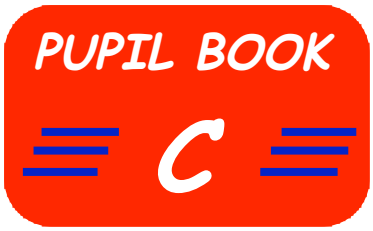
TeeJay Publishers

Level C Textbook

Produced by members of the TeeJay Writing Group

T. Strang (P.T. Mathematics - Clydebank High School)

J. Geddes (P.T. Mathematics - Renfrew High School)



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TeeJay Publishers
P.O. Box 1375
Barrhead
Glasgow
G78 1JJ

Tel: 0141 880 6839
Fax: 0870 124 9189
e-mail: teejaypublishers@ntlworld.com
web page: www.teejaypublishers.co.ok

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Level C Textbook

The book can be used in both Primary and Secondary with pupils who have gained a Level B.

- In secondary schools it can be used with those pupils who had already gained a National Test level B in Primary or early Secondary.

  - It should prepare pupils to sit maths level C national test, **or equivalent**, by the end of Primary 4, 5, 6, 7 or by the end of Secondary 1.
  - There are no A and B exercises. It basically covers the **entire Level C course** without the teacher having to pick and choose which questions to leave out and which exercises are important. They all are !
  - It covers the important work of level C in ONE textbook.
  - It contains a 7 page "**Chapter Zero**" which primarily revises every topic at level B and can be used as a diagnostic tool. This could be followed by a diagnostic assessment * of the work of Level B.
  - Non-calculator skills will be emphasised and encouraged throughout the book
  - Each topic will have a "**Topic in a Nutshell**" exercise as a summary.
  - Homework is available as a photocopiable pack along with an Assessment pack which can be used topic by topic or combined to form a series of level C cumulative Tests.
  - **Optional** worksheets are available to accompany certain exercises and are marked like this :-

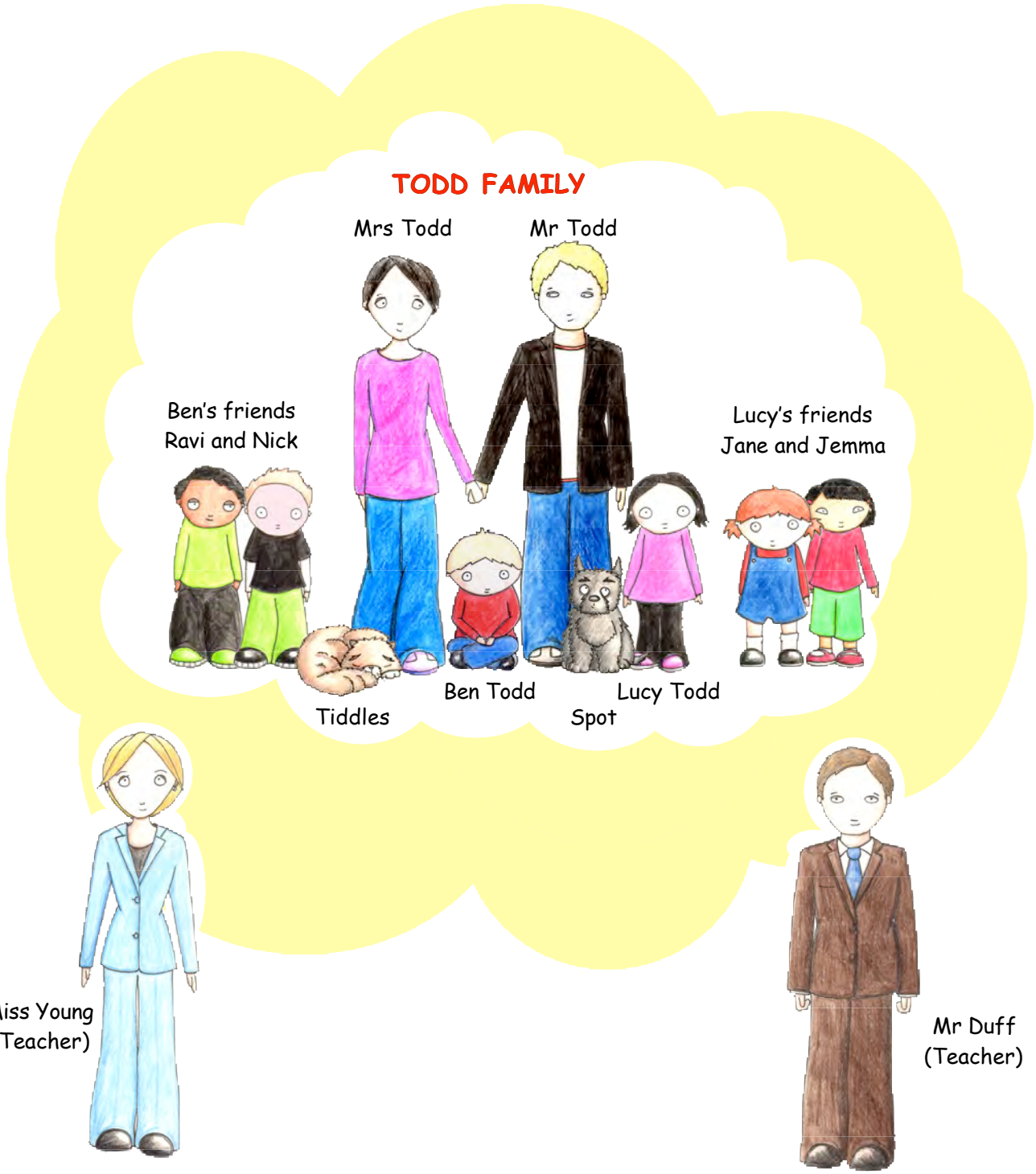
We make no apologies for the multiplicity of colours used throughout the book, both for text and in diagrams - we felt it helped brightened up the pages !!

Tom Strang and Jim Geddes

(August 2004)

Contents

The Characters

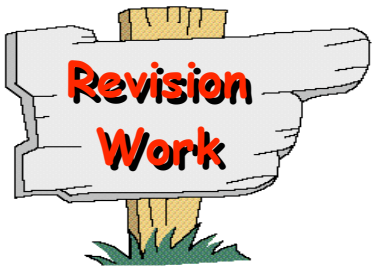


TeeJay gratefully acknowledges
the Artwork
by

Susan Fitzpatrick

Chapter 0

Calculators should NOT be used anywhere in this chapter.



1. Write the following numbers **in words** :-

   a 96 **b** 123 **c** 459 **d** 905.

2. Write the following numbers using **digits** :-

   a sixty two **b** seven hundred and fifteen

   c five hundred and ninety **d** eight hundred and four.

3. What number comes :-

   a 10 **after** 137 **b** 100 **before** 379 **c** 50 **after** 627

   d 200 **before** 820 **e** 20 **before** 210 **f** 300 **after** 695 ?

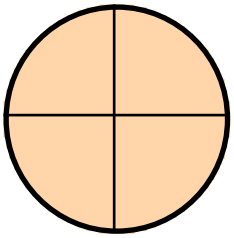
4. Write these numbers in order putting the **LARGEST** first :-

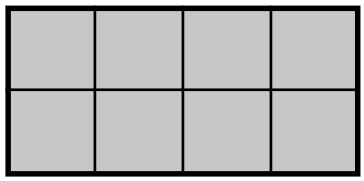
   a 199, 96, 211, 390, 89, 208, 302.

   b 807, 799, 800, 789, 803, 817, 798, 779.

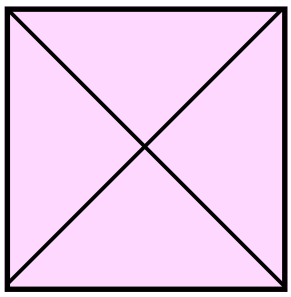
5. **Trace** or **copy** each shape neatly and colour in $\frac{1}{2}$ of it each time :-

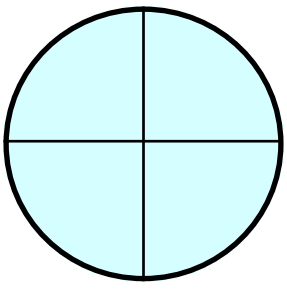
   a 

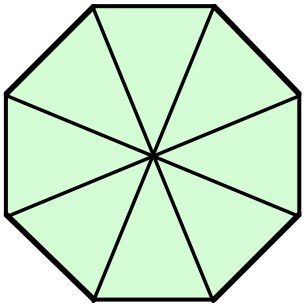
   b 

   c 

6. **Trace** or **copy** each shape neatly and colour in $\frac{1}{4}$ of it each time :-

   a 

   b 

   c 

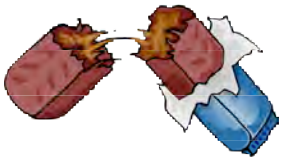
7. **a** To find a **half** of something what do you divide it by ?

b To find a **quarter** of something what do you divide it by ?

8. Lucy bought a chocolate bar for **33p**.

a What change will she get from **£1** ?

b What coins might the shopkeeper give her as change ?



9. **a** How many **10 pences** can Lucy get in exchange for **one** 50 pence piece ?

b How many **5 pences** can Lucy get in exchange for **three** 20 pence pieces ?

c How many **2 pences** can Lucy get in exchange for **four** 10 pence pieces ?

10. Find **mentally** :-

a 7 + 3	**b** 32 + 6	**c** 90 – 20	**d** 130 + 40
e 58 – 7	**f** 21 – 8	**g** 200 – 100	**h** 170 + 40

11. **Work out** :-

a 52 + 43	**b** 29 + 53	**c** 77 – 23	**d** 81 – 74

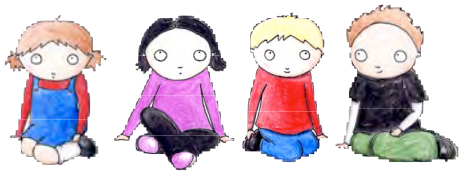
12. Find **mentally** :-

a 2 × 7	**b** 5 × 8	**c** 4 × 5	**d** 3 × 9
e 10 × 6	**f** 16 ÷ 2	**g** $5\overline{)35}$	**h** 28 ÷ 4
i $10\overline{)60}$	**j** 5 × 9	**k** 18 ÷ 3	**l** 90 ÷ 10

13. **Find** :-

a 51 × 3	**b** 34 × 5	**c** 61 × 10	**d** $3\overline{)42}$
e $10\overline{)460}$	**f** 85 ÷ 5	**g** 63 × 4	**h** $4\overline{)72}$

14. **a** Lucy, Ben, Nick and Jane share **84 pence** amongst themselves **equally**.



How much does Lucy get ?

b A packet contains **10** caramels. The total weight is **450 grams**.
What does each caramel weigh ?

15. **a** What is the total cost of **3** tyres if each one costs **£33** ?

b A nail weighs **9 grams**.
What is the weight of **5** nails ?

16. Round each of these to the nearest **10** :-

a 63 **b** 77 **c** 44 **d** 19

17. Round :-

a 43 to the nearest **10** **b** 68 to the nearest **10**

18. Find :-

a $\frac{1}{2}$ of £26 **b** $\frac{1}{2}$ of 68 g **c** $\frac{1}{4}$ of £16 **d** $\frac{1}{4}$ of 40 kg

19. Ben writes down the following numbers :

43, 66, 117, 19, 62, 130, 89, 6, 402, 197.

Help Ben by writing down all of the **EVEN** numbers.

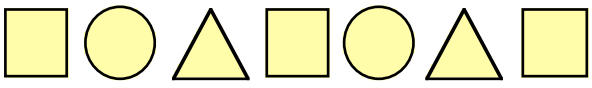
20. Find the next **3** numbers in these **patterns** :-

a 3, 6, 9, 12 **b** 5, 10, 15, 20 **c** 80, 70, 60, 50

d 13, 23, 33, 43 **e** 2, 5, 8, 11 **f** 77, 66, 55, 44.

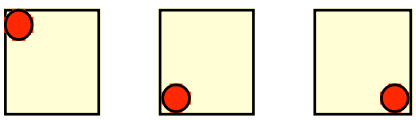
21. Draw the next **two** shapes in each of the following patterns :-

a

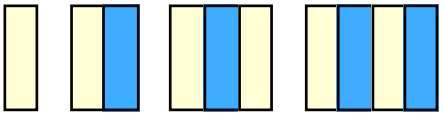


b

c



d



22. **Copy** the following and fill in the missing numbers :-

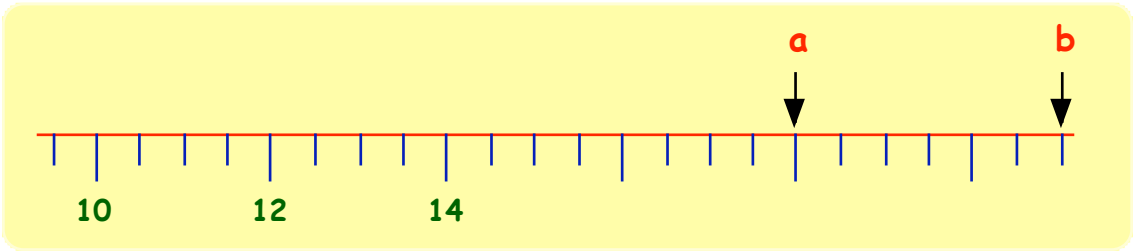
a 6 + ... = 13 **b** 19 - ... = 11 **c** 3 x .... = 21

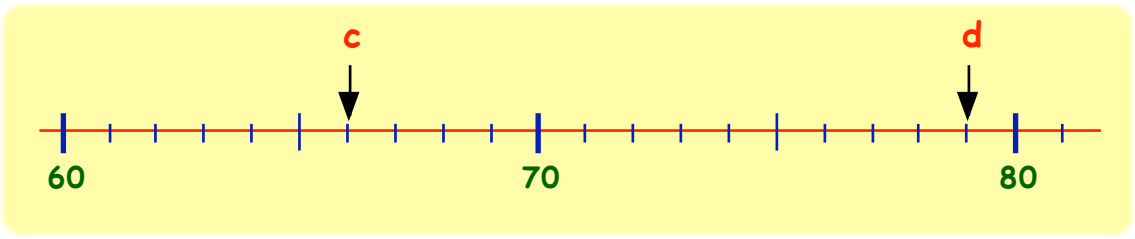
d 30 ÷ ... = 6 **e** ... - 4 = 13 **f** ... ÷ 4 = 6

23. Write down which sign (+, −, ×, ÷) is missing here :-

a 4 .... 6 = 24 **b** 3 .... 9 = 12 **c** 18 .... 2 = 16 **d** 18 .... 2 = 9

24. What numbers are the arrows pointing to ?





25. Put these lengths in order, starting with the **SMALLEST** :-

85 cm, 1 m 83 cm, 90 cm, 105 cm, 1 m 6 cm

26. **Change** :-

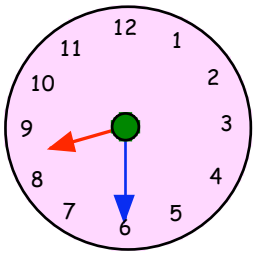
a 3 metres 25 centimetres to centimetres

b 2 m 56 cm to cm **c** 1 m 8 cm to cm

d 430 cm to m and cm **e** 207 cm to m and cm.

27. Write the times shown on these clocks.

a



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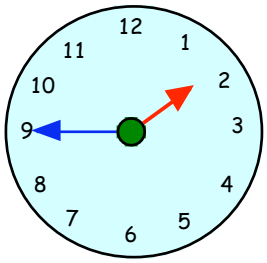


28. Write out these "**digital**" times in words :-

a 06:15 **b** 11:45

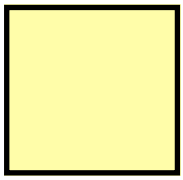
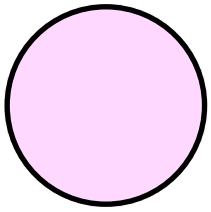
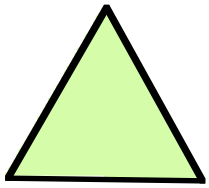
29. Put these in order, **earliest** first:-

June 17th, August 1st, June 30th July 23rd.

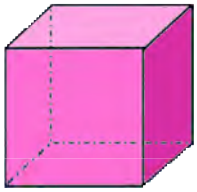
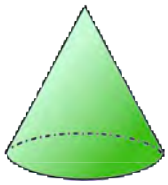
30. Write the following months in order, **EARLIEST** first :-

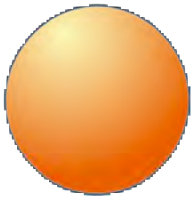
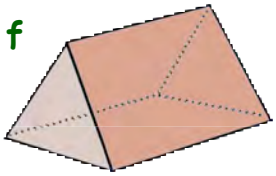
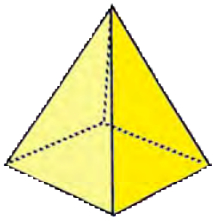
March, December, January, August, June.

31. What are the mathematical names for these shapes :-

a  **b**  **c**  **d** 

32. What are the proper mathematical names for these **solid** shapes :-

a  **b**  **c**  **d** 

e  **f**  **g** 

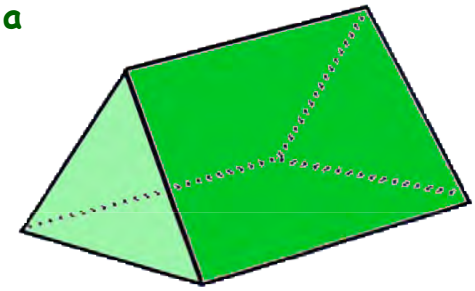
33. This shape is called a **cuboid**.

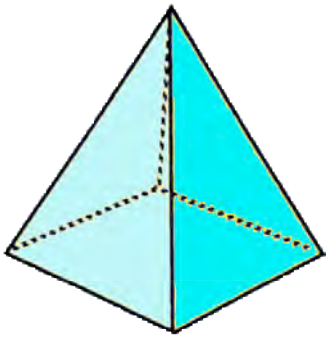
a How many "**faces**" does it have ?

b How many "**edges**" does it have ?

c How many "**corners**" does it have ?

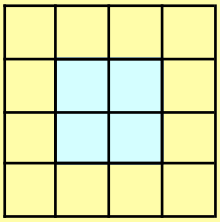
34. How many **faces**, how many **edges** and how many **corners** do each of these 2 shapes have :-

a 

b 

35. Which of the following shapes are "good" shapes for tiling :-
(*covering a page with no gaps*)

a



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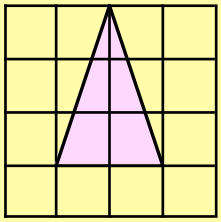

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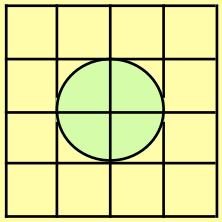

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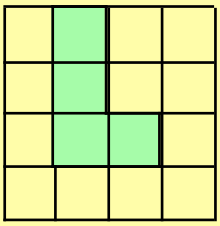
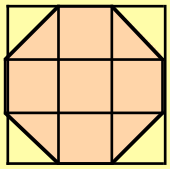


e



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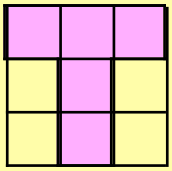
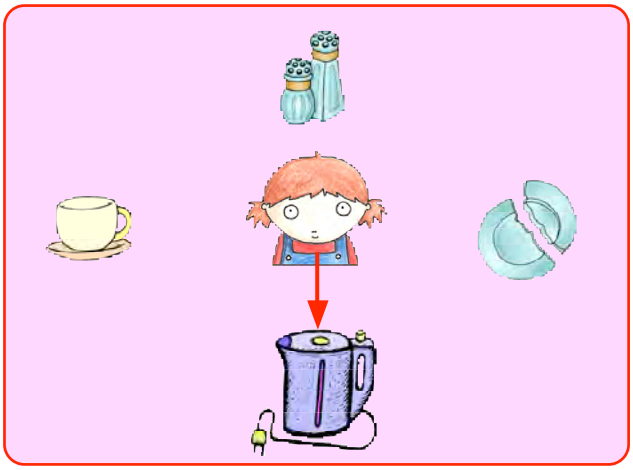


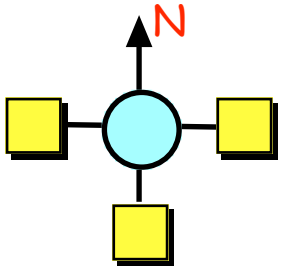
36. Jane is in the kitchen.
She is looking at the kettle.
What object would Jane be looking at if:-

a she made a **quarter turn** clockwise ?

b she made a **half turn** ?



37.



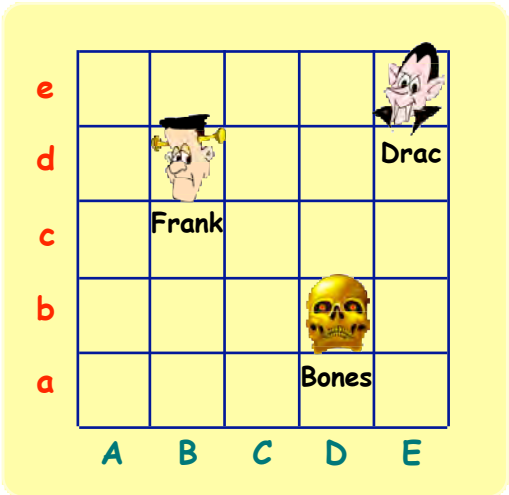
Make a **copy** of this **COMPASS ROSE**.

Fill in the other 3 directions.

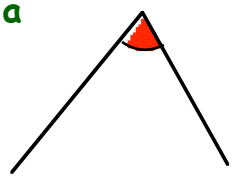
38. Look at this grid.

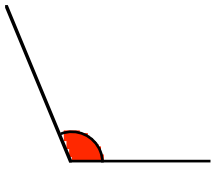
a Which monster is at **Bd** ?

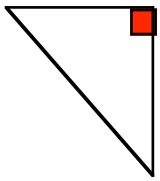
b Which monster is **1** box **right** and **3** boxes **up** from the monster at **Db** ?

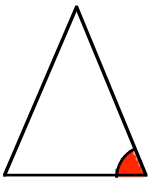


39. Which of the following angles are **right angles** :-

a 

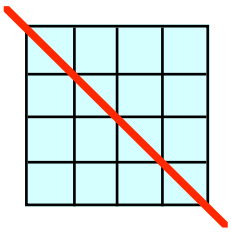
b 

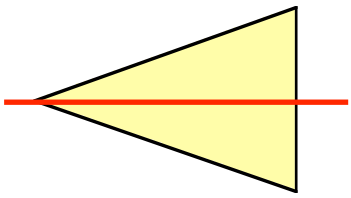
c 

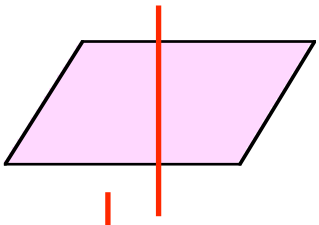
d 

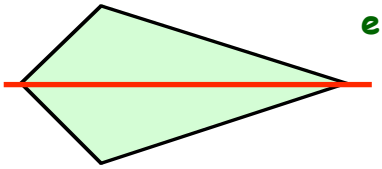
40. **You may use a mirror here.**

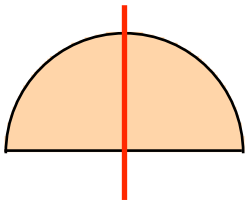
In which of the following shapes is the red line a **line of symmetry** :-

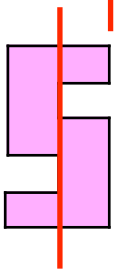
a 

b 

c 

d 

e 

f 

41. This table gives the **hair** colour and **eye** colour of a group of children.

a Which 2 boys have **Black** hair ?

b One person has **red** hair.
What colour of eyes does this person have ?

c How many children have **green** eyes ?

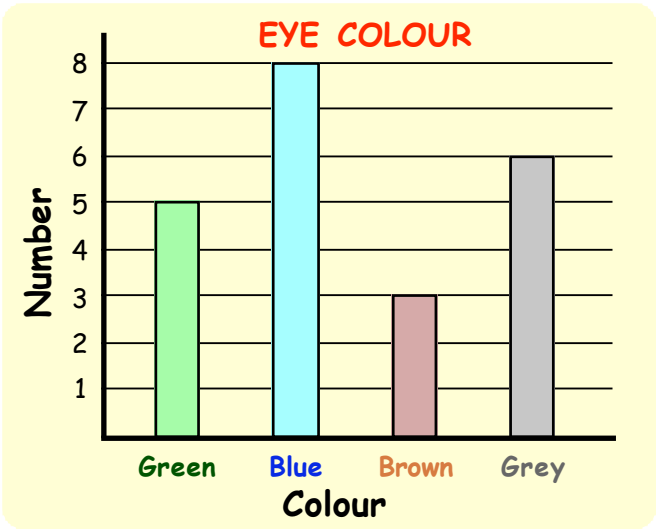
	Hair	Eyes
Billy	Brown	Blue
Tommy	Black	Blue
Nicola	Red	Green
Lynne	Brown	Grey
John	Black	Green

42. A bar graph was drawn showing the eye colour of the whole class.

a Which is the **least** common colour of eyes ?

b How many people have blue eyes ?

c How many **more** people have grey eyes than brown eyes ?



Chapter 1

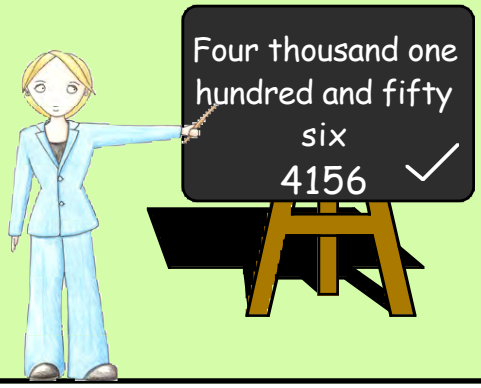
Whole Numbers 1

Calculators should NOT be used anywhere in this chapter.

Place Values

In the number :- **4156**

the **4** stands for **4** thousand	=	4000
the **1** stands for **1** hundred	=	100
the **5** stands for **5** tens	=	50
the **6** stands for **6** units	=	6
	=	4156



Exercise 1

1. What do the following **digits** stand for in the number 6827 :-

   a 2 **b** 6 **c** 7 **d** 8 ?

2. What does the **7** stand for in each of these numbers :-

   a 7382 **b** 6971 **c** 2037 **d** 708 ?

3. Write out the following numbers fully **in words** :-

   a 562 **b** 708 **c** 9317 **d** 8827

   e 98 **f** 5030 **g** 8006 **h** 9103.

4. Write the following numbers **using digits** :-

   a eight hundred and fifty. **b** seven hundred and five.

   c seven thousand eight hundred. **d** six thousand two hundred and four.

   e five thousand and sixty three. **f** nine thousand and fourteen.

   g one thousand two hundred and thirty four.

5. **a** George's dad is building a garage at two hundred and fifteen Loan Avenue. Write this number **using digits**.

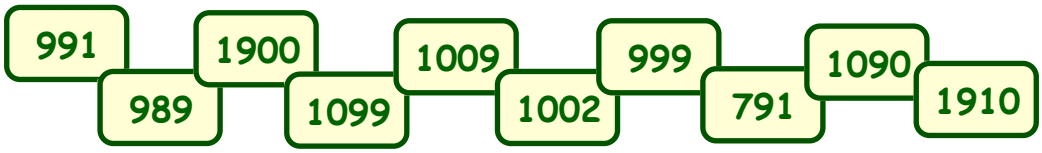
   b His friend stays at number 308. Write this **in words**.

6. Put the following groups of numbers in order, (**SMALLEST first**) :-

a 270, 304, 299, 300, 317, 237, 289, 310, 298.

b 6054, 6099, 5989, 5045, 6104, 6200, 5897, 6001.

c



7. Write down the number that comes :-

a 10 **after** 350 **b** 20 **after** 670 **c** 300 **before** 4600

d 60 **before** 1490 **e** 200 **after** 1470 **f** 400 **before** 6500

g 500 **after** 1500 **h** 1000 **before** 3700. **i** 4000 **before** 7200.

j fifty **after** six hundred and twenty.

k six hundred **before** nine thousand eight hundred.

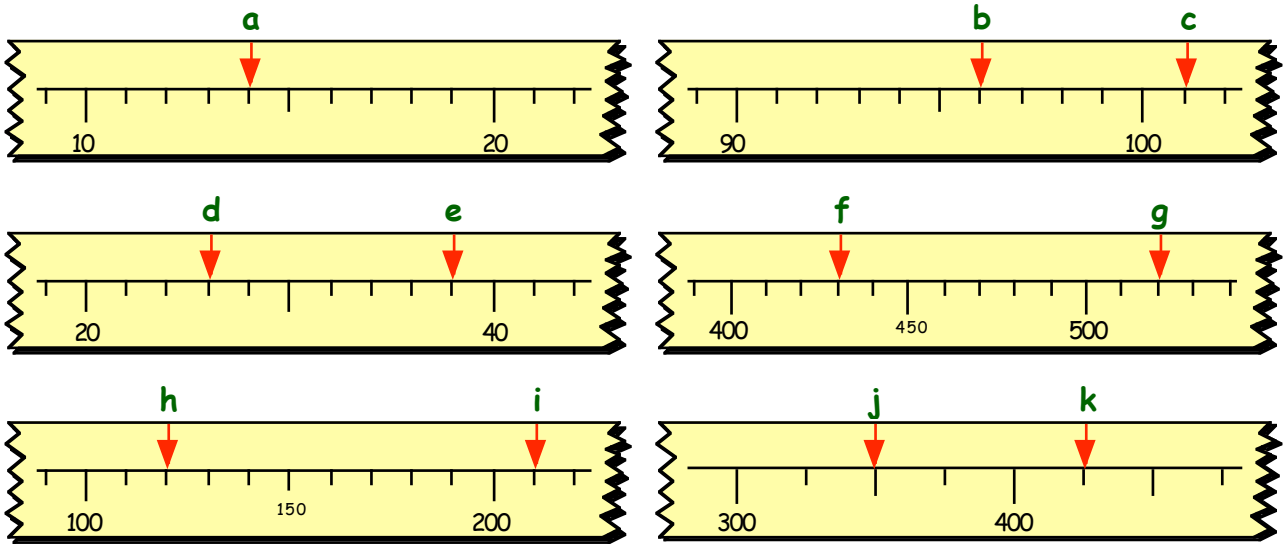
l one thousand one hundred **before** six thousand five hundred.

8. **a** Ravi's dad was born in 1958.
Ravi was born 30 years **later**.
In what year was Ravi born ?

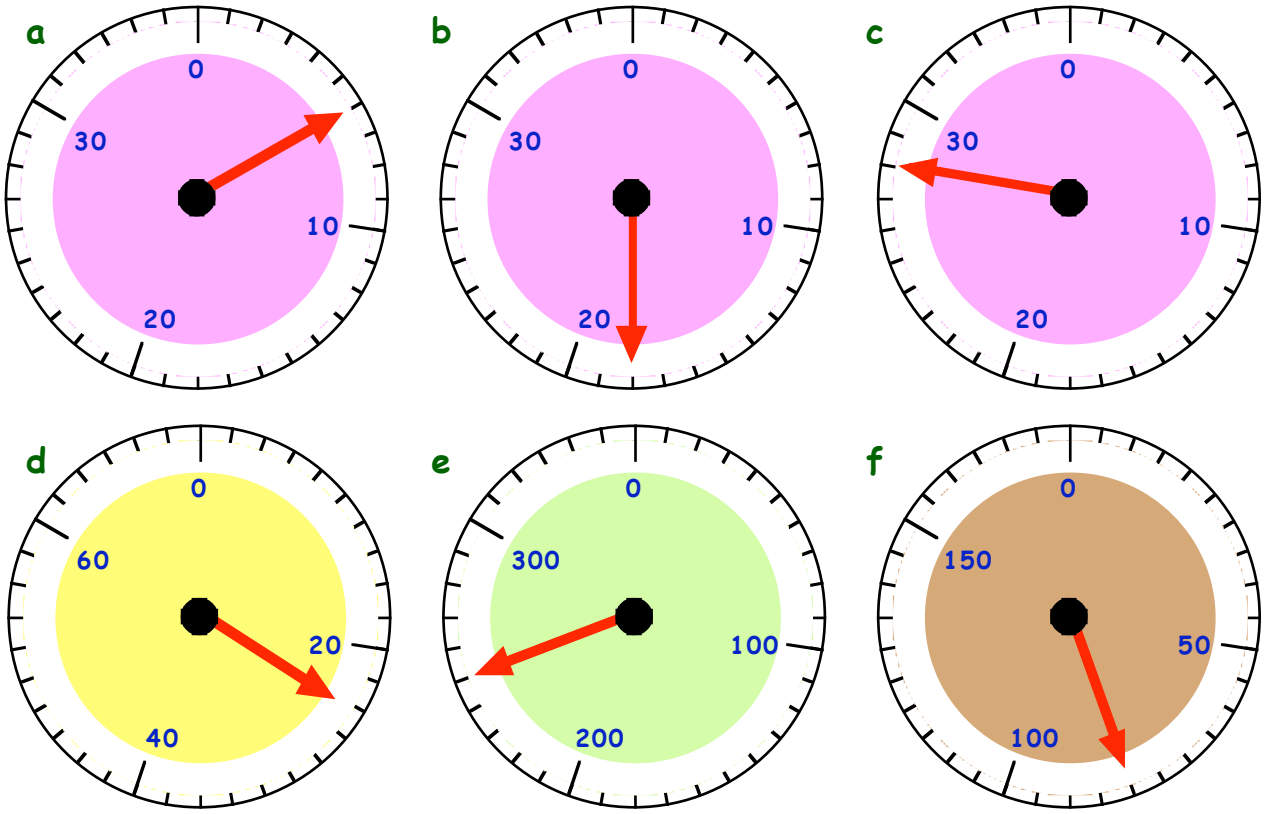
b

The Americans put a man on the moon in 1969.
Jane's gran was born 40 years **before** this.
In what year was Jane's gran born ?

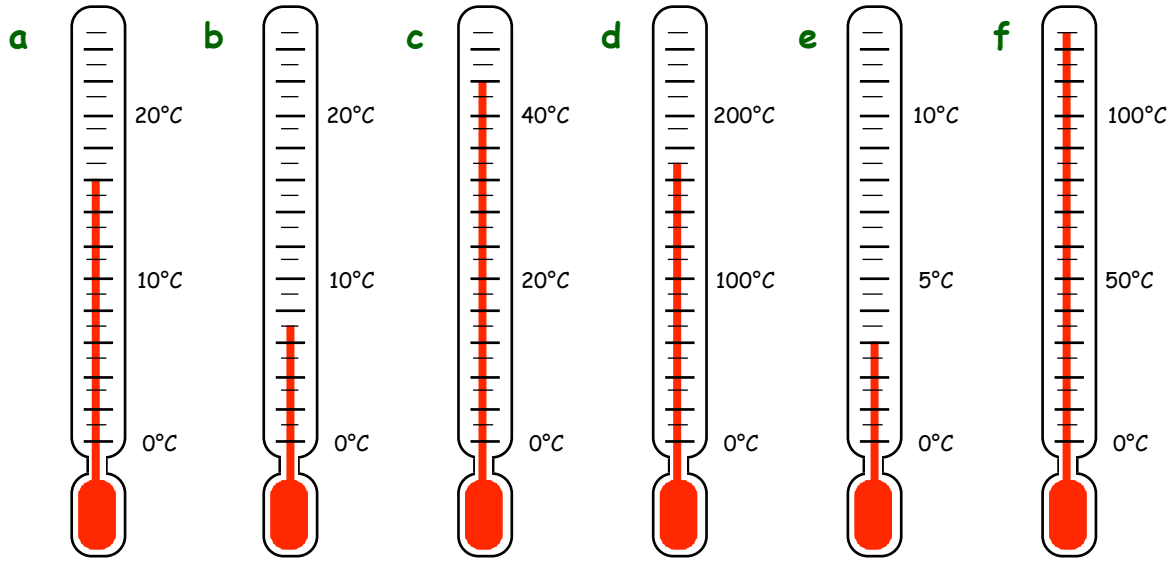
9. Look at these scales. What numbers are the arrows pointing to ?



10. What are the readings on these gauges ?

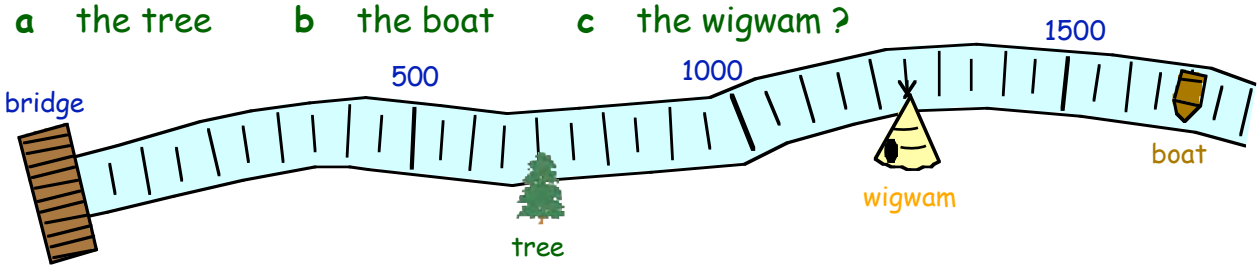


11. What are the temperatures on these thermometers ?



12. The diagram shows a river with distances (in metres) from the bridge.
How far up **from** the bridge is :-

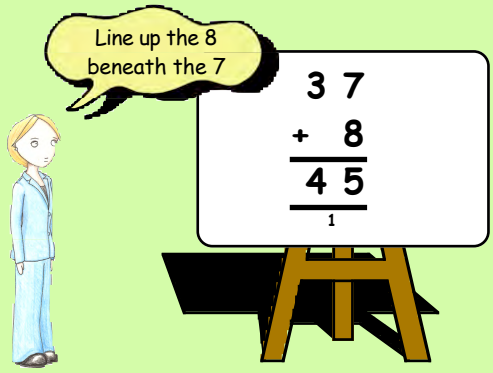
a the tree **b** the boat **c** the wigwam ?



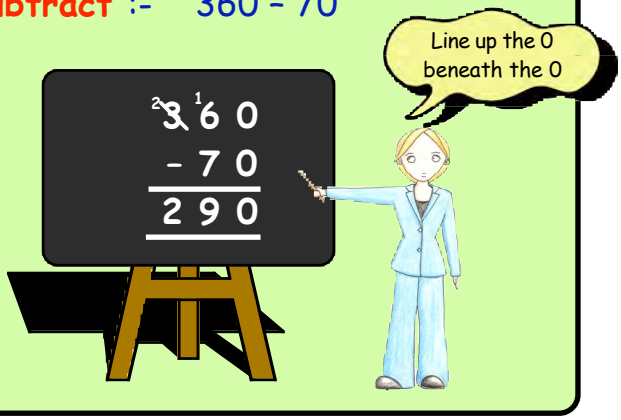
Add and Subtract Whole Numbers

When **adding** (or **subtracting**) numbers make sure you line them up properly

To **add** :- 37 + 8



To **subtract** :- 360 – 70



Exercise 2

1. Copy and complete each calculation :-

a 58 + 3	**b** 61 + 7	**c** 22 + 9	**d** 15 + 8
e 39 + 6	**f** 65 + 9	**g** 510 + 40	**h** 460 + 80
i 160 + 90	**j** 340 + 70	**k** 704 + 9	**l** 370 + 60
m 39 3 + 8	**n** 52 6 + 7	**o** 90 380 + 60	**p** 70 60 + 530

2. Set these down in a similar way (**or try them mentally**) :-

a 39 + 8	**b** 7 + 49	**c** 9 + 25	**d** 57 + 4
e 75 + 6	**f** 8 + 64	**g** 130 + 70	**h** 90 + 250
i 360 + 80	**j** 540 + 70	**k** 220 + 90	**l** 780 + 30
m 160 + 50 + 30	**n** 380 + 40 + 40	**o** 50 + 190 + 60	**p** 30 + 580 + 70

3. Copy and complete each calculation :-

a	67 − 3	**b**	59 − 8	**c**	46 − 7	**d**	72 − 6
e	83 − 5	**f**	48 − 9	**g**	65 − 7	**h**	93 − 6
i	18 − 9	**j**	250 − 7	**k**	320 − 9	**l**	450 − 60
m	270 − 80	**n**	600 − 40	**o**	830 − 90	**p**	920 − 30

4. Set these down in a similar way (**or try them mentally**) :-

a	39 − 6	**b**	58 − 7	**c**	42 − 6	**d**	31 − 7
e	70 − 8	**f**	94 − 9	**g**	63 − 10	**h**	72 − 5
i	260 − 40	**j**	490 − 50	**k**	320 − 60	**l**	510 − 90
m	720 − 80	**n**	610 − 60	**o**	930 − 50	**p**	700 − 30

5. **a** A tram in Melbourne has 37 passengers on board.

At the next stop, 8 passengers get off.
At the stop after that, 5 passengers get on.

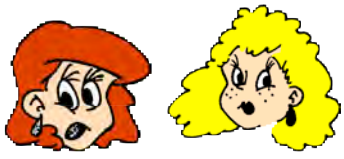
How many passengers are now on the bus ?

b

It is 46 metres across from one bank of a river to the other.
Jamie swam out 8 metres from one bank before losing his trunks.

How **far** was he from the other bank ?

c Sandy saved up £170 and Lynsey saved £90.



i How much had they saved **altogether** ?

ii How much **more** had Sandy saved than Lynsey ?

d The ACE Company's factory is 230 metres high.
The SCOTIA BANK building is 80 metres high.

How much **higher** is the ACE building than the BANK building ?

e

Lucy's Uncle Ted is 35 years old.
Her Aunt Mary is 6 years **younger** than Ted.
Her Uncle Arthur is 8 years **older** than Ted.

i How old is Mary ?

ii How old is Arthur ?

iii How much **older** than Mary is Arthur ?

f A bird is flying at a height of 820 metres above ground level.
A hill is 680 metres high. The bird **drops** by 80 metres.

i What is the bird's new height ?

ii By how much will the bird now clear the top of the hill ?

g

An empty box weighs 360 grams
A tube of toothpaste weighs 80 grams.

What is the total weight of :-

i the box and 1 tube of toothpaste ?

ii the box and 2 tubes of toothpaste ?

iii the box and 5 tubes of toothpaste ?

6. Find the value of the * each time:-

a
$$\begin{array}{r} 6\,* \\ +\ 8 \\ \hline 7\ 2 \end{array}$$

b
$$\begin{array}{r} 5\,* \\ +\ 6 \\ \hline 6\ 3 \end{array}$$

c
$$\begin{array}{r} 4\,* \\ +\ 9 \\ \hline 5\ 8 \end{array}$$

d
$$\begin{array}{r} 3\ 8 \\ +\ * \\ \hline 4\ 4 \end{array}$$

e
$$\begin{array}{r} 5\,* \\ -\ 7 \\ \hline 4\ 4 \end{array}$$

f
$$\begin{array}{r} 6\,* \\ -\ 5 \\ \hline 5\ 9 \end{array}$$

g
$$\begin{array}{r} 9\,* \\ -\ 9 \\ \hline 8\ 3 \end{array}$$

h
$$\begin{array}{r} 8\ 3 \\ -\ * \\ \hline 7\ 6 \end{array}$$

i
$$\begin{array}{r} 3\,*\,0 \\ +\ 4\ 0 \\ \hline 4\ 1\ 0 \end{array}$$

j
$$\begin{array}{r} 5\,*\,0 \\ +\ 9\ 0 \\ \hline 6\ 0\ 0 \end{array}$$

k
$$\begin{array}{r} 7\ 8\ 0 \\ +\ *\ 0 \\ \hline 8\ 2\ 0 \end{array}$$

l
$$\begin{array}{r} 1\ 6\ 0 \\ +\ *\ 0 \\ \hline 2\ 4\ 0 \end{array}$$

m

$$\begin{array}{r} 4\star 0 \\ -\ 3\,0 \\ \hline 4\ 2\,0 \end{array}$$

n

$$\begin{array}{r} 5\star 0 \\ -\ 8\,0 \\ \hline 4\ 3\,0 \end{array}$$

o

$$\begin{array}{r} 9\star 0 \\ -\ 6\,0 \\ \hline 8\ 6\,0 \end{array}$$

p

$$\begin{array}{r} 6\,2\,0 \\ -\ \star\,0 \\ \hline 5\,3\,0 \end{array}$$

7. **a** A box should have **36** chocolates inside.
When Lucy looked at the box some were missing.
There were **28** chocolates in the box.
How many chocolates had been taken ?

b

The library is **820** metres from my house.

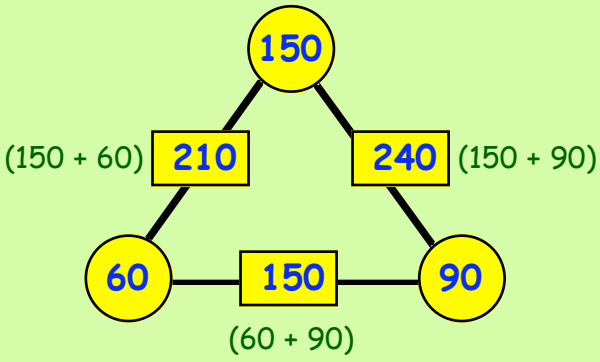
I was walking to the library when I stopped because I had forgotten my library card.

I was **750** metres from the library.

How far had I walked ?

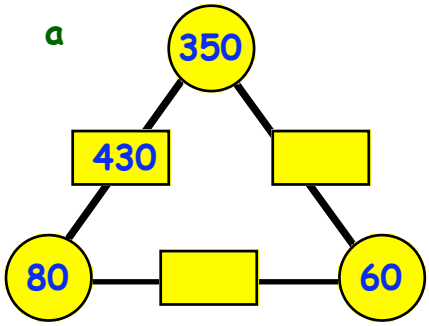
Triangle Puzzles.

In these "Triangles" the number in the rectangle is found by adding the numbers in the 2 circles either side of it.

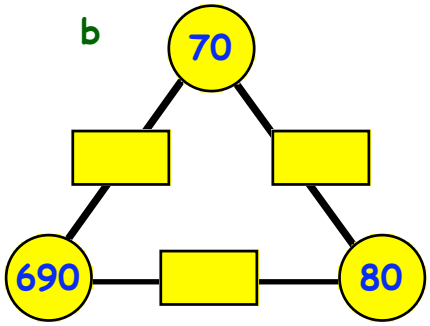


8. Copy the following number triangles and fill in the missing numbers :-

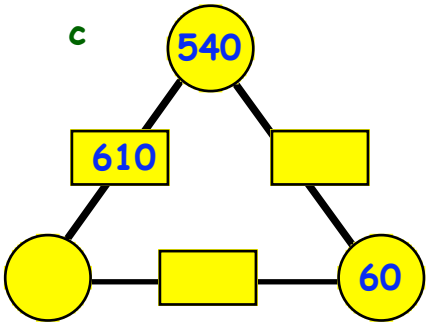
a



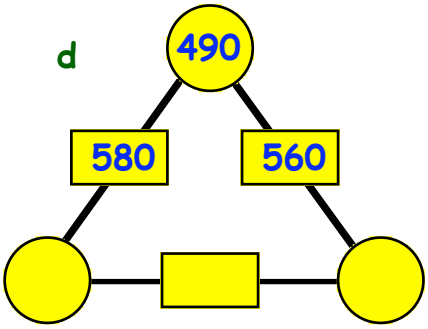
b



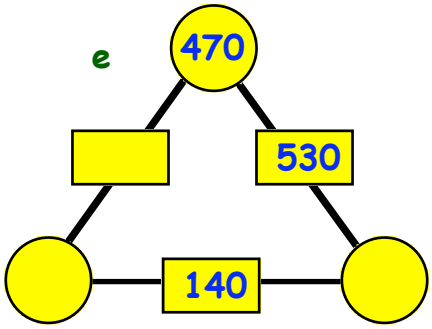
c



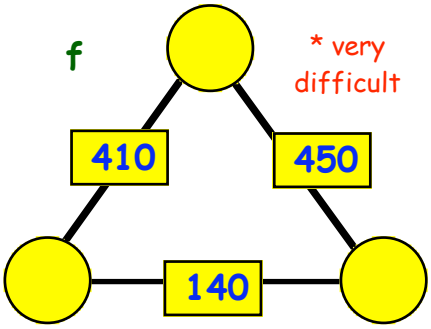
d



e



f



* very difficult

W'Sheet 1·1

Topic in a Nutshell

1. What does the **4** stand for in each of these numbers :-

   a 407 **b** 2164 **c** 5649 **d** 4287 ?

2. Write these numbers out fully **in words** :-

   a 57 **b** 321 **c** 4008 **d** 7942.

3. Write the following numbers **using digits** :-

   a six hundred and thirty. **b** four thousand nine hundred.

   c three thousand and one. **d** two thousand five hundred and twenty.

4. Put the following groups of numbers in order, **(put the LARGEST first)** :-

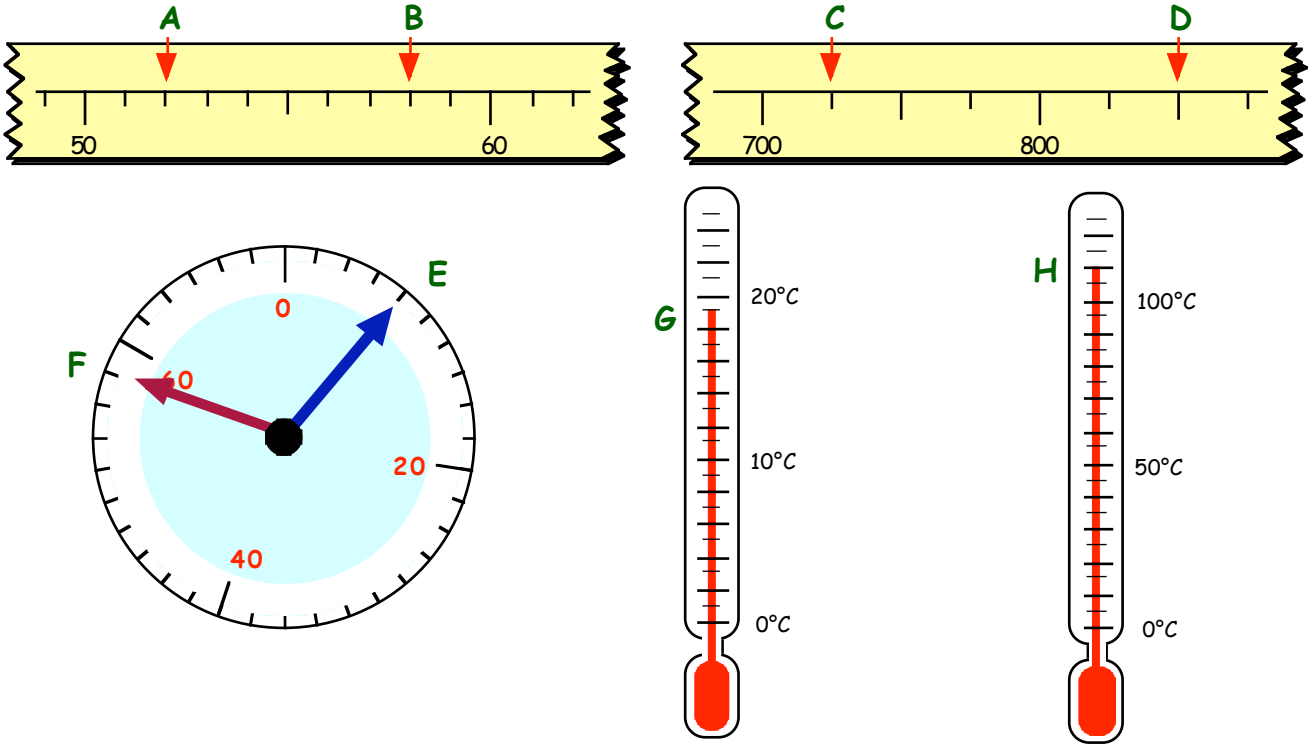
   3087, 3021, 2998, 2415, 3002, 3200, 2899, 3004.

5. The hit "You've found that Lovin' Feeling" was No. 1 in the charts in 2002. The same record, sung by a different artist, was a No. 1 hit twenty years **before that**.

   What year was that ?

6. Look at the following scales, gauges and thermometers.

   What numbers or temperatures are shown on each :-



7. Set down these additions and try them :-

a $\begin{array}{r} 33 \\ +\ 8 \\ \hline \end{array}$ **b** $\begin{array}{r} 460 \\ +\ 70 \\ \hline \end{array}$ **c** $\begin{array}{r} 50 \\ 220 \\ +\ \ 9 \\ \hline \end{array}$ **d** $\begin{array}{r} 90 \\ 340 \\ +\ 70 \\ \hline \end{array}$

e 57 + 9 **f** 470 + 50 **g** 140 + 30 + 80 **h** 270 + 90 + 42.

8. Set down these subtractions and work out the answers :-

a $\begin{array}{r} 59 \\ -\ 6 \\ \hline \end{array}$ **b** $\begin{array}{r} 35 \\ -\ 7 \\ \hline \end{array}$ **c** $\begin{array}{r} 480 \\ -\ 60 \\ \hline \end{array}$ **d** $\begin{array}{r} 530 \\ -\ 90 \\ \hline \end{array}$

e 47 - 6 **f** 83 - 9 **g** 680 - 330 **h** 810 - 50.

9. Sally has 28 walnuts. She gives 9 of them to her friend Tony.
Her other friend Cindy then hands 4 walnuts to Sally.

How many walnuts does Sally have now ?

10.

Joe earns £21 per week for doing a paper round.
Georgie gets £3 **less** than that for her paper round but
Francis gets paid £5 **more** than Joe.

a What does Georgie earn ?

b What does Francis earn ?

c How much **less** than Francis does Georgie earn ?

11. Find the missing value in each of the following.
The missing number is shown as a ■ .

a $\begin{array}{r} 3\blacksquare \\ +\ 9 \\ \hline 43 \end{array}$ **b** $\begin{array}{r} 490 \\ +\ \blacksquare 0 \\ \hline 570 \end{array}$ **c** $\begin{array}{r} 8\blacksquare \\ -\ \ 7 \\ \hline 75 \end{array}$ **d** $\begin{array}{r} 310 \\ -\ \blacksquare 0 \\ \hline 240 \end{array}$

12. I was taking part in a **400 metre** race.

One of my running shoes flew off **165 metres**
from the finishing line.

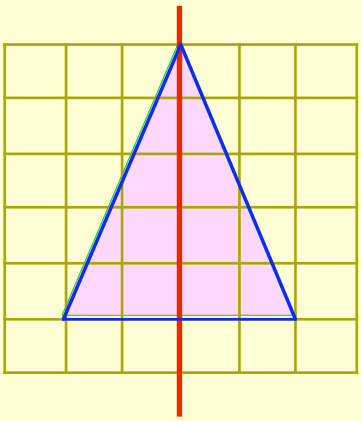
How far had I ran before my shoe split ?

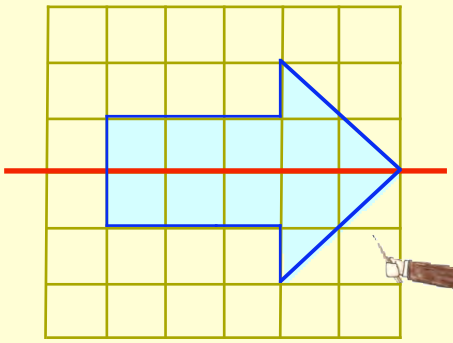
Chapter 2

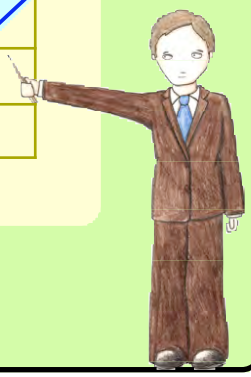
Symmetry

Line Symmetry

A shape has a **line of symmetry** if :- when you fold the shape over the line the 2 halves **exactly** match.







Each shape above has a line of symmetry (shown in **red**).

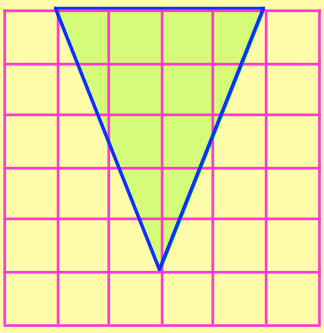
Exercise 1

W'Sheet 2·1

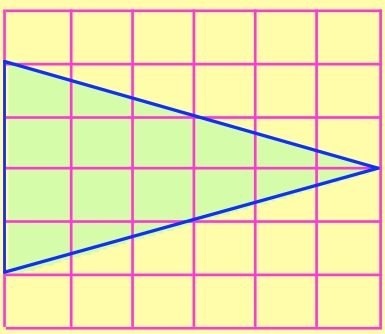
1. Which of these shapes have a line of symmetry ?

   (Write **YES** or **NO** for each)

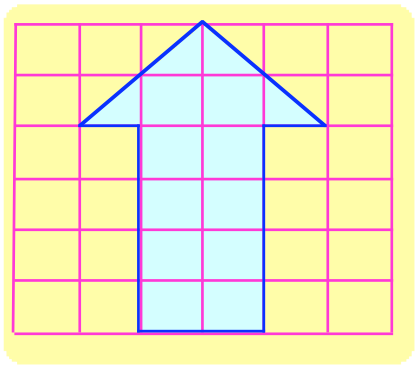
   a



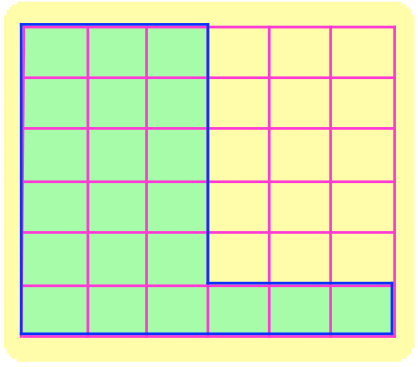
   b



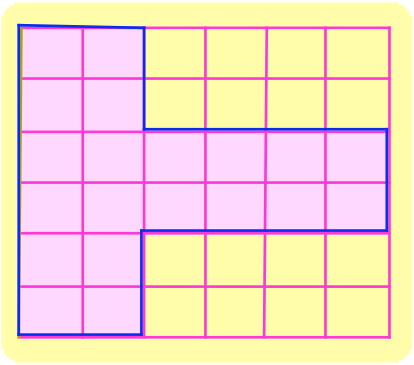
c



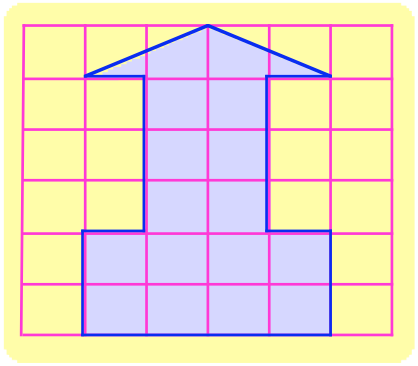
d



e



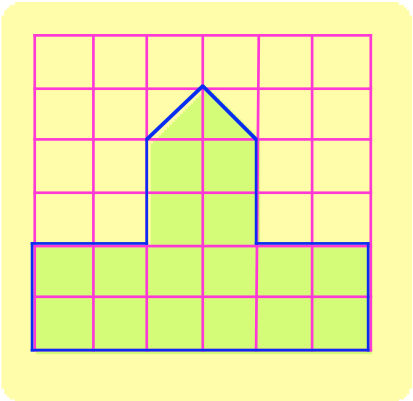
f



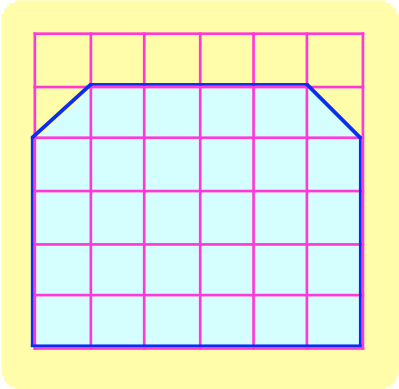
2. Draw (or trace) each shape **carefully** into your jotter and mark any lines of symmetry.

W'Sheet 2·2

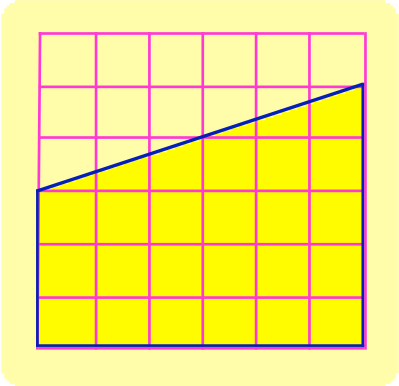
a



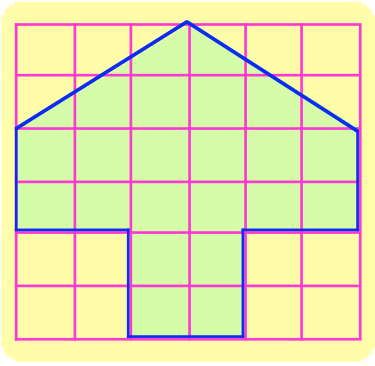
b



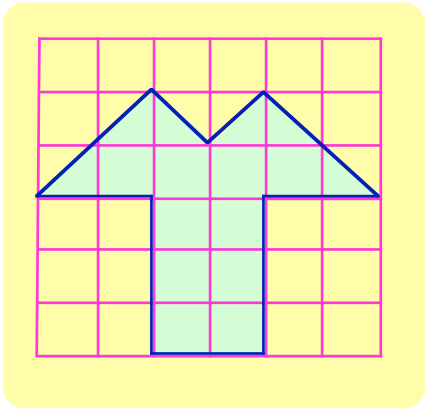
c



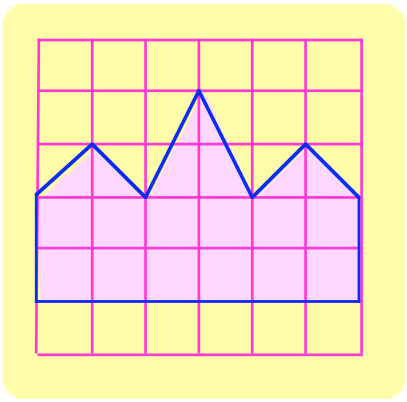
d



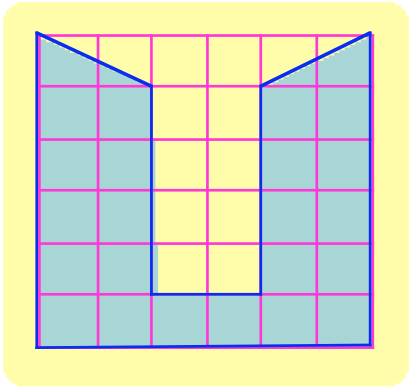
e



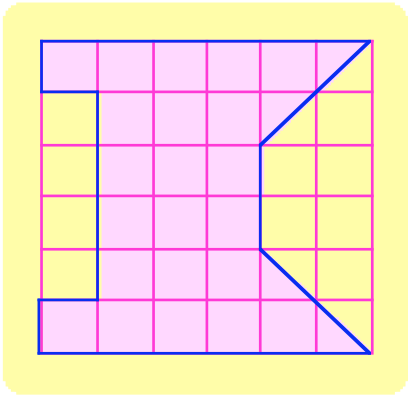
f



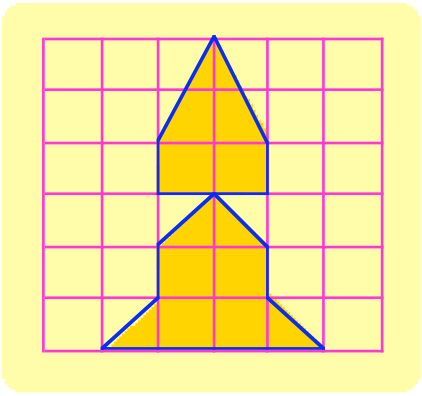
g



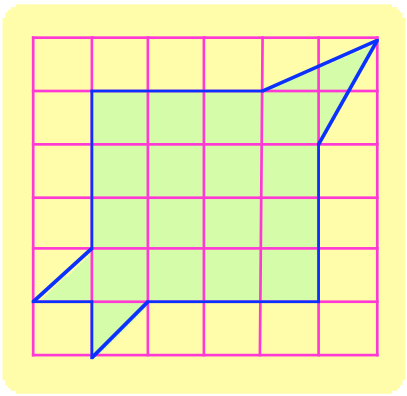
h



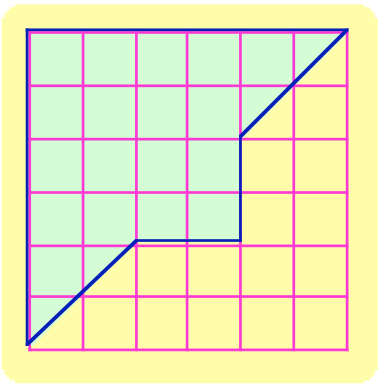
i



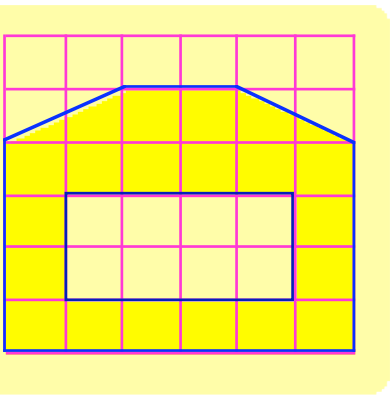
j



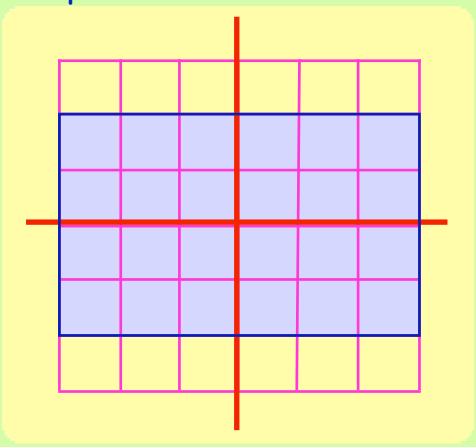
k



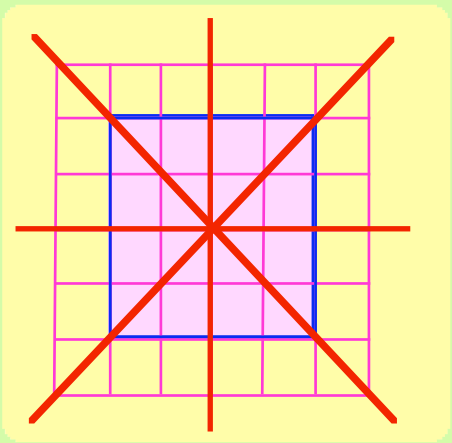
l



Some shapes have more than 1 line of symmetry.



A rectangle has 2 lines of symmetry.

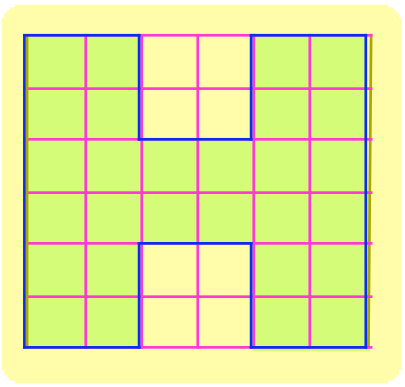


A square has 4 lines of symmetry.

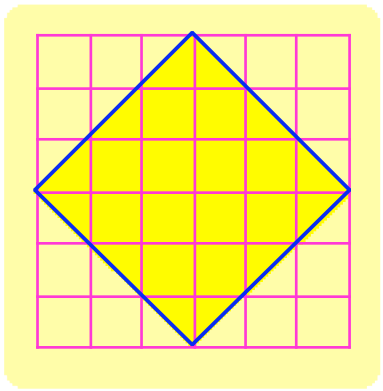
W'Sheet 2·3

3. How many lines of symmetry does each shape have :-

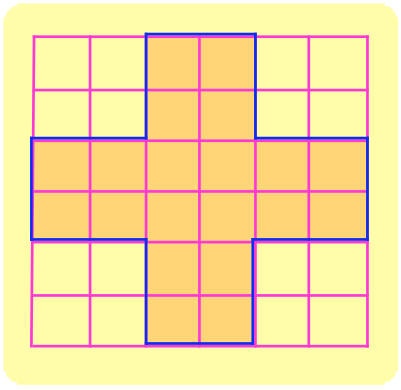
a



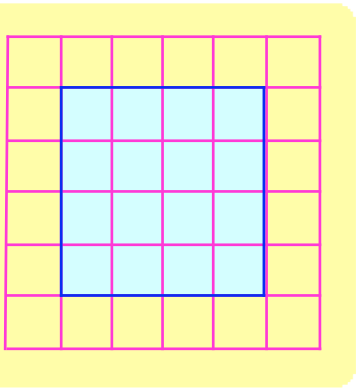
b



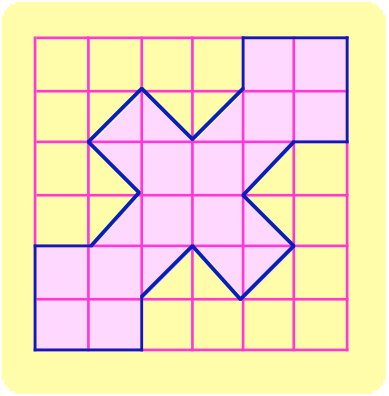
c



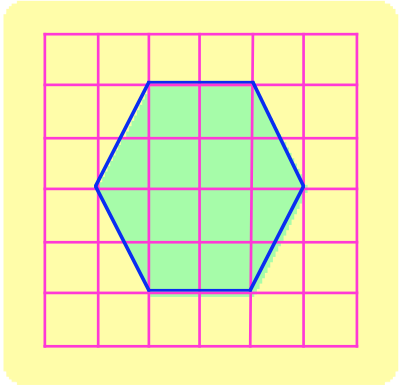
d



e



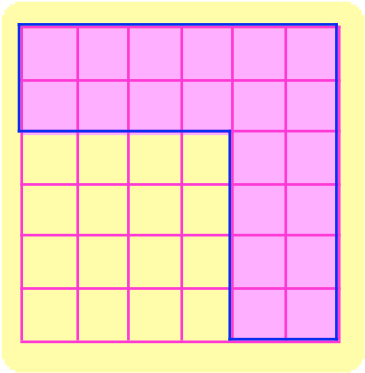
f



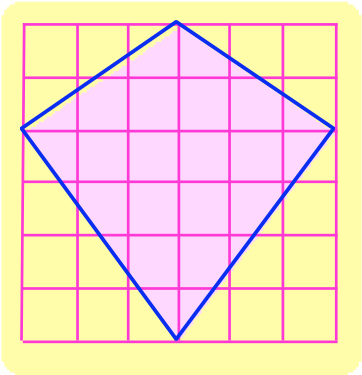
4. **Copy** each shape as carefully as you can.

Draw in all lines of symmetry using a coloured pencil.

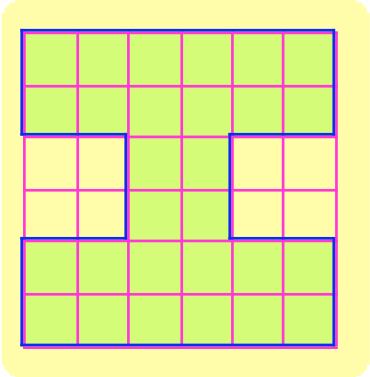
a



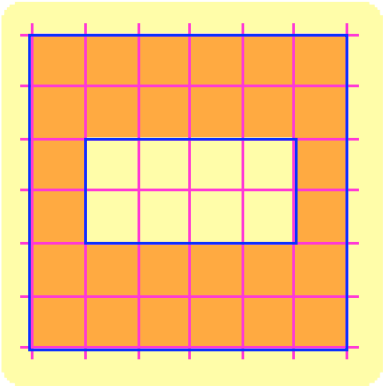
b



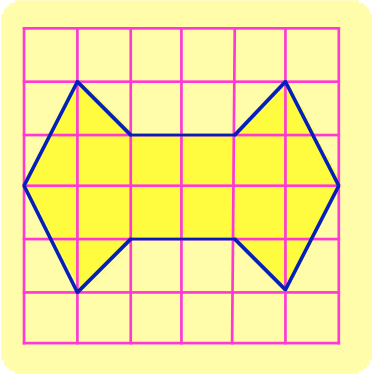
c



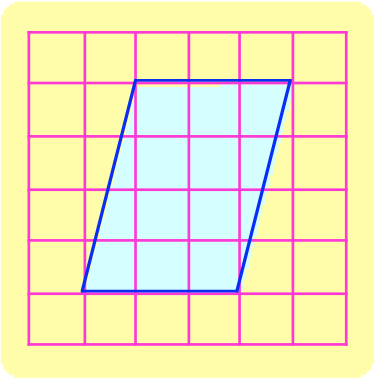
d



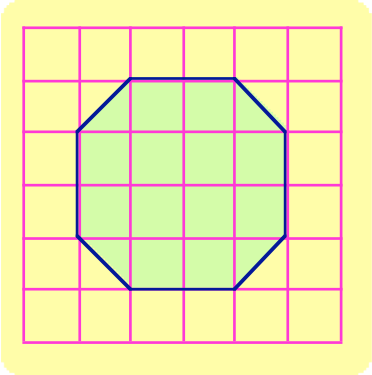
e



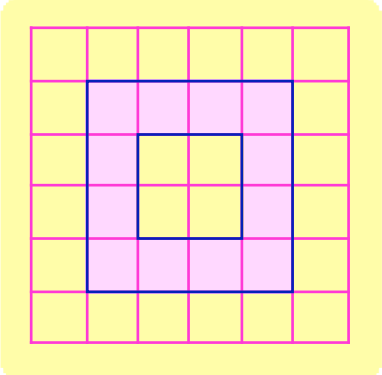
f



g



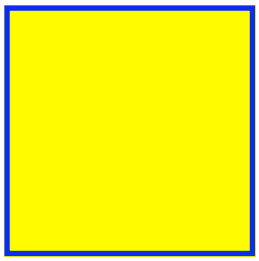
h



W'Sheet 2·4

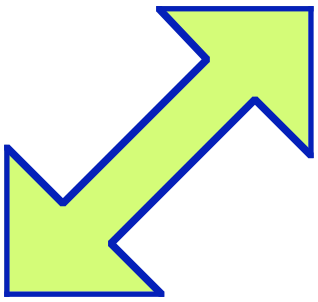
5. How many lines of symmetry does each of these shapes have :-

a

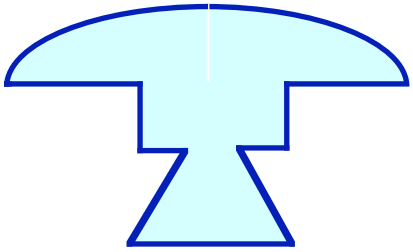


b

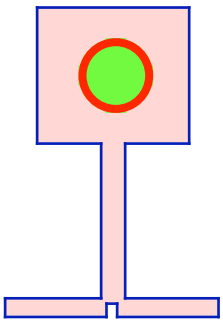
c



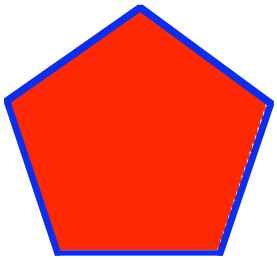
d



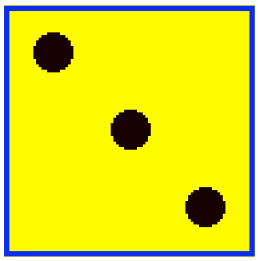
e



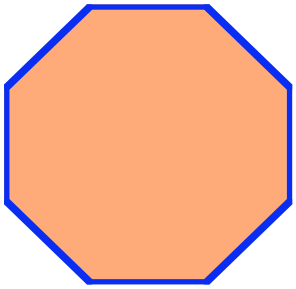
f



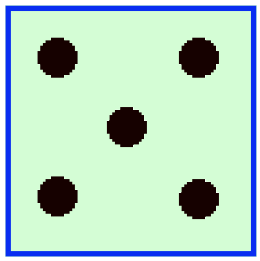
g



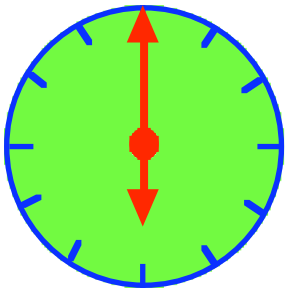
h



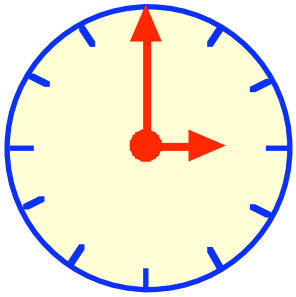
i



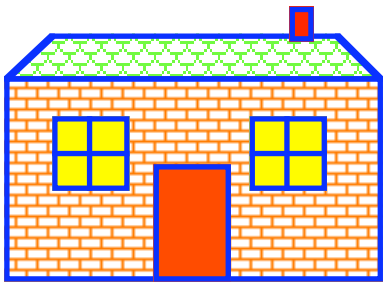
j



k



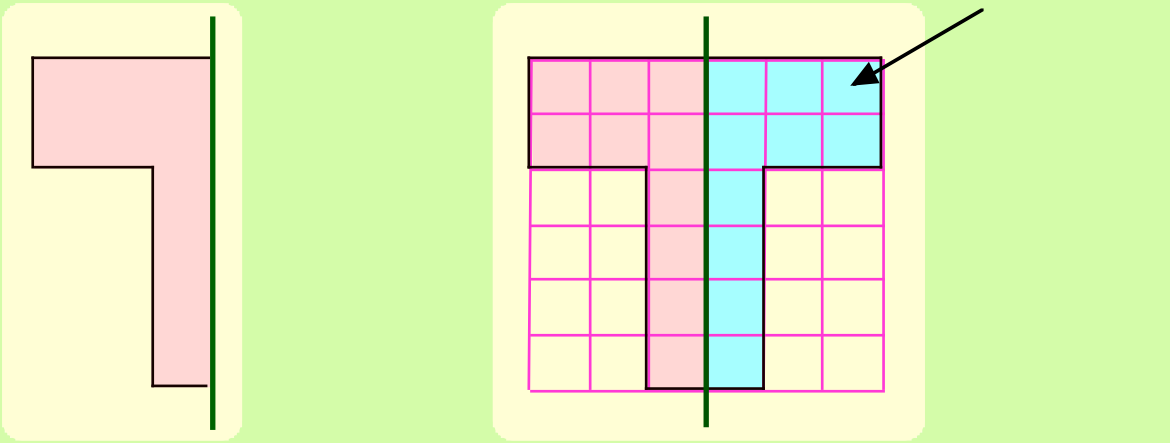
l



Making Symmetrical Shapes

If you are given **half** a symmetrical shape with a line of symmetry shown,

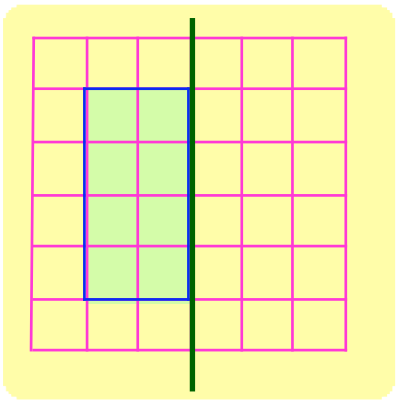
it is fairly easy to draw the **other half**.



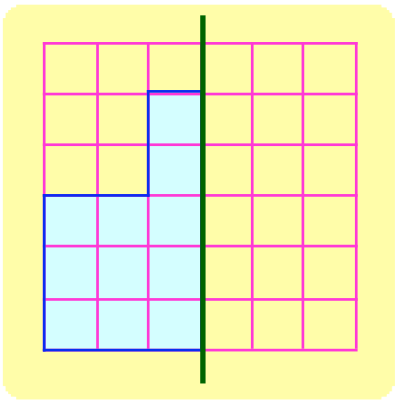
Exercise 2

1. Copy each shape onto squared paper.
   Draw the **other half** using the **green** line as a line of symmetry.

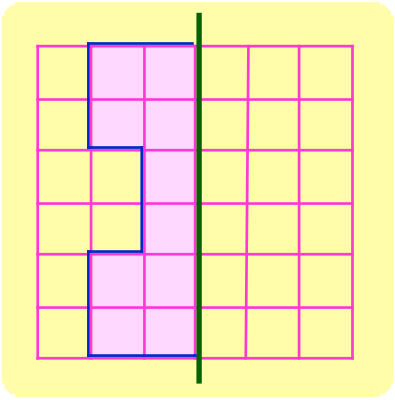
a



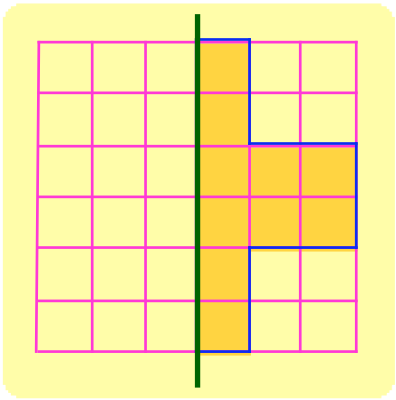
b



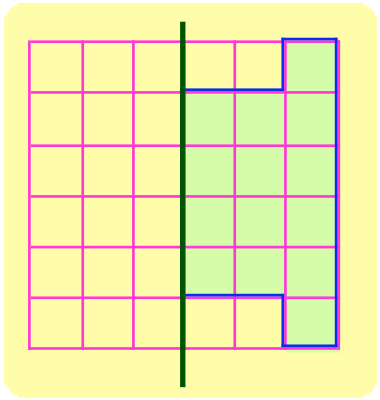
c



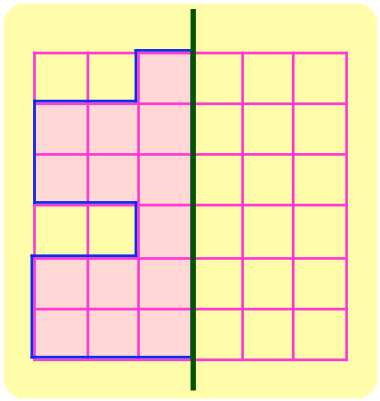
d



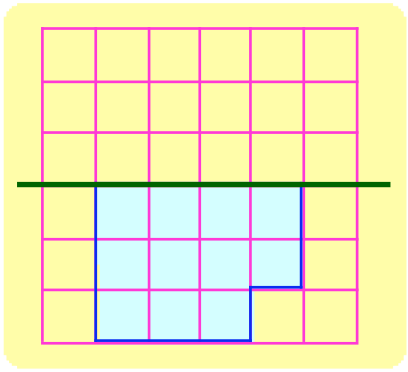
e



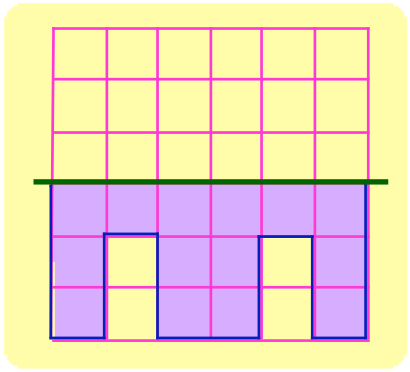
f



g



h

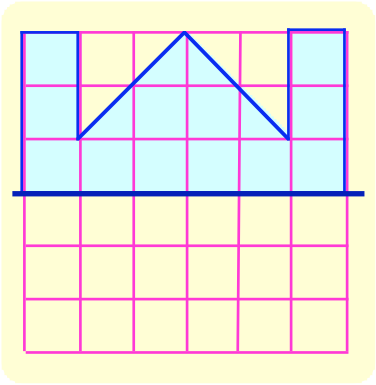


W'Sheet 2·5

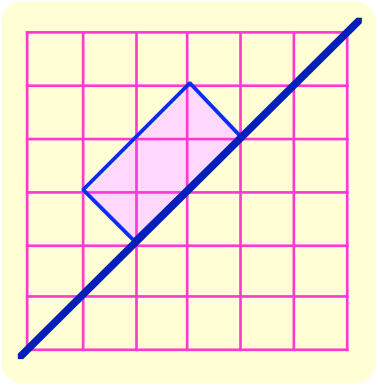
2. These are much harder.

Copy each figure and complete it so that the **blue** line or **blue** lines become lines of symmetry :-

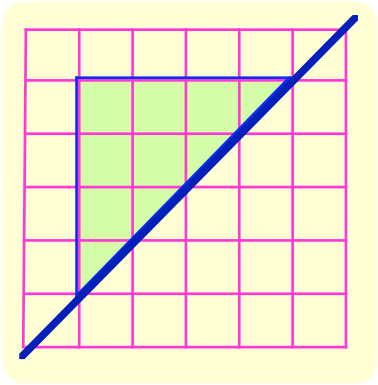
a



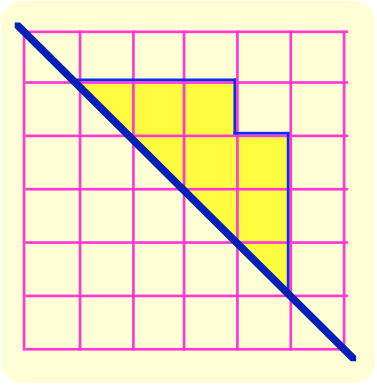
b



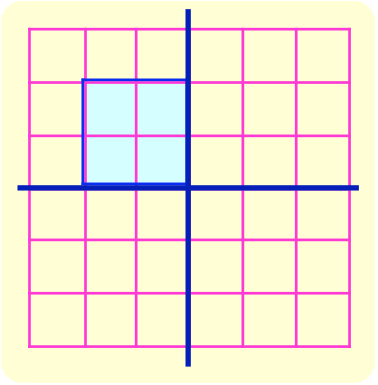
c



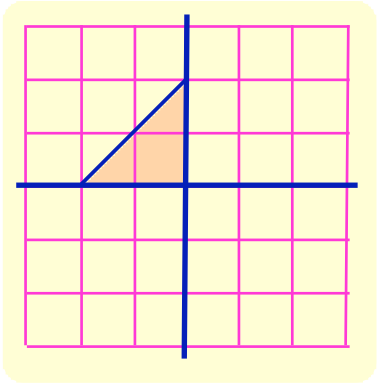
d



e



f

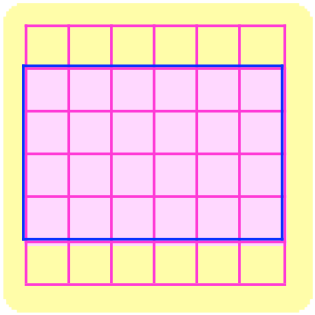


Topic in a Nutshell

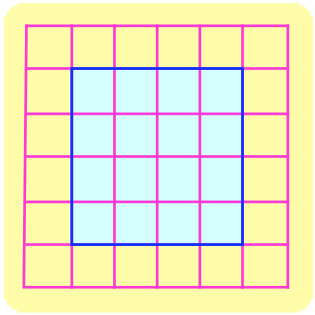
1. Explain in your own words what is meant by a **line of symmetry**.

2. Copy each shape in your jotter and mark any lines of symmetry :-

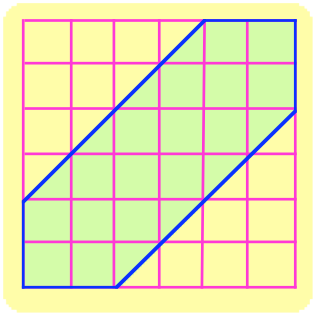
a



b

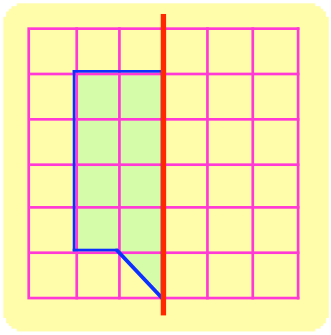


c

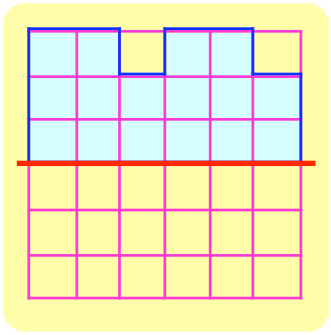


3. Copy each shape and draw the other half using the **red** line as a line of symmetry :-

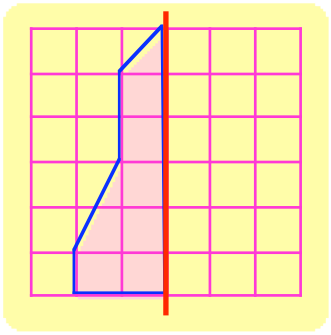
a



b

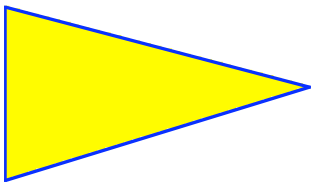


c



4. How many lines of symmetry do each of these shapes have ?

a



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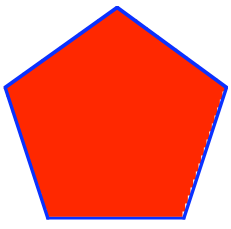

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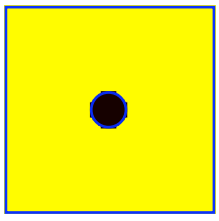

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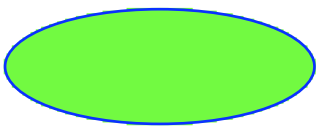

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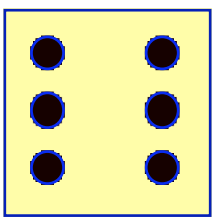

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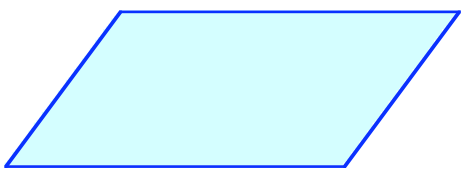
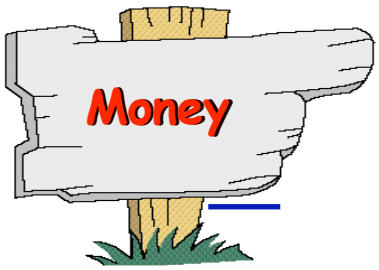


Chapter 3

Calculators should NOT be used anywhere in this chapter except in the final exercise.



The Value of Money

Here are the coins which we use today.

Example 1.  is the same as 

Example 2.  is the same as 

Example 3. **a** Change 450p into £'s and pence - £4 and 50p or £4·50

b Change £1·32 into pence - 132p

Exercise 1

1. How many 1p pieces have the same value as :-

a 

b 

c 

d 

e 

f 

g 

h 

i 

2. How many 5p pieces will I receive for :-

a 

b 

c 

d 

e 

f 

3. How many 10p pieces should I get for :-

a 

b 

c 

d 

e 

f 

Nick has 

Jemma has 

Altogether they have 35p.

4. What does each pair of children have altogether ?

a Brian 

and Charlotte 

b John 

and Sadie 

c Peter 

and Anne 

5. Lucy bought a packet of gum for 15p.
She found that she only had to use **TWO** coins to pay for the gum.

Try to use only **TWO** coins to pay for the following items.
If you find that **TWO** is not enough, you may use **THREE** coins, but no more !

a pencil 6 p

b sweets 22p

c comic 30p

d milk 70p

e bread 80p

f magazine £1·11.

6. How many **£1 coins** should I get for :-

a 300p **b** 500p **c** 800p **d** 900p ?

7. How many **1 pence** coins will I receive for :-

a £1 **b** £5 **c** £8 **d** two £2 and three £1 ?

8. Change the following into **pounds (£'s) and pence (p)** (215 p = £2 and 15p)

a 140p **b** 247p **c** 364p **d** 107p

e 999p **f** 205p **g** 36p **h** 2p.

Add and Subtract Money

Addition and Subtraction

When you add or subtract money, it is important to **line up the decimal points.**

Examples

Addition

43p + 14p
= 57p

£0·43
+ £0·14
£0·57

£2·84 + £1·52
= £4·36

£2·84
+ £1·52
£4·36

Subtraction

78p – 13p
= 65p

£0·78
- £0·13
£0·65

£8·35 – £5·42
= £2·93

£8·35
- £5·42
£2·93

Your teacher will show you how to subtract

Exercise 2

1. Write the following as **pounds (£'s)**.

for example :- **2 pounds and 45 pence = £2·45.**

a 6 pounds and 13 pence. **b** 4 pounds and 62 pence.

c 5 pounds and 78 pence. **d** 3 pounds and 2 pence.

e 29 pence. **f** 3 pence.

2. **Copy** and complete :-

a	£0·45 + £0·23	**b**	£0·62 + £0·37	**c**	£0·66 + £0·24
d	£0·85 + £0·43	**e**	£0·96 + £0·78	**f**	£0·88 + £0·75
g	£1·30 + £1·50	**h**	£1·20 + £8·80	**i**	£3·70 + £6·60
j	£6·24 + £2·44	**k**	£4·90 + £0·10	**l**	£5·35 + £4·85
m	£3·94 + £7·17	**n**	£8·82 + £4·58	**o**	£3·95 + £9·43
p	£7·40 + £5·90	**q**	£7·25 + £9·75	**r**	£3·07 + £8·94
s	£6·60 + £8·70	**t**	£6·87 + £1·90	**u**	£4·08 + £7·89

3. **Copy** and complete :-

a	£0·50 - £0·30	**b**	£0·80 - £0·20	**c**	£0·95 - £0·45
d	£1·00 - £0·65	**e**	£2·00 - £1·45	**f**	£3·00 - £1·85
g	£5·40 - £1·10	**h**	£7·90 - £3·60	**i**	£8·75 - £1·75
j	£1·50 - £0·48	**k**	£2·80 - £1·35	**l**	£7·62 - £3·47
m	£9·82 - £4·35	**n**	£12·51 - £8·75	**o**	£13·45 - £12·55

4. Ravi bought a can of cola for 55p and a packet of crisps for 32p.
How much did this cost him in total ? (set down like Question 2)

5. Lucy bought a packet of lollies for 37p and paid for it with a 50p coin.
How much change did Lucy get ?

6. 

Joe paid 87p for a pen. He handed the shopkeeper a £1 coin.
How much change did Joe receive ?

7. Sally spent 80p on her bus fare and 30p on a comic.

a How much did this come to **in total** ?

b What change did Sally get from a £1 coin and a 50p coin ?

8. Zoheb paid £1·40 for a hamburger and 50p for french fries.

a How much did the burger and fries cost ?

b What change did Zoheb get from a £2 coin ?

9. 

Nick went to a football match.
He paid £5·20 to get in and bought a programme for £1·50.

a How much was this **in total** ?

b What change did Nick get from a £5 note and a £2 coin ?

10. 

Cindy handed over a £5 note to pay for her make-up.
She got a 50p coin and two 10p coins in her change.

a How much was her change ?

b What was the cost of Cindy's make-up ?

11. Ben buys a cooked breakfast.
Bacon & Eggs £1·25, Mushrooms 40p, Toast 25p and Fresh Orange Juice 80p.

a What is the total cost of Ben's breakfast ?

b He only has two £1 coins and one 50p coin with him.
Will this be enough ? Explain !

12. Mr Barnes paid £17·88 for fish suppers for his family.

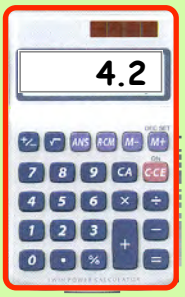
a How much change did he get from a £20 note ?

b Give an example of what coins he might have had in his change.

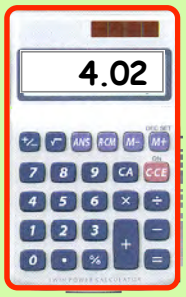
Mixed Money Problems

Money and the Calculator

Be careful with these :-



The amount of money shown on this calculator **is £4·20**
(£4 and 20 pence)
NOT £4·02



The amount of money shown on this calculator **is £4·02**
(£4 and 2 pence)

Example Brenda and her mum went swimming.
The cost was £2·64 for mum and £1·38 for Brenda.

What change was left from £5 ?

Answer [Set down £2·64 + £1·38 in your jotter] (now use your calc)

£2·64 + £1·38 = £4·02

[Now show £5 – £4·02 in your jotter] (use your calc again)

£5 – £4·02 = £0·98 change.

Exercise 3

W'Sheet 3·1

1. A **service charge** is always added to the bills in Cafe Carlo.

   Find the total bill in each case :-

   a

CAFE CARLO	
meal for two	= £17·60
service charge	= £2·40
Total	=

   b

CAFE CARLO	
a la carte for one	= £12·75
service charge	= £1·95
Total	=

2. Set down each bill and work out the total cost of these items :-

   a

eggs	80p
bacon	£1·40
cheese	£2·30
milk	60p
	£

   b

apples	65p
oranges	£1·75
pears	£2·60
pineapple	£3·95
	£

3. Lucy's mum bought a skirt reduced in a sale by £4·50.
The price of the skirt **before** the sale was £16·99.
What did Lucy's mum pay for it in the sale ?

4.

Lucy's mum bought a blouse in the sale.
It had been reduced by £2·36.

What was the price of the blouse before the sale started ?

5. Hamish went to the ice rink.
He hired skates for £1·75 and paid £2·20 to go on the ice.

a How much did it cost Hamish altogether to go ice-skating ?

b Hamish's grandma gave him **four £1** coins to pay for his day out.
How much money did he have left once he had paid for his skating ?

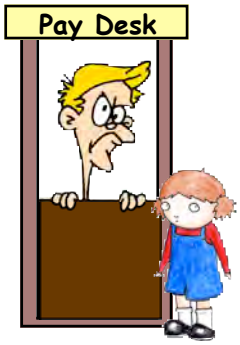
6. Mr James bought two trays of bedding plants costing £6·44 and £9·75.

Calculate :-

a the total cost.

b the change from £20.

7.



Jane buys a railway ticket for £6·84
and a £3·98 magazine to read on the train.

a What is the total cost ?

b She had a £20 note to start with.
How much change will she have left ?

8. Lucy's mum gave her a £5 note and two £1 coins.

If she bought a toy racer for £4·98 and paid £0·27 for the wrapping paper, how much had Lucy left ?

9. Trish bought eye make-up for £4·20, hair conditioner for £5·55 and face cream for £3·79.

How much change did Trish get from three £5 notes ?

Topic in a Nutshell

Until Question 11

1. How many **1p** pieces will I get for :-

a 

b 

c 

2. How many **5p** pieces should I receive for :-

a 

b 

c 

3. How many **10p** pieces will I receive for :-

a 

b 

c 

4. How many **£1 coins** will I get in exchange for :-

a 400p **b** 700p **c** 1000p ?

5. How many **1p** coins will I get for :-

a £3 **b** £7 **c** two £2 and five £1 ?

6. Change the following pence into **pounds (£'s) and pence (p)** :-

a 120p **b** 52p **c** 217p **d** 903p.

7. Write the following as pounds, (example :- **1 pound and 20 pence = £1·20**)

a 4 pounds and 12 pence **b** 7 pounds and 6 pence

c 41 pence **d** 9 pence.

8. **Copy** and complete each calculation :-

a	£0·25 + £0·63	**b**	£0·44 + £0·26	**c**	£0·97 + £0·45
d	£0·98 - £0·58	**e**	£0·72 - £0·23	**f**	£1·00 - £0·75
g	£3·30 + £1·60	**h**	£4·90 + £3·70	**i**	£6·27 + £2·95
j	£2·50 - £1·10	**k**	£5·40 - £2·80	**l**	£7·55 - £5·98

9. Sidney paid **£2·70** for a kebab and **90p** for vegetables.

a How much did the kebab and vegetables cost **in total** ?

b What change did Sidney get from a two pound coin and two £1 coins ?

10. Doreen bought an inflatable crocodile in Blackpool. It cost **£18·82**.

a How much change did she get from a £20 note ?

b List the coins she may have received in her change.

11. A shirt and tie set was reduced in a sale by £8·95.

If the price of the set **before** the sale was £18·50
what was the price of the shirt and tie during the sale ?

12.

Richard found that the price he paid for
his train ticket this week was £0·85 **cheaper**
than last week.

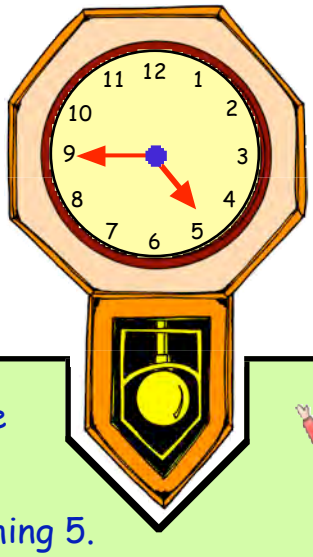
Richard paid £3·60 this week. What must
the cost of his ticket have been last week ?

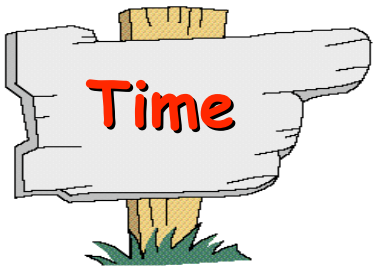
13. I set off for my school disco with **three £1 coins** and a **50p** coin in my purse.
At the disco I bought 2 bottles of water at 75p each,
1 packet of crisps at 34p and a lollipop at 20p.

It also cost me £1·25 to get into the disco.

How much money did I return home with ?

Chapter 4





The Clock Face

The **BIG** hand on the above clock points to 9.

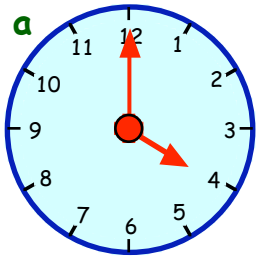
The **small** hand is approaching 5.

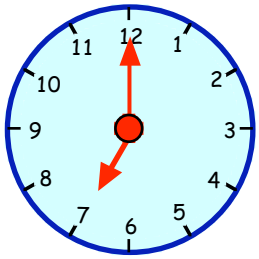
The time is **"quarter to 5"**.

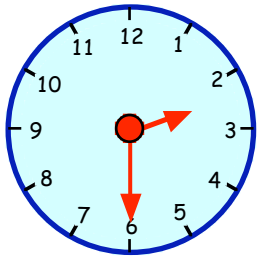
Exercise 1

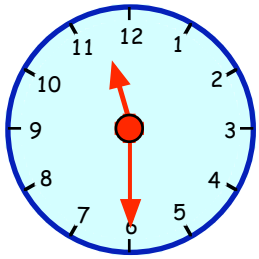
1. Use these words, to give the times on the clocks :-

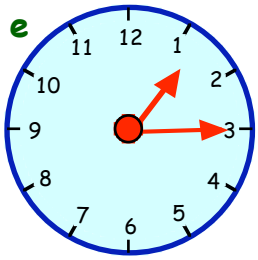
... o'clock **quarter to ...** **half past ...** **quarter past ...**

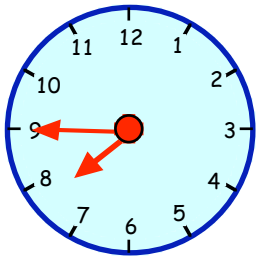
a 

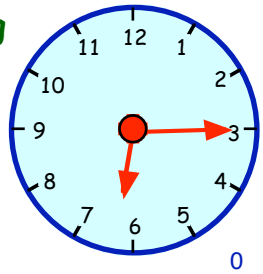
b 

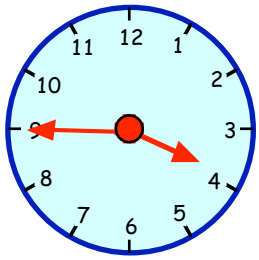
c 

d 

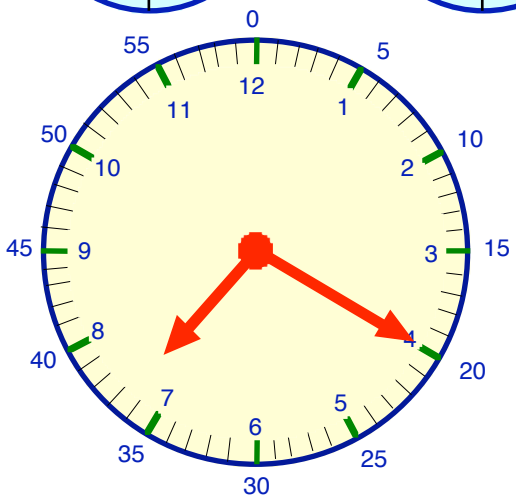
e 

f 

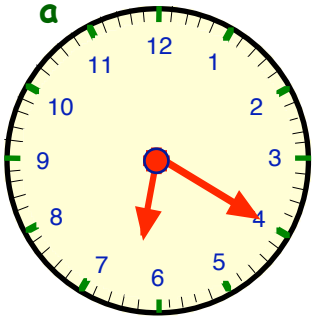
g 

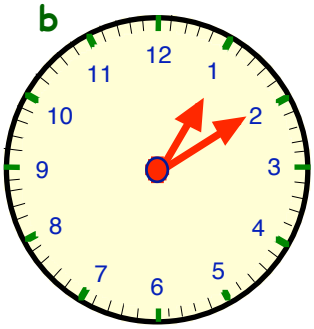
h 

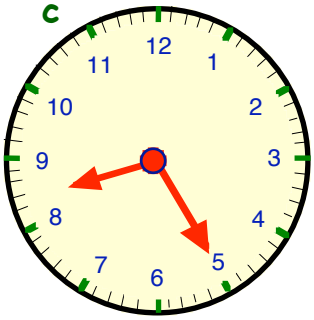
This clock face shows a time of **"20 past 7"**.

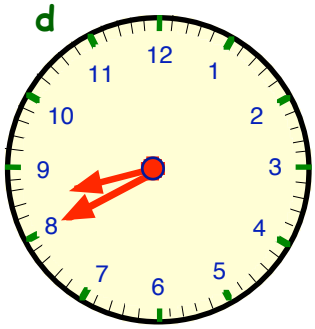


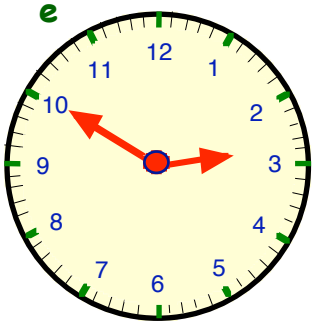
2. Write down the times on these clock faces :-

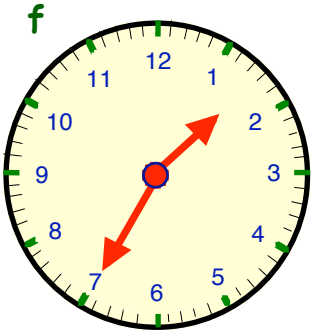
a 

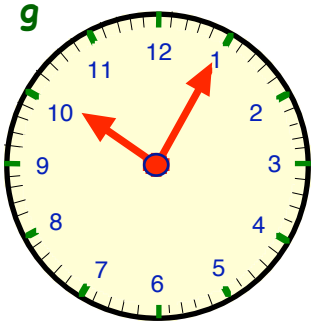
b 

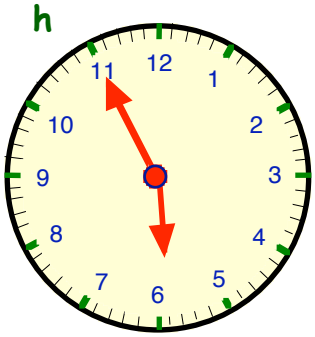
c 

d 

e 

f 

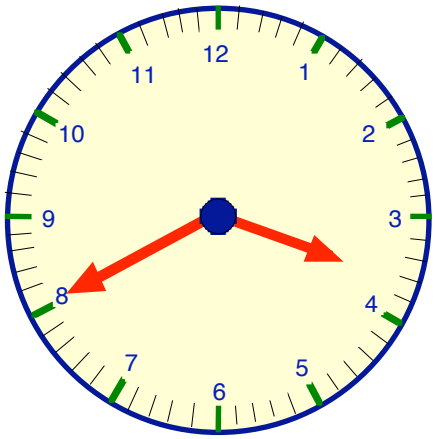
g 

h 

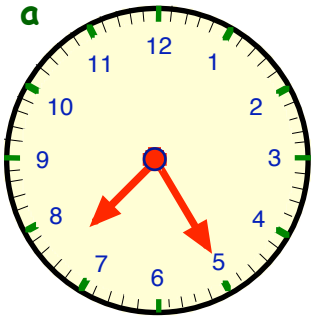
Usually, times can be given in more than one way.

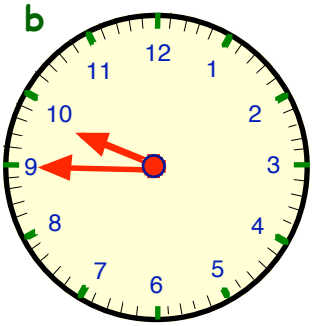
The time on this clock is given as :-

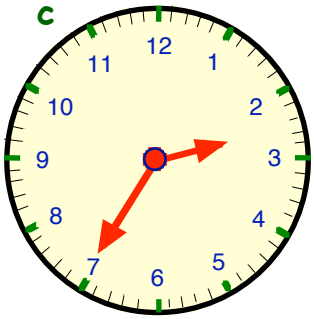
"3·40" or "20 to 4".

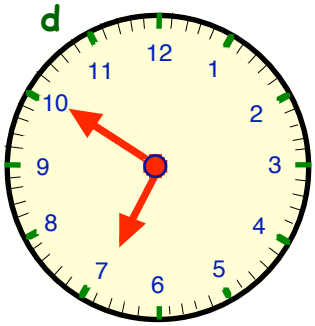


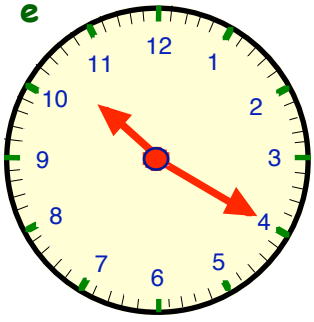
3. Write down the times on these clock faces **in 2 ways** :-

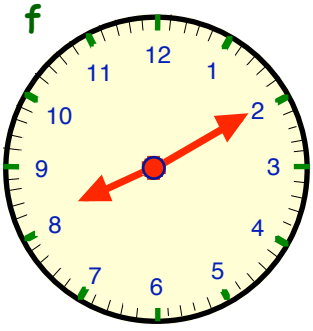
a 

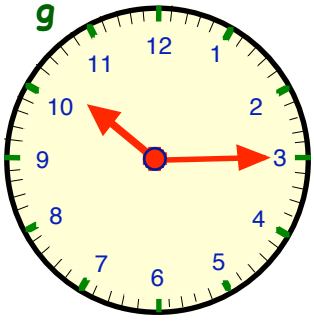
b 

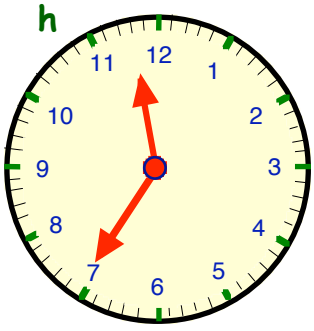
c 

d 

e 

f 

g 

h 

The Digital Clock

It was in the 1980's that **digital** clock displays were invented.

This display shows a time of

10:15 or **quarter past ten**.

Exercise 2

1. Write each of the following digital clock times in **words** :-

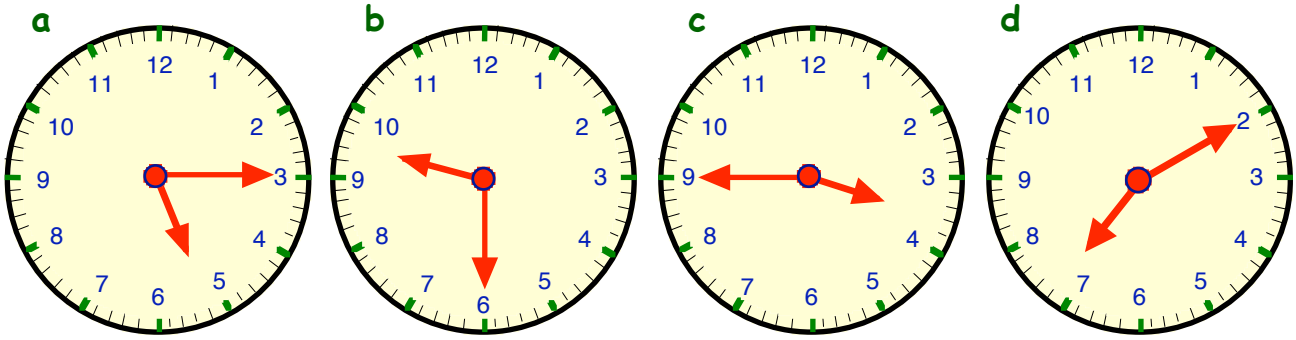
a 2:30 **b** 3:45 **c** 6:15 **d** 8:50

e 7:20 **f** 9:40 **g** 12:55 **h** 1:35

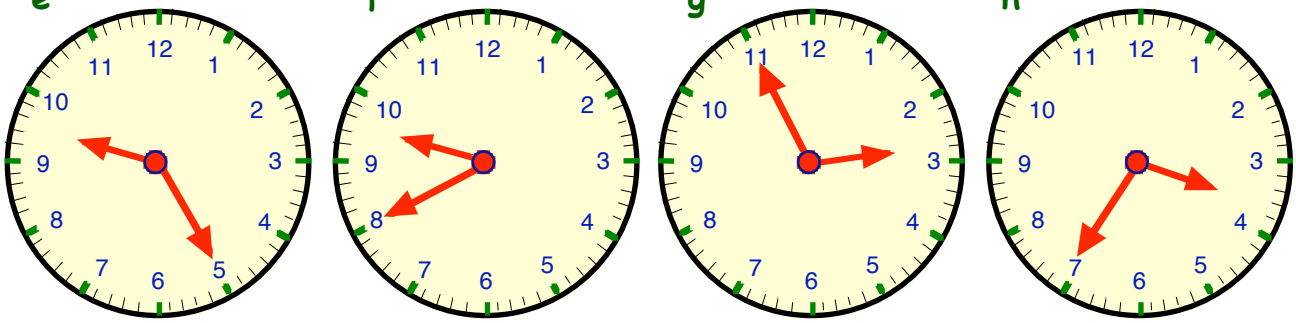
2. Draw a small **digital** clock face for each of these.
Write each of the times in **digital form** :-

W'Sheet 4·1

a **b** **c** **d**

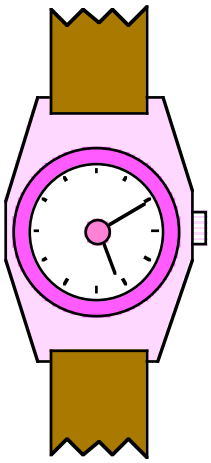


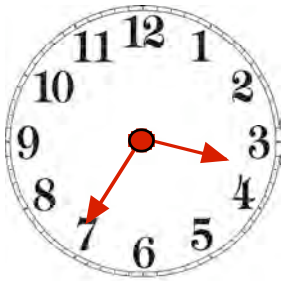
e **f** **g** **h**

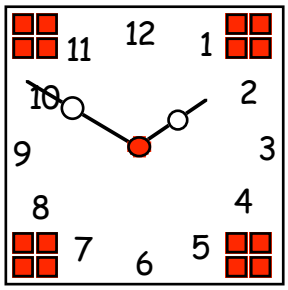


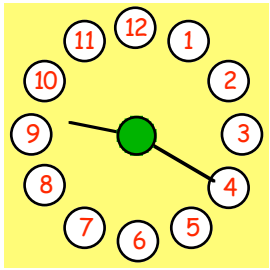
i $\frac{1}{4}$ to 6 **j** 20 to 8 **k** 5 to 6 **l** $\frac{1}{2}$ past 7

3. Write each of the following times in 2 ways :-

a 

b 

c 

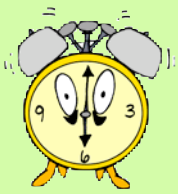
d 

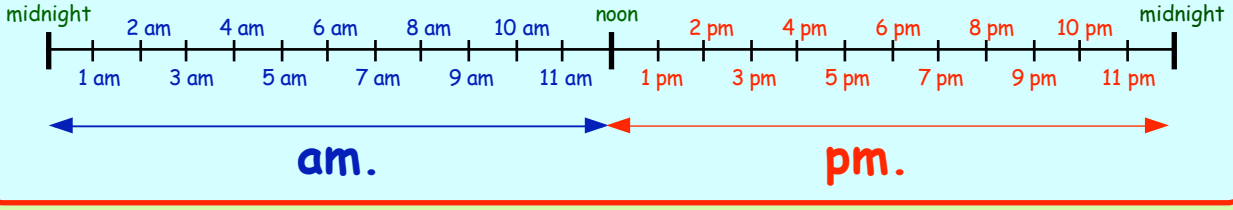
a.m. and p.m.

Each day is divided into 2 "**halves**".

before – noon (ante-meridian (**am**))

after – noon (post-meridian (**pm**))

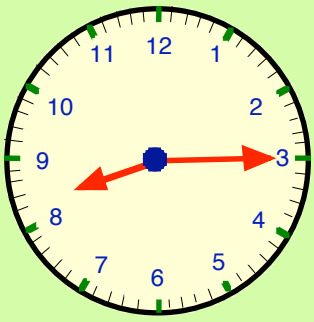




Most people start school at about 9·00 **am**.
Most people have their tea at about 5·00 **pm**.

The time on the clock opposite shows

"$\frac{1}{4}$ past 8 at night or 8·15 pm"

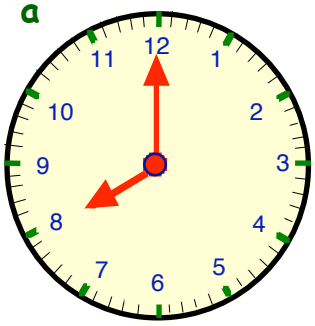


supper-time

Exercise 3

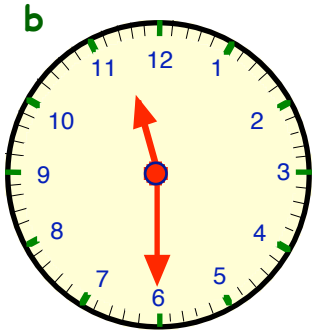
1. Write each of the following times in 2 ways (Remember to use **am** or **pm**) :-

a



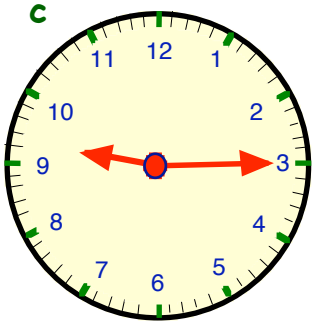
in the morning

b



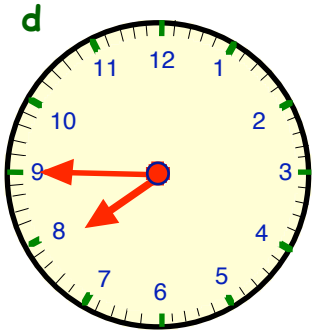
just before lunch

c



bedtime

d



on way to school

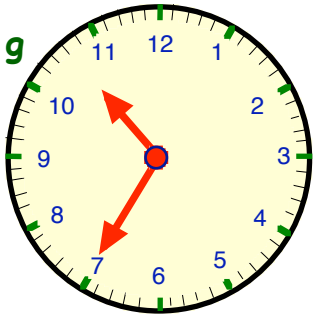
e

just after tea

f

morning break

g

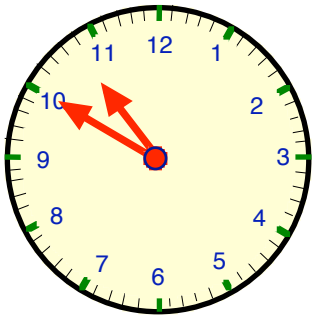


late at night

h

school stops

i



Sunday morning church

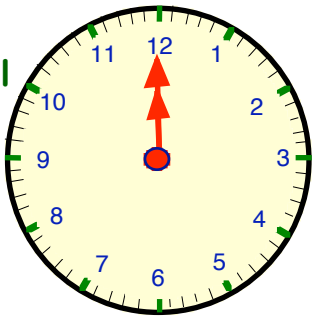
j

wake up early

k

film starts at night

l



coach turns into pumpkin

2. Write each of the following times using **am** or **pm**.

(for example, "**8·20 am**" or "**7·55 pm**") :-

a Nick fell off his bike at $\frac{1}{4}$ **past eight** last night.

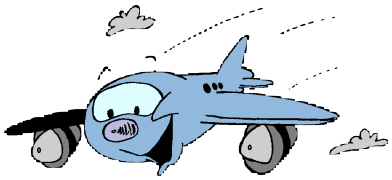
b

Ben had a big Maths test which started at $\frac{1}{4}$ **to eleven** and ended at **half past eleven**.

c My favourite T.V. programme lasts from **twenty five past seven** till **twenty to nine** and then I go to bed.

d I was allowed out to play just after I finished my lunch at **ten to one**.

e



My plane left Edinburgh airport at **ten to seven** and arrived in London at **five to 8**. I then had breakfast.

f My dentist appointment was just after school at **twenty to four**. I did not get home till **twenty five past five** that night.

7:45 am **7:45 am** can be written as "**quarter to 8 in the morning**".

3. Write each of the following times out fully :-
(use "**in the morning**", "**in the afternoon**" or "**at night**")

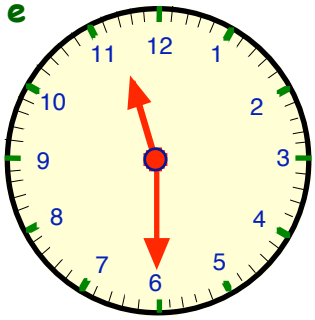
a 2:30 pm

b 9:45 am

c 10:50 pm

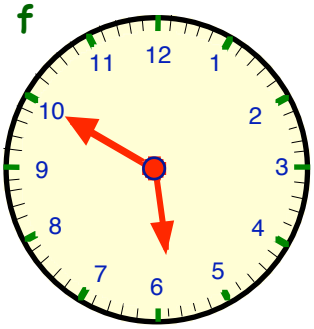
d 6:10 am

e



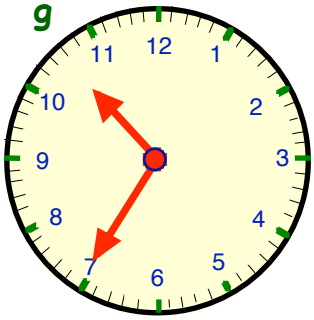
a m

f



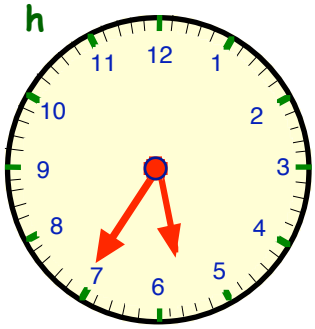
p m

g



a m

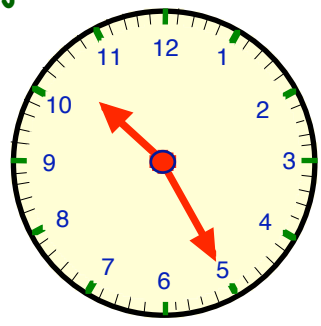
h



a m

i 7:52 pm

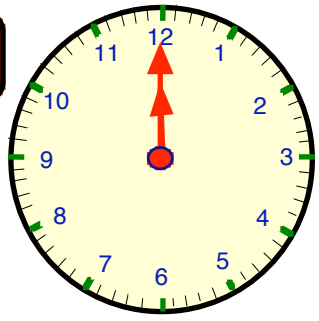
j



p m

k 11:55 am

l



noon

4. Shown is a bus timetable.

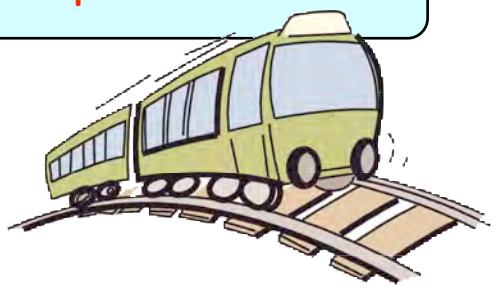
The bus is at Lugden at "**quarter to 11 in the morning**".

Write the other 4 bus times out fully **in words**.

Lugden	10:45 am
Penmure	11:25 am
Overton	11:59 am
Dunure	12:20 pm
Helsby	1:05 pm

5. **Make a neat copy** of this train timetable.

Bremley	—>	Adley	—>	Newton	—>	Elton	—>	Findly
9·55 am		11·05 am		.....		2·10 pm		.....



a At what time was the train at **Bremley** ?

b At what time was the train at **Adley** ?

c The train arrived at Newton at **25 to 2** in the afternoon.
Write this (*using am/pm*) in **your** timetable.

d Write out in words when the train was at **Elton**.

e The train journey ended at Findly at **five to three** in the afternoon.
Write this in **your** timetable (using am/pm).

6. Ravi and his dad arrived at the circus at **6·50 pm**.

Were they **late** or **early** ?

7.

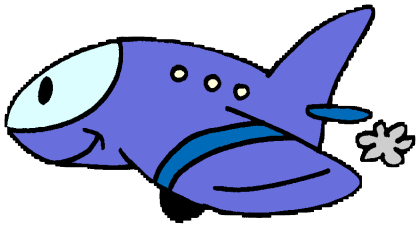
EASY-AIR
Flight Departures

Malaga	10:55 am
Palma	11:40 am
Barcelona	12:35 pm
Ibiza	1:05 pm
Tenerife	2:50 pm
Nice	3:20 pm

Lucy's mum is checking her flight times.

The plane for Malaga leaves at **5 to 11 in the morning**.

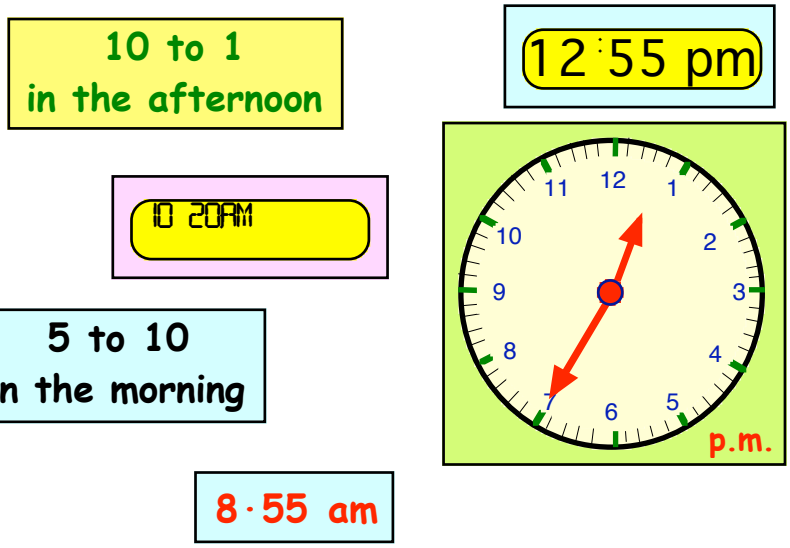
Write the other departure times in a similar way.

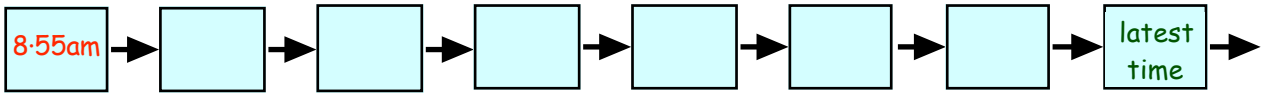


8. Jane writes lots of times on pieces of card.

Sort out the cards for her.

Copy them out **IN ORDER**, with the **earliest** time first.





earliest time

(use am or pm for all your times)

9. Nick was looking at Channel 6's T.V. programmes for Tuesday.

CHANNEL 6

3:05	Dosie and Jen (R)
3:25	Royal Ascot
3:50	Count-Up (game show)
4:15	Ace Lightning (film)
5:25	Neighbours At Home
5:50	Tea-Time News
6:25	Scottish Report
7:05	Six-Alive
7:35	Sports Roundup
8:00	BIG SISTER (live)
8:50	News In Brief
9:00	The Big Banana (film)

a **Dosie and Jen** are on at **3:05** (five past 3).

Do you think this is in the afternoon or early morning ?

b **Royal Ascot** is on at **25 past 3** in the afternoon.

Write out the times of the following programmes fully in a similar way :-

i Count-Up

ii Neighbours At Home

iii Sports Roundup

iv News In Brief

c Nick was watching Channel 6 at **5 past 4**.

Which programme must he have been watching ?

d Which programmes are showing on Channel 6 at :-

i 5:35 pm ii 7:50 pm iii ¼ past 8 at night ?

Time Intervals

Let us look at the **minute hand** of the clock.

There are **60** minutes in **1** hour.

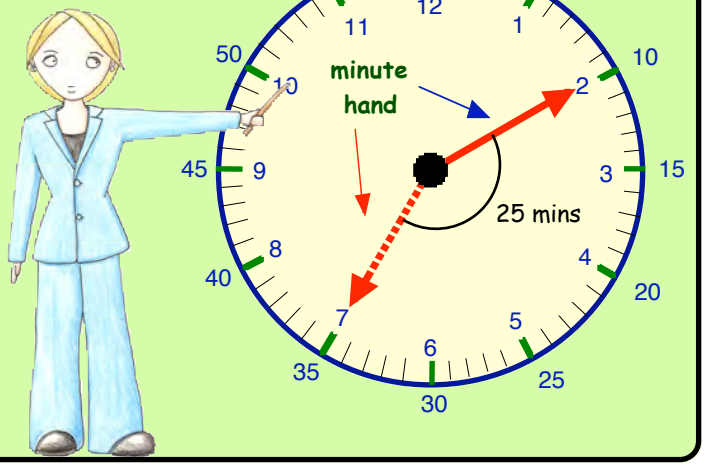
If the clock time changes from

10 past 11 to 25 to 12.

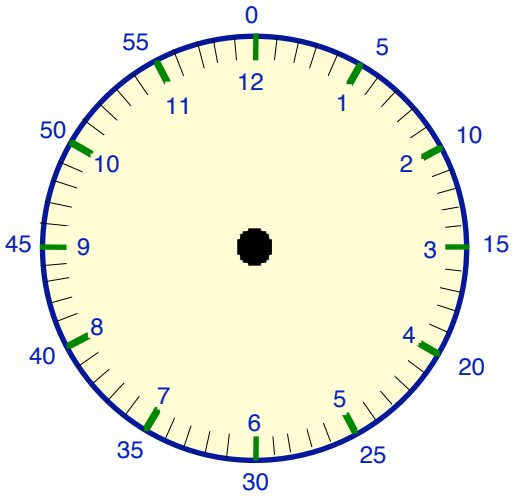
the hand has moved from :-

11:10 —> 11:35

Can you see that the minute hand has moved through **25 minutes** ?



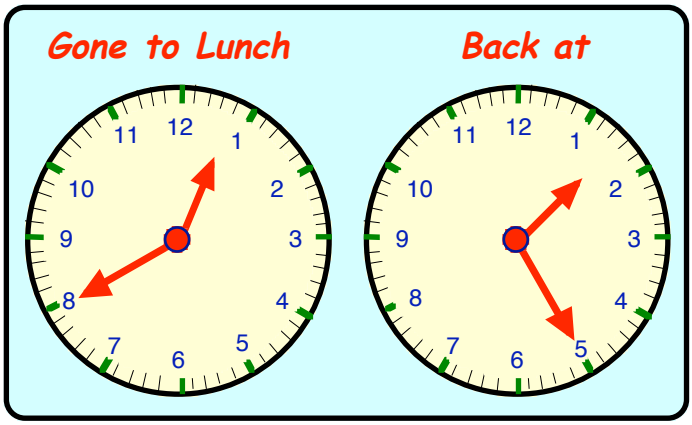
Exercise 4



1. How many **minutes** is it from :-

a	10·30 till 10·45	**b**	9·25 till 9·45
c	8·10 till 8·40	**d**	7·25 till 7·50
e	3·05 till 3·45	**f**	4·10 till 4·45
g	10·30 till 11·05	**h**	9·45 till 10·10 ?

2.



This sign, outside the library, showed when the librarian closed for lunch.

How long was her lunch break ?

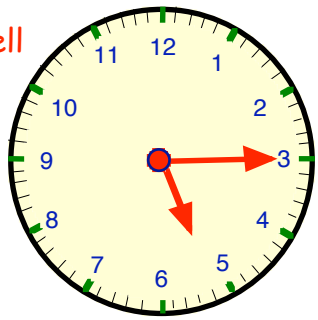
3. How many minutes is it from :-

a	8·15	to	8·35	**b**	10·20	to	10·55	**c**	7·30	to	8·10
d	9·10	to	9·22	**e**	7·25	to	7·38	**f**	6·05	to	6·51 ?

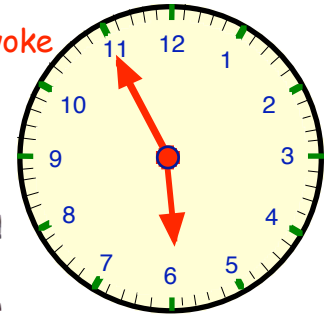
4. Ben went for a nap.

For how long was Ben asleep ?

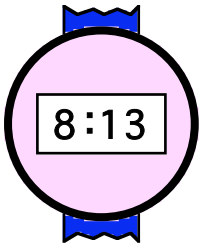
Ben fell asleep at



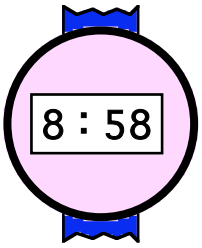
Ben awoke at



5.



starting time



finishing time

Tony was training for the London marathon.

He checked his watch before he started his run and again when he finished.

How long did Tony train for ?

6. Brian's school lunch-break is from **10 to twelve** till **25 to one**.

How long does his lunch break last ?

7. The Loch Trindle Paddle Steamer goes round the loch, calling at different places.

How long did it take the boat to travel from :-

a The **Harbour** to **Browlie** ?

b **Browlie** to **Cape Tong** ?

c The **Harbour** to **Cape Tong** ?

d **Port Rush** to **Mendolay** ?

e **Mendolay** to the **Harbour** ?

Loch Trindle Paddle Steamer

Harbour	**2:30 pm**
Browlie	**2:55 pm**
Cape Tong	**3:10 pm**
Port Rush	**3:50 pm**
Mendolay	**4:35 pm**
Harbour	**5:10 pm**

8. Lucy left her house at **5·15 pm**, and jogged for **20 minutes** to the station.

At what time did she arrive at the station ?

9. Write down the time which is :-

a 15 minutes **after** 3·40 pm

b 25 minutes **after** 2·25 am

c 40 minutes **after** 8·50 am

d 20 minutes **before** 6·45 pm

e $\frac{1}{4}$ of an hour **before** 8·30 am

f $\frac{1}{2}$ of an hour **after** 5·50 pm

g 50 minutes **after** 7·05 am

h $\frac{1}{2}$ of an hour **before** 12·00 noon.

10. Part of a rail timetable from Glasgow to New Cumnock is shown.

	Train A	Train B
Glasgow	9:53	11:03
Barrhead	10:05	11:15
Dunlop	10:25	11:27
Stewarton	10:29	11:31
Kilmaurs	10:34	11:36
Kilmarnock	11:37	11:41
Auchinleck	11:55	12:03
New Cumnock	11:03	12:11

a Train **A** leaves **Glasgow**.
Where does it first stop at ?

b How long did train **A** take from :-

i **Glasgow** to **Barrhead** ?

ii **Barrhead** to **Dunlop** ?

iii **Kilmarnock** to **Auchinleck** ?

c How long did train **B** take from :-

i **Glasgow** to **Dunlop** ?

ii **Glasgow** to **Kilmarnock** ?

iii **Barrhead** to **New Cumnock** ?

11. Mr Todd's train leaves the station at **10·05 am**.
He leaves his house at **9·25 am**.
It takes him **35 minutes** to walk to the station.

Will he catch his train if it leaves on time ?

12. Jane left for school at **8·20 am** and arrived at **8·53 am**.

Lucy left for school at **8·13 am** and arrived at **8·49 am**.

a How long did **Jane** take to reach school ?

b How long did **Lucy** take to reach school ?

c By how many minutes was Lucy **slower** than Jane ?

13. a It is now **7·45 pm**. What was the time 1 hour ago ?

b Lucy's watch shows **4·20 pm**. What was the time $\frac{1}{2}$ an hour ago ?

c Mr Duff's plane left at **9·40 pm**.
He had to get to the airport
2 hours before take-off.

At what time did he get there ?

d My boat journey took exactly **4 hours**.

If I arrived at my destination at **11·25 pm**,
at what time must my boat have left ?

Calendars

You should know that there are **365** days in a year *.

This rhyme helps to remember the number of days in each month.

* leap years have 366.
They occur every 4 years.

30 days has September, April,
June and November.
All the rest have 31, excepting
February which has 28 days clear
and 29 in each leap year.

January 2004

Su	Mo	Tu	We	Th	Fr	Sa
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

calendar tab for Jan 2004

Exercise 5

W'Sheet 4·2

1. a What is the **1st** month of the year ?
   b What is the **last** month of the year ?
   c Which month comes just **after** July ?
   d Which month comes just **before** May ?
   e Write down all 12 months in the correct order.

2. How many days are there in the month of :-
   a January b February c April d June
   e August f October g November h December ?

3. What is the :-
   a 6th month b 3rd month c 10th month d 8th month ?

The date, **3rd of January 2004** can be written using 6 digits.

3rd Jan 2004

3rd January, 2004 = 03 : 01 : 04 or 03/01/04

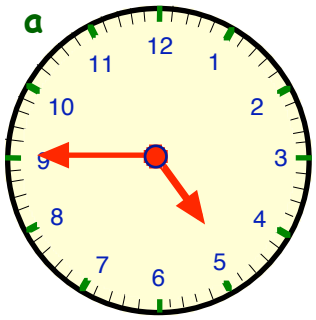
day month year

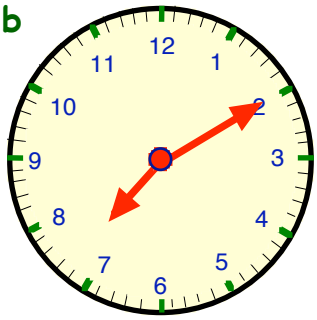
4. Write each of these dates using 6 digits as above :-
   a 23rd February 2004 b 19th April 2003
   c 22nd July 2004 d 18th August 1997
   e 7th June 1985 f 3rd March 1988
   g 10th December 2002 h 1st January 2001

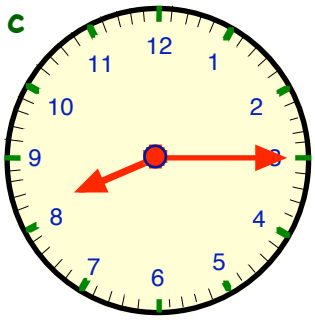
Topic in a Nutshell

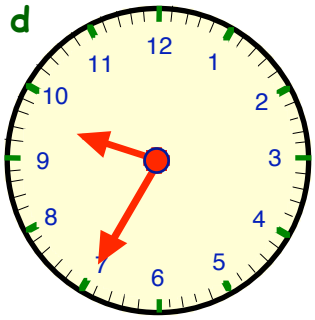
1. Write down the times on these clock faces.

   (for example :- "**twenty past four**").

a 

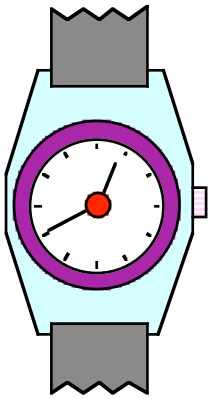
b 

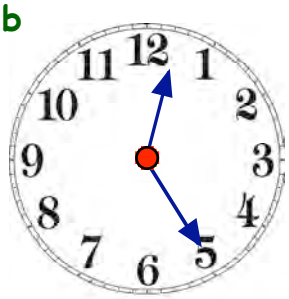
c 

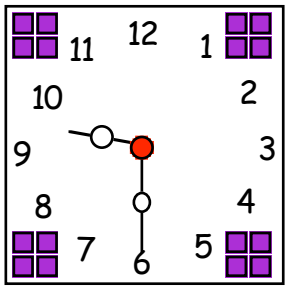
d 

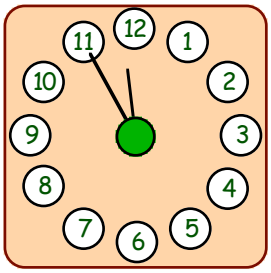
2. Write down the times on these clock faces in **two** ways.

   For example - "**twenty past four**" and "**4·20**".

a 

b 

c 

d 

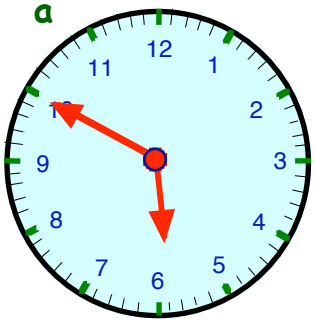
e 

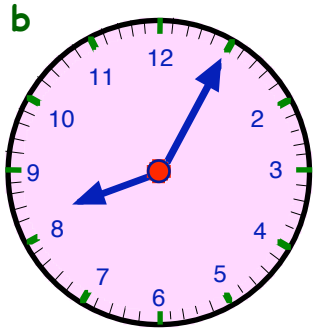
f 

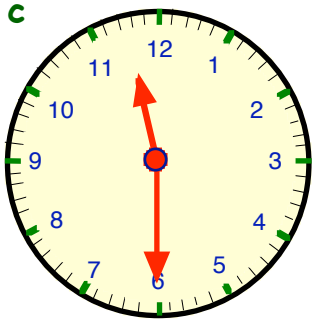
g 

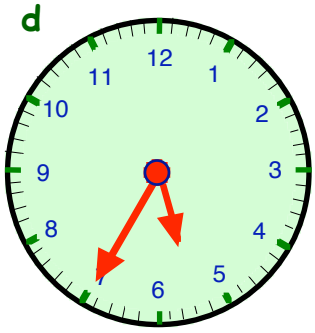
h 

3. For each of these clocks, draw a small digital clock face and put in the correct time **in digital form** :-

a 

b 

c 

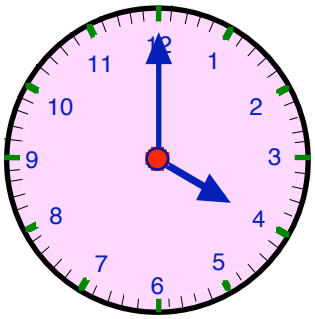
d 

4. Write each of the following times in two ways :-

1st way - "**half past eight at night**". **2nd way** - "**8·30 pm**".

*Remember - morning **am**, afternoon/evening **pm**.

a

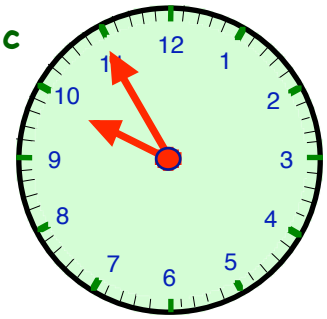


in the morning

b

just after lunch

c



at night

d

mid - morning

5. **Rewrite** Charles' story about his school day, using **am/pm** style :-

"I got up this morning at quarter past eight.
I arrived at school at five to nine and stopped work for my break at ten to eleven.
Lunch was at 1 o'clock until ten to two.
I left school at twenty five to four and arrived home at quarter past four."

6. **2·30 pm** is "**half past two in the afternoon**" What is :-

a 8·30 pm **b** 6·15 am **c** 10·50 am **d** 11·25 pm ?

7. Make a neat copy of this bus timetable.

Largs →	Johnstone →	Paisley →	Ralston →	Govan
11·20 am	12·15 pm	.....	12·40 pm	.....

a What time did the bus leave Largs ? (answer - ".... in the ..... ")

b How many minutes after **noon** did the bus reach Johnstone ?

c The bus arrived at the Paisley boundary at **25** past **twelve**.
Write this time in your timetable in am/pm form.

d Write out **in words** the time when the bus reached Ralston.

e The bus arrived in Govan at quarter past one in the afternoon.
Write this time in your timetable in am/pm form.

8. How many **minutes** is it from :-

a 5·10 am till 5·35 am **b** 7·20 am till 7·55 am

c 3·18 pm till 3·25 pm **d** 11·02 pm till 11·53 pm

d 11·25 am to noon **e** 7·15 pm to 9 pm ?

9.

It takes Dr Jones 20 minutes to reach the hospital from his house.

He has to get to the hospital for 9·05 am

What is the latest time he can leave home ?

10. Write down the time which is :-

a 25 minutes **after** 10·35 am **b** 20 minutes **before** 6·15 pm.

c 30 minutes **before** 2·20 pm **d** 40 minutes **after** 4·30 am.

11. What is :-

a the month just **after** August **b** the month just **before** December

c the 4th month of the year **d** the 11th month

e the 3rd month **after** May **f** the month just **after** December ?

12. How many days are there in the month of :-

a March **b** June **c** September **d** October ?

13. My grandma was born on **the 23rd of September, 1918**.

That was **23 : 09 : 18**.

a Write **your** date of birth using these two different ways.

b Write **today's** date in these two ways.

14. Write out the following dates **in full** :-

a 22 : 05 : 96 **b** 01 : 12 : 04.

Chapter 5

Whole Numbers 2

Calculators should NOT be used anywhere in this chapter unless you are told to do so.

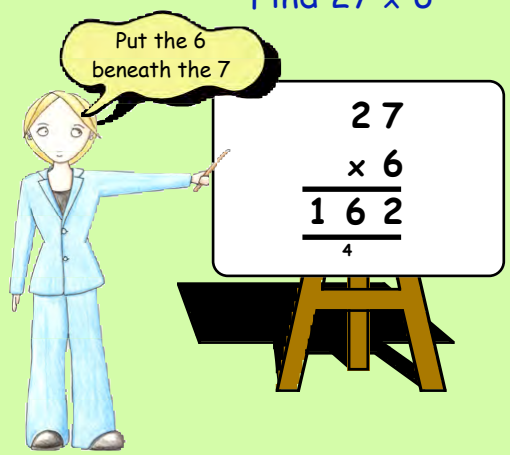
Multiplication

For this, you **really must know your tables.**

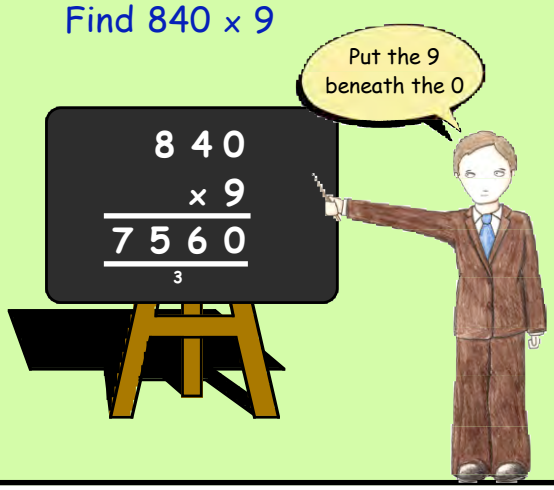
Revise or learn them NOW - **tables must be learned !!**

2 x 2 = 4	3 x 2 = 6	4 x 2 = 8	5 x 2 = 10
2 x 3 = 6	3 x 3 = 9	4 x 3 = 12	5 x 3 = 15
2 x 4 = 8	3 x 4 = 12	4 x 4 = 16	5 x 4 = 20
2 x 5 = 10	3 x 5 = 15	4 x 5 = 20	5 x 5 = 25
2 x 6 = 12	3 x 6 = 18	4 x 6 = 24	5 x 6 = 30
2 x 7 = 14	3 x 7 = 21	4 x 7 = 28	5 x 7 = 35
2 x 8 = 16	3 x 8 = 24	4 x 8 = 32	5 x 8 = 40
2 x 9 = 18	3 x 9 = 27	4 x 9 = 36	5 x 9 = 45
6 x 2 = 12	7 x 2 = 14	8 x 2 = 16	9 x 2 = 18
6 x 3 = 18	7 x 3 = 21	8 x 3 = 24	9 x 3 = 27
6 x 4 = 24	7 x 4 = 28	8 x 4 = 32	9 x 4 = 36
6 x 5 = 30	7 x 5 = 35	8 x 5 = 40	9 x 5 = 45
6 x 6 = 36	7 x 6 = 42	8 x 6 = 48	9 x 6 = 54
6 x 7 = 42	7 x 7 = 49	8 x 7 = 56	9 x 7 = 63
6 x 8 = 48	7 x 8 = 56	8 x 8 = 64	9 x 8 = 72
6 x 9 = 54	7 x 9 = 63	8 x 9 = 72	9 x 9 = 81

Find 27 x 6



Find 840 x 9



Exercise 1

1. **Copy** and complete each calculation :-

a	32 × 6	**b**	51 × 3	**c**	63 × 7	**d**	52 × 4
e	45 × 5	**f**	99 × 2	**g**	48 × 8	**h**	63 × 9

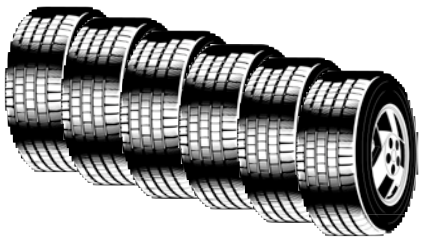
2. **Copy** and find :-

a	230 × 8	**b**	160 × 6	**c**	530 × 4	**d**	890 × 2
e	370 × 3	**f**	650 × 7	**g**	240 × 9	**h**	720 × 5

3. Set these down in a similar way as shown above and find :-

a	63 x 7	**b**	74 x 5	**c**	86 x 4	**d**	15 x 9
e	290 x 6	**f**	130 x 8	**g**	620 x 3	**h**	780 x 2

4. **a** What is the cost of **6** tyres if one tyre costs £38 ?



b A large bag of crisps weighs 45 grams.

What will **8** bags weigh ?

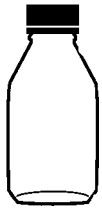
c

A snake crawls 72 cm in one minute.

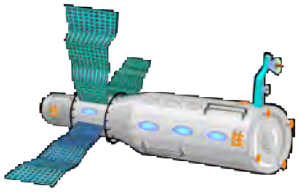
At the same speed, how far will it travel in **5** minutes ?

d A small bottle holds 240 millilitres.

How many millilitres are there in **4** bottles ?



e



A space station orbits the moon every 32 hours.

How long will it take to orbit the moon **9** times ?

If you **DOUBLE** a number —> you simply multiply it by **2**.

—> double 7 —> 2 x 7 = 14 double 36 —> 2 x 36 = 72

If you **TREBLE** a number —> you simply multiply it by **3**.

—> treble 6 —> 3 x 6 = 18 treble 19 —> 3 x 19 = 57

5. What is :-

a double 9 **b** double 16 **c** double 25 **d** double 47 ?

6. What is :-

a treble 7 **b** treble 10 **c** treble 20 **d** treble 39 ?

In this "funfair" game, you throw hoops at a board to win prizes.

A **green** hoop counts **SINGLE**

A **blue** hoop counts **DOUBLE**

A **red** hoop counts **TREBLE**

7. **a** What was the score from the green hoop ?

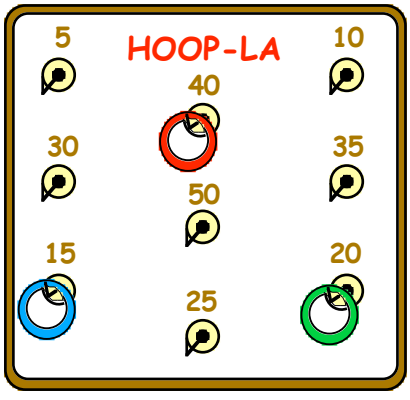
b What was the score from the **blue** hoop ? (**not** 50 !)

c What was the score from the **red** hoop ?

d What was the **TOTAL score**?

8. For each game, write down the score gained by each hoop. Now the write down the **TOTAL** score.

a

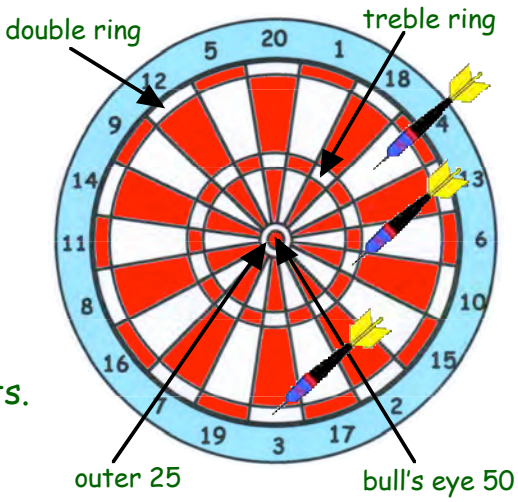


b

c

When playing darts, if a dart lands on :-

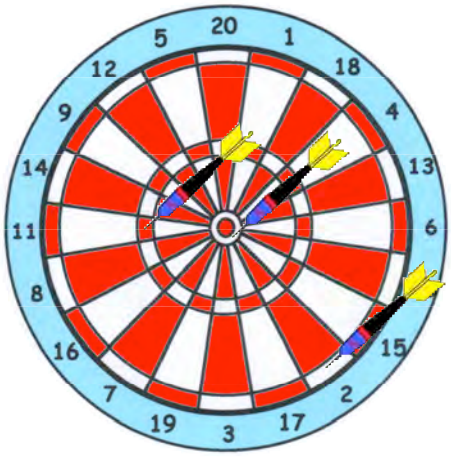
- **double** 12 —> you score **2** x 12 = 24
- **treble** 18 —> you score **3** x 18 = 54
- outer —> you score 25
- **bull's eye** —> you score 50



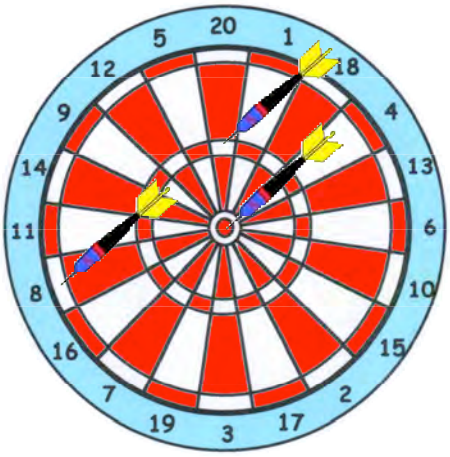
9. **a** Write down the value of each of the 3 darts.

b What is the **TOTAL** score for all 3 darts ?

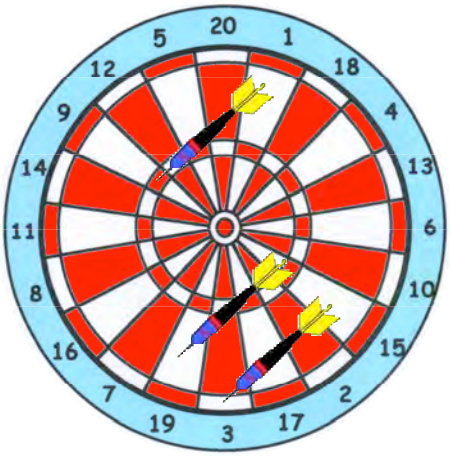
10. What did each person score here ?



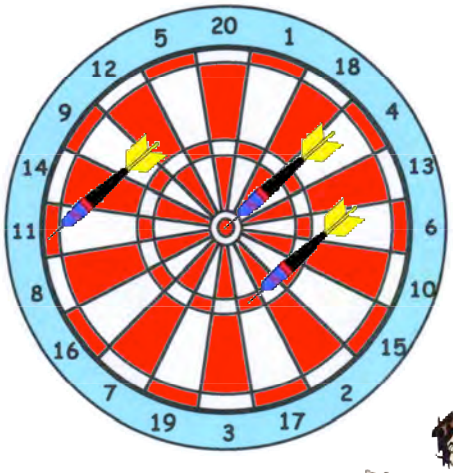
Tom



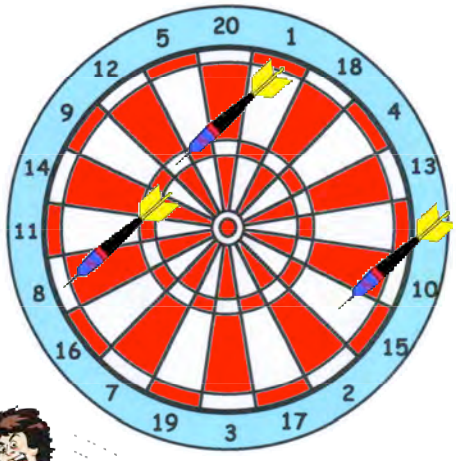
Dick



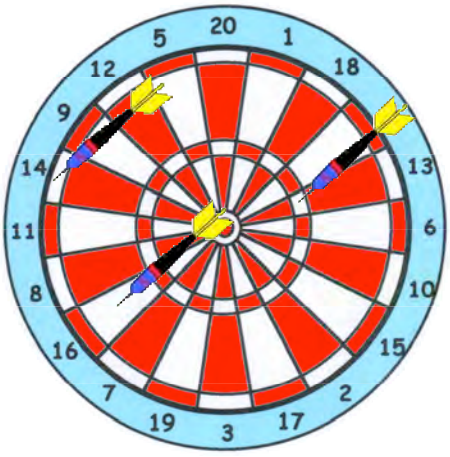
Harry



Jean



Alex

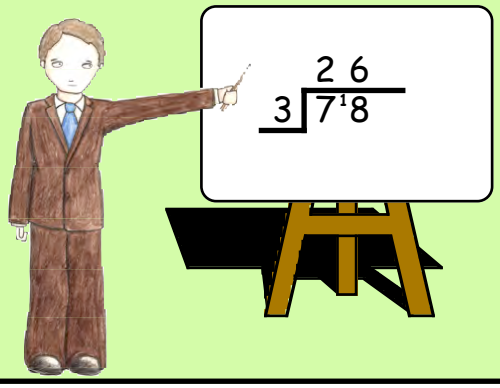


Karen

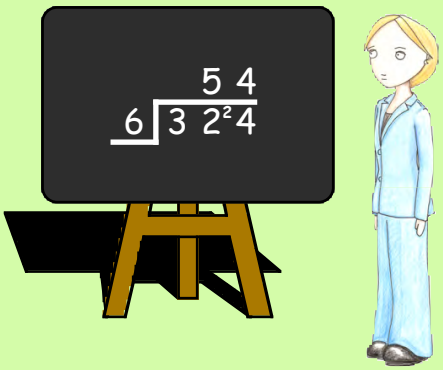
Division by a Digit

Again, knowing your tables really helps here.

Find 78 ÷ 3



Find 324 ÷ 6



Exercise 2

1. **Copy** and complete :-

a $\begin{array}{r} 1\ldots \\ 3\overline{)5^{2}4} \end{array}$ **b** $4\overline{)92}$ **c** $5\overline{)75}$ **d** $6\overline{)84}$

e $7\overline{)91}$ **f** $8\overline{)96}$ **g** $9\overline{)99}$ **h** $2\overline{)94}$

2. **Copy** and find :-

a $4\overline{)132}$ **b** $6\overline{)270}$ **c** $5\overline{)710}$ **d** $7\overline{)245}$

e $9\overline{)378}$ **f** $8\overline{)504}$ **g** $3\overline{)621}$ **h** $2\overline{)532}$

i $6\overline{)804}$ **j** $7\overline{)434}$ **k** $5\overline{)495}$ **l** $4\overline{)388}$

There are different ways of asking:- "**divide 87 by 3**".

—> 87 divided by 3 $3\overline{)87}$ 87 ÷ 3

3 into 87 $\frac{87}{3}$

3. Write each of the following in the form $3\overline{)87}$ and do the calculation :-

a $64 \div 4$ **b** $6\overline{)150}$ **c** $\frac{95}{5}$

d 2 into 624 **e** 98 divided by 7 **f** $276 \div 4$

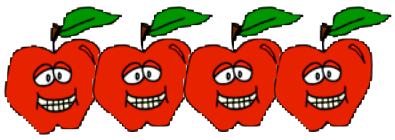
g $\frac{416}{8}$ **h** $9\overline{)504}$ **i** 3 into 543

j 500 divided 4 **k** $\frac{756}{6}$ **l** $301 \div 7$

4. **Show your working in all of the following questions :-**

a **4** apples cost 92p.

What is the cost of **1** apple ?



b 

6 barrels of apples weigh 186 kg.

What will **1** barrel weigh ?

c To run **5 hundred** metres takes Nick 85 seconds.

How long would it take him to run
1 hundred metres at the same pace ?

d I drank **3** cups of tea.
Altogether I drank 192 millilitres.

How many millilitres are there in **1** cup ?

e **8** packets of "Chewit" weigh 360 grams. What will **1** packet weigh ?

f 

7 verses of a song are played.
The total time taken is 378 seconds.

How long does **each** verse last ?

g When I treble my age, the answer comes to **129** years.

How old am I ?

h When Mr Todd worked during Easter Monday,
he got "**Double**" his normal pay.

Mr Todd earned £152 on Easter Monday.
What is his normal "**pay**" for a day's work ?

5. A simple way of dividing a number by **6** is to

=> divide by **2**, then divide your answer by **3**.

a Find 288 ÷ 6 = ...

b Now find 288 ÷ 2 = ... and then find ..... ÷ 3 = ...

Did you get the same answer ?

6. **Copy** and complete :-

a "To divide by **8**, I could divide by **2**, then divide by ....."

b "To divide by **9**, I could divide by **3**, then divide by ....."

c "To divide by **10**, I could divide by **2**, then divide by ....."

7. Find these by following the instructions :-

a Find 656 ÷ 8 by dividing by **2**, then dividing your answer by **4**.

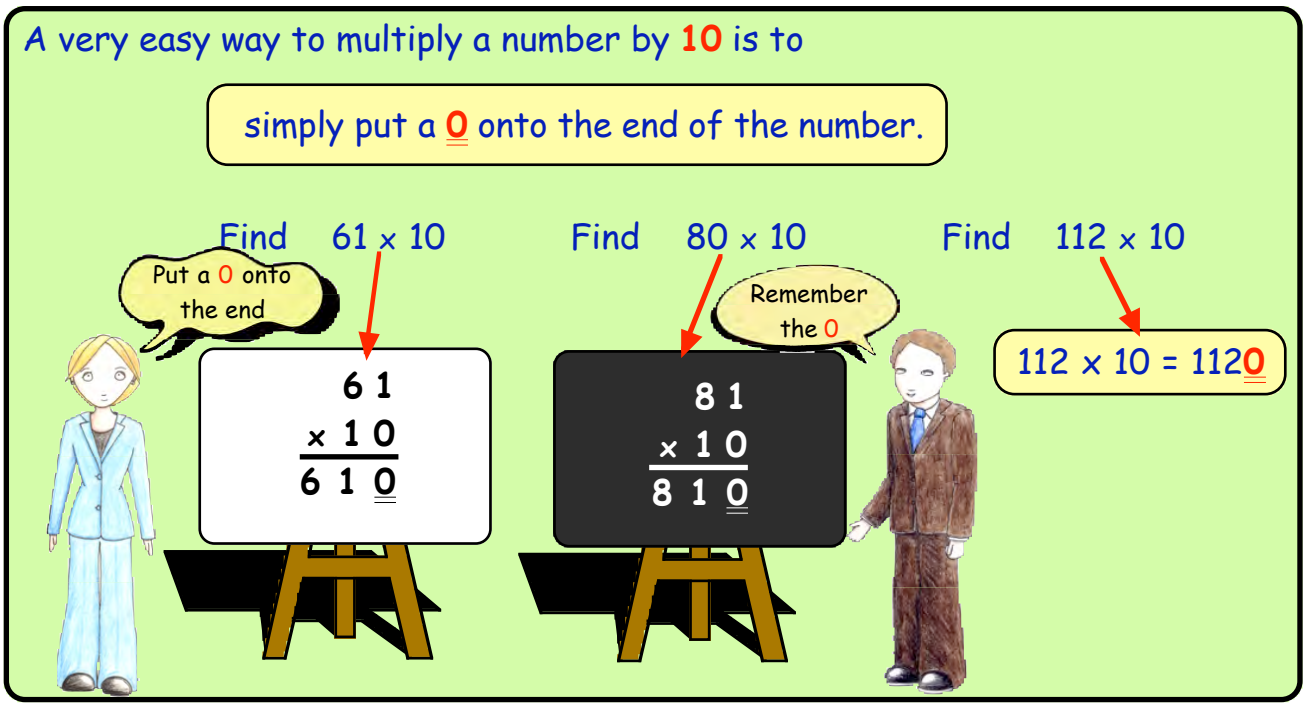
b Find 756 ÷ 9 by dividing by **3**, then dividing your answer by **3**.

c Find 470 ÷ 10 by dividing by **2**, then dividing your answer by **5**.

Multiplication by 10

A very easy way to multiply a number by **10** is to

simply put a 0 onto the end of the number.



Exercise 3

1. **Copy** and complete :-

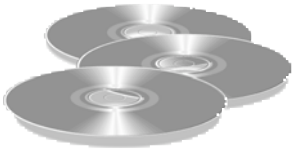
a	31 × 10	**b**	56 × 10	**c**	73 × 10	**d**	90 × 10
e	17 × 10	**f**	117 × 10	**g**	321 × 10	**h**	206 × 10
i	530 × 10	**j**	400 × 10	**k**	605 × 10	**l**	20 × 10

2. Do the following **mentally** (just write down your answer) :-

a	42 x 10	**b**	77 x 10	**c**	10 x 18	**d**	95 x 10
e	10 x 213	**f**	185 x 10	**g**	320 x 10	**h**	10 x 803

3. **a** A blank recordable C.D. costs 47p.

What will a box of **10** C.D.'s cost ?



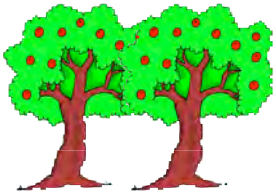
b 

1 jar of jam weighs 375 grams.

What will a carton of **10** jars weigh ?

c A farmer plants **10** trees in a row.

How many trees are there in **52** rows ?



d 

A carton of juice holds 520 millilitres.

How many millilitres are in **10** cartons ?

4. There are **10** millimetres in **1** centimetre.

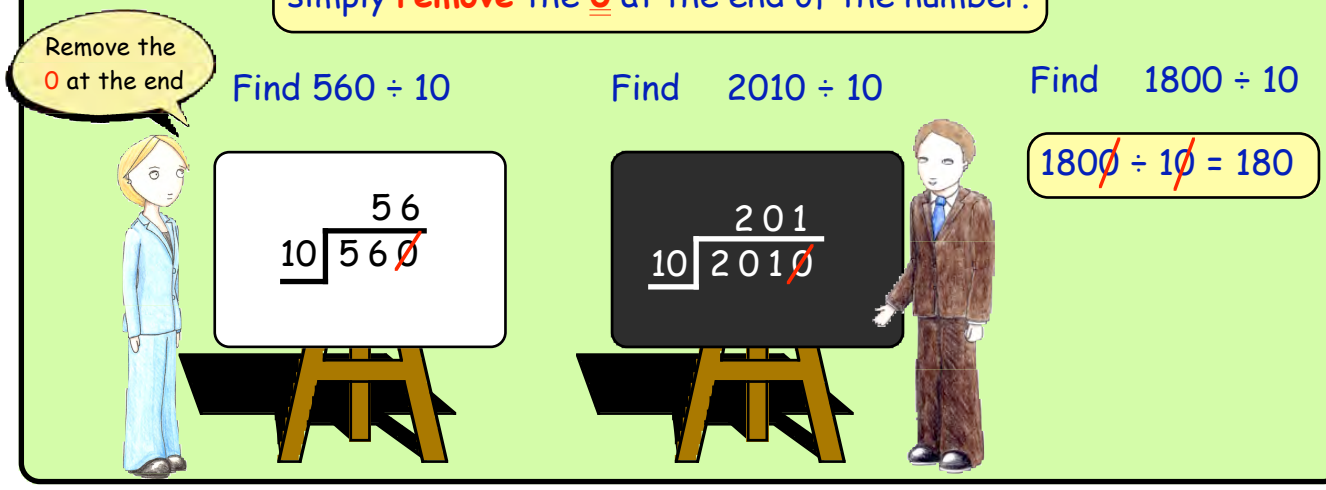
How many millimetres are there in :-

a 6 cm **b** 18 cm **c** 75 cm **d** 120 cm **e** 743 cm ?

Division by 10

If a number ends in a "0", a way of dividing it by 10 is to :-

simply **remove** the 0 at the end of the number.



Exercise 4

1. **Copy** and complete :-

a $10\overline{)270}$	**b** $10\overline{)940}$	**c** $10\overline{)1620}$	**d** $10\overline{)800}$
e $10\overline{)300}$	**f** $10\overline{)5080}$	**g** $10\overline{)7200}$	**h** $10\overline{)6060}$
i $10\overline{)5000}$	**j** $10\overline{)8000}$	**k** $10\overline{)1000}$	**l** $10\overline{)1010}$

2. Do the following **mentally** (just write down the answer) :-

a 640 ÷ 10	**b** 720 ÷ 10	**c** 1900 ÷ 10	**d** $10\overline{)4200}$
e $10\overline{)6080}$	**f** 5600 ÷ 10	**g** $10\overline{)1760}$	**h** 1000 ÷ 10

3. There are various ways of writing "**divide by 10**".

390 ÷ 10 | "10 into 390" | $10\overline{)390}$ | $\frac{1}{10}$ of 390 | $\frac{390}{10}$

Find :-

a 580 ÷ 10	**b** $\frac{1}{10}$ of 710	**c** $\frac{950}{10}$	**d** $10\overline{)760}$
e 10 into 900	**f** $\frac{4080}{10}$	**g** $\frac{1}{10}$ of 6000	**h** 9050 ÷ 10

4. There are **10** millimetres in **1** centimetre.

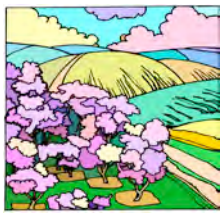
How many centimetres are there in :-

a 40 mm **b** 90 mm **c** 160 mm **d** 400 mm **e** 720 mm ?

5. **a** 180 tennis balls are packed into boxes of **10**.

How many boxes are needed ?

b



640 trees are planted in an orchard.

If there are **10** trees in each row, how many rows are there ?

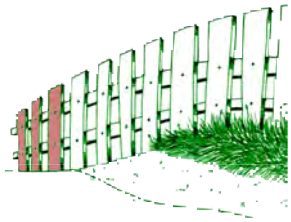
c At a party, 300 sweets were shared equally amongst 10 people.

How many sweets did each person get ?

d Bob **and** his nine pals share 7000 millilitres of juice equally.

How many millilitres will each person receive ?

e A fence has 320 planks of wood.
A **tenth** of the planks is to be painted brown.



How many planks will be painted brown ?

6. Nick's uncle Bill left ten thousand pounds in his will.
Nick got **a tenth** of this amount.

How much did Nick receive ?

7.

A tank holds 400 gallons of water.
A barrel holds a **tenth** of a tank.
A bucket holds a **tenth** of a barrel.

How many gallons does a bucket hold ?

8. Ben had 2000 marbles in his collection.
He put an equal amount of marbles into **10 boxes**.

a How many marbles are in each box ?

Ben then took the marbles from one box and put an equal amount into **10 bags**.

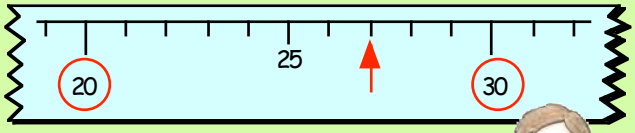
b How many marbles would be in each bag ?

c How many bags will Ben need for his **whole** collection?

Rounding (to the nearest 10)

Look at this number line.

The arrow points to the number **27**



- Can you see that **27** lies between **20** and **30** ?
- can you see that **27** is closer to **30** than **20** ?

We say that, " **27, rounded to the nearest 10, is 30** "

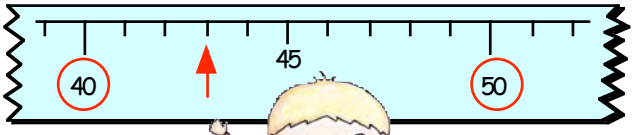
Rule :-

If the last digit is a 1, 2, 3, 4 round **DOWN**

If the last digit is a 5, 6, 7, 8, 9 round **UP**

Exercise 5

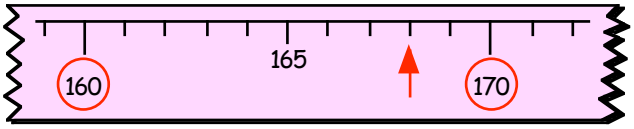
1. Look at this number line.



Copy the following and complete :-

- 43 lies between 40 and .....
- 43 is closer to ..... than .....
- 43 rounds to ..... (to the nearest 10)

2. **Copy** and complete :-



- 168 lies between 160 and .....
- 168 is closer to ..... than .....
- 168 rounds to ..... (to the nearest 10)

3. Picture in your head, the number **62**.

Copy and complete :-

- 62 lies between 60 and .....
- 62 is closer to ..... than .....
- 62 rounds to ..... (to the nearest 10)

4. By imagining the following numbers, decide what each one rounds to, (to the nearest 10) :-

a Lucy finds that **86** lies between 80 and ..... It is closer to .....

b Alex finds that **122** lies between ..... and 130 It is closer to .....

c Alan finds that **257** lies between 250 and ..... It is closer to .....

d Jane finds that **607** lies between 600 and ..... It is closer to .....

A short way of writing "72 rounds to 70 to the nearest 10"
is to simply write **72 —> 70**

5. **Copy** each of the following and round to the nearest 10 :-

a 46 —> 50 **b** 82 —> ..... **c** 19 —> ..... **d** 84 —> .....

e 146 —> ..... **f** 181 —> ..... **g** 219 —> ..... **h** 424 —> .....

i 65 —> ..... **j** 195 —> ..... **k** 203 —> ..... **l** 888 —> .....

6. **a** There were 137 pupils at the school dance.

Round this to the nearest **10**.

b

It is 432 miles from my home by car to London.

Round this to the nearest **10** miles.

c My bed is 196 cm long.

Round this to the nearest **10** cm.

d

When Lucy's dad stood on the scales, he weighed 154 pounds.

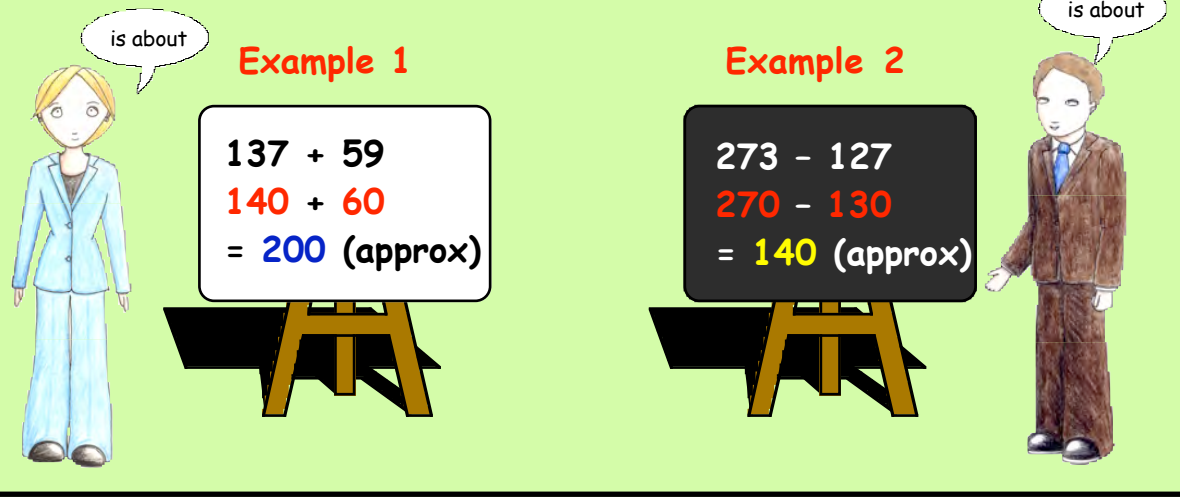
What is his weight to the nearest **10** pounds ?

e When a "Lottery" win was shared, each person received 476 dollars.

Round this to the nearest **10** dollars.

Estimating (by rounding)

We can round numbers to the nearest 10 to estimate calculations.



Exercise 6

1. **Copy** and complete each calculation :-

a	58 + 77	**b**	94 + 86	**c**	36 + 68	**d**	137 + 264
is about	60 + 80	is about	90 + ...	is about	.... + 70	is about	.... + ...
	=		=		=		= .....
e	131 - 88	**f**	197 - 133	**g**	262 - 188	**h**	493 - 416
is about	130 -	is about	200 -	is about	.... -	is about	.... - ....
	=		=		=		= .....
i	674 + 188	**j**	503 - 438	**k**	819 + 263	**l**	996 - 599
is about	.... + ...	is about	.... -	is about	.... + ...	is about	.... - ....
	=		=		=		= .....

2. **Estimate** (**mentally**):-

a	49 + 33	**b**	67 + 89	**c**	63 + 29	**d**	121 + 101
e	83 - 59	**f**	154 - 27	**g**	262 - 98	**h**	673 - 469

3. Gary had 751 stamps in his collection.
He sold 199 stamps.

Estimate how many stamps he still had.

Using a Calculator (You may use a calculator)

In this exercise, you must decide, in each problem, whether to **add**, **subtract**, **multiply** or **divide**. **You must choose the correct one**.

Example 1

Ted weighs 196 pounds.
Jack weighs 187 pounds.

How much do they weigh together ?

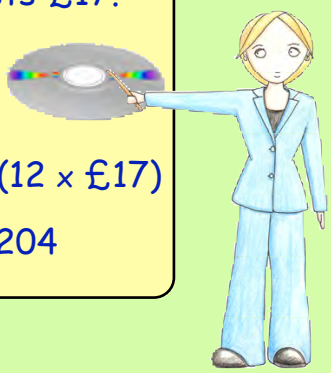
—> You must **add** (196 + 187)

=> 196 + 187 = 383 pounds

Example 2

One copy of a C.D. costs £17.

What is the total cost of 12 C.D.'s



—> You must **multiply** (12 x £17)

=> 12 x £17 = £204

Exercise 7

In every question, **YOU** must decide to +, −, x, or ÷.
Write down and show what calculation you are doing.

1. Brian and Sue went shopping with **£150**.
They spent **£117** in one shop.

How much money had they left ?

2. 

Julie booked a school trip for herself **and 26** pupils.
Each person was charged **£185**.

What was the **total** cost for all of them ?

3. There were **23** men, **37** women, **116** boys and **138** girls on a Sunday School trip.

How many were on the trip **altogether** ?

4. Alice, Nicola, Julie and Lynne won **£976 each** on the Lottery.

How much was this **altogether** ?

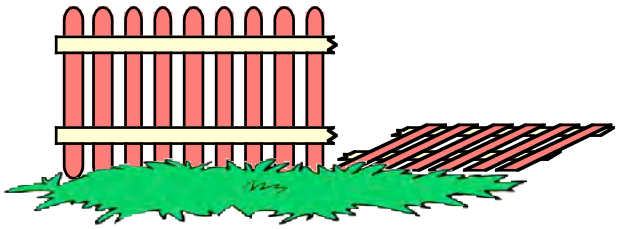
5.

A truck weighs **750 kg** when empty.
8 cartons are loaded onto the truck.
Each carton weighs **175 kg**.

Calculate the **total** weight.

6. A fence was **525 cm** long.
During a winter storm, a section **187 cm** long, was blown down.

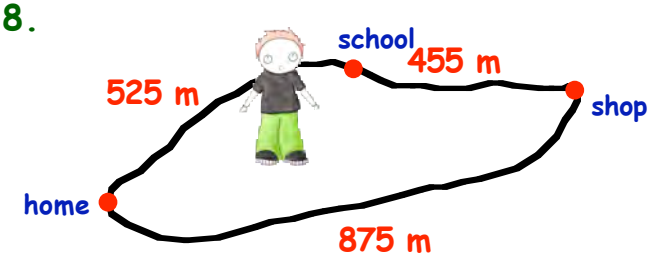
What length remained standing ?



7. A scientist measured **512** millilitres of liquid equally into **16** small jars.

How many millilitres are in each jar ?

8.



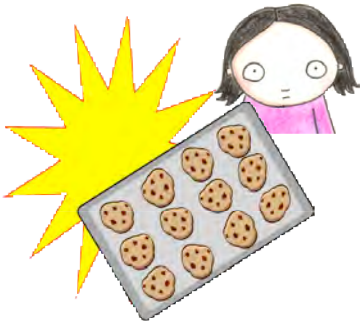
Nick walks from his home to school.
He then walks from school to a shop.
He then walks home the other way.

How far has he walked altogether ?

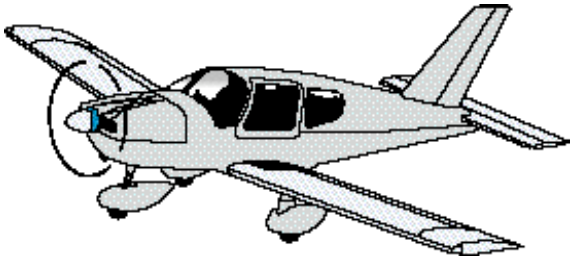
9. Lucy bakes trays of chocolate chip cookies for her School Fayre.

Each tray contains **12** cookies.

How many trays are needed if she bakes **720** cookies ?



10.



Ben was flying his model plane at a height of **338** metres.

He lost control and the plane dropped to a height of **97** metres.

By how many metres had the plane dropped ?

11. When a Lottery win was shared equally among a group of **23** winners, each person received **£475**.

What must the total winnings have been ?

12.

A grocer was counting the money in his cash register.

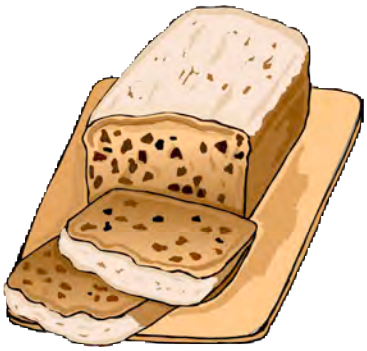
He had seventeen **£50** notes, thirty five **£20** notes, eighty seven **£10** notes and forty five **£5** notes.

How much cash had he altogether ?

13. There are 365 days in a year.
Harry is exactly **12** years old.

For how many days has Harry lived (forget Leap Years) ?

14.



A cardboard box contains **12** fruit loaves.

The total weight is **4000** grams.

The empty box weighs **880** grams.

a What is the weight of all **12** fruit loaves ?

b What is the weight of **1** loaf ?

15. Jemma practises her times tables for **12 minutes** every day.

a How many minutes does she practise every **week** ?

b How many minutes does she practise in **November** ?

c How many minutes does she practice in **a year** ? (365 days)

16. A small **carton** of soda holds 150 millilitres.
Cartons are put in **packs** of eight.
A **box** holds nine packs.

How many **millilitres** does a box hold ?

17. How many **minutes** are there in :-

a January **b** April **c** June, July and August altogether ?

Topic in a Nutshell

Until Question 16

1. Set down these multiplications and try them :-

a 21 × 6	**b** 45 × 7	**c** 28 × 9	**d** 34 × 8
e 140 × 8	**f** 270 × 6	**g** 310 × 9	**h** 560 × 7
i 72 × 6	**j** 87 × 4	**k** 64 × 3	**l** 270 × 5

2. What is the cost of **6** dining room chairs priced at £39 each ?

3. What is :-

a **double** 7 **b** **double** 36 **c** **treble** 30 **d** **treble** 28 ?

4. At the funfair we visited earlier :-

a **green** hoop counted as **single**;

a **blue** hoop counted **double**;

a **red** hoop counted **treble**.

a Write the score gained by each hoop.

b Add them up to find the **total score**.

5. Copy these divisions and find the answers :-

a $3\overline{)48}$	**b** $4\overline{)76}$	**c** $5\overline{)540}$	**d** $6\overline{)810}$
e $7\overline{)91}$	**f** $8\overline{)936}$	**g** $9\overline{)927}$	**h** $7\overline{)903}$
i 96 ÷ 6	**j** 9 into 819	**k** $\frac{405}{5}$	**l** 104 divided by 8

6. 

7 bananas cost 98 pence.

Find the cost of **one** banana.

7. A set of 8 tyres for a lorry cost £512 in total.

Work out the cost of **one** tyre.

8. Find the answer to :-

a 424 ÷ 8 by dividing by 2, then dividing your answer by 4.

b 648 ÷ 9 by dividing by 3, then dividing your answer by 3.

9. Do the following - just write down the answer :-

a 21 x 10 **b** 354 x 10 **c** 500 x 10 **d** 999 x 10

e 320 ÷ 10 **f** 1700 ÷ 10 **g** 7840 ÷ 10 **h** 9000 ÷ 10

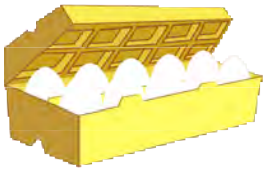
10. Envelopes can be bought in a box containing 520 envelopes.

An office buys 10 boxes. How many envelopes will it have ?

11. There are 10 millimetres in 1 centimetre.

How many millimetres are there in :-

a 3 cm **b** 47 cm **c** 800 cm **d** 584 cm ?

12. 

A grocer has 150 eggs which he places into boxes, each containing 10 eggs.

How many boxes will he fill ?

13. A chest contains 300 melons.
A display box can take a **tenth** of a chest.
A supermarket bag can hold a tenth of a display box.

How many melons can a supermarket bag hold ?

14. Round these numbers to the nearest **10** :-

a 14 **b** 69 **c** 563 **d** 855.

15. Round each number to the nearest **ten**, then do the calculation :-

a 67 + 31 **b** 59 – 38 **c** 829 + 111 **d** 998 – 399.

You may use a Calculator for the last five questions

16. Jane and bill bought a DVD/Video player for £137.

They paid for it with two £100 gift vouchers.

How much change did they get ?

17.

The coach driver went in with 18 senior citizens to the cinema.

The total cost of £57 for the outing was split equally amongst **everyone**.

What did it cost the coach driver ?

18. Dana bought :-

5 hamburgers at 99p each

6 cokes at 48p each

8 slices of pizza at 65p each.

How much did all this cost her **altogether** ?

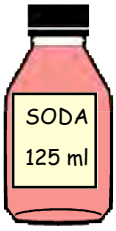
19. A fridge can hold 6300 millilitres of orange juice.

The fridge will hold seven packs of juice.

There are six cartons in each pack.

How many millilitres does each **carton** of orange juice contain ?

20.



A small bottle holds 125 millilitres of soda.

A box holds 12 bottles.

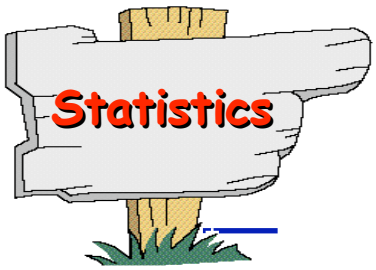
A case holds 6 boxes.

A crate holds 10 cases.

How many millilitres of soda are in a full crate ?

Chapter 6

Calculators should NOT be used in this chapter unless told to do so.



Tally Marks & Tables

Tally Table Putting a long list of numbers into a table or graph can make it easier to understand the information in the list.

Example

Pupils were asked where they liked to go on holiday.

The table shows their answers.

Put the information into a tally table.

U.S.A	Spain	Italy	UK
Italy	Spain	Spain	Spain
France	Italy	France	France
Spain	France	USA	UK
UK	UK	Italy	France
Spain	Spain	UK	UK

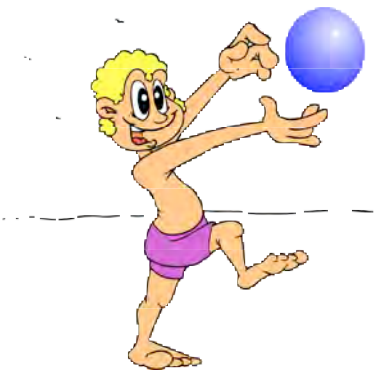
Place	Tally	Number
U.S.A	II	2
Italy	IIII	4
France	𝍸	5
Spain	𝍸 II	7
U.K.	𝍸 I	6

2 pupils chose USA.
4 pupils chose Italy.
5 pupils chose France.

The tally marks are in groups of five. (Easier to count a lot of tally marks).

Exercise 1

1. Look at the tally table above.
   - **a** How many pupils chose Spain ?
   - **b** How many pupils chose U.K. ?
   - **c** How many **more** pupils chose Spain than U.S.A. ?
   - **d** How many pupils were asked altogether ?



2. Use tally marks to represent each number :-

Remember to group in five. (𝍸 I) represents 6.

a 7 **b** 5 **c** 4 **d** 8

e 9 **f** 10 **g** 12 **h** 17.

3. Pupils were asked to name their favourite drink.

Cola	Irn Bru	Cola	Lemon
Orange	Irn Bru	Irn Bru	Irn Bru
Water	Cola	Orange	Orange
Lemon	Orange	Water	Irn Bru
Irn Bru	Lemon	Cola	Orange
Irn Bru	Irn Bru	Lemon	Lemon
Water	Irn Bru	Lemon	Irn Bru

a **Copy** and complete the tally table.

b How many pupils chose Orange ?

c What was the most popular drink ?

d How many **more** pupils chose Irn Bru than Cola ?

e How many pupils were asked to name their favourite drink ?

Drink	Tally	Number
Cola		
Orange	Make a copy of this table	
Water		
Irn Bru		
Lemon		

4. Each year, teachers voted for the best behaved primary class.

P1	P4	P7	P5	P2	P4	P4	P5
P5	P6	P2	P6	P5	P7	P5	P5
P5	P5	P7	P2	P4	P4	P5	P5

a **Copy** and complete the Tally table.

b How many teachers voted for :-

i P2 **ii** P3 **iii** P4 ?

Class	Tally	Number
P1		
P2		

c Which primary class was voted the best behaved ?

d How many teachers voted ?

5. Pupils were asked to name their favourite season.

Winter	Summer	Spring	Summer	Spring
Spring	Winter	Summer	Spring	Spring
Summer	Summer	Spring	Summer	Summer
Autumn	Summer	Winter	Summer	Summer
Winter	Summer	Summer	Summer	Autumn
Summer	Spring	Summer	Winter	Summer

a Make a Tally table to show this information.

b How many **more** pupils chose Spring than Autumn ?

c What was the most popular season ?

6. Shown are the number of pupils in each class in a school.

20	18	23	23	20	25
19	20	19	21	23	18
18	22	23	23	18	18
20	22	23	23	23	20

a **Copy** and complete the tally table.

b How many classes are in the school ?

c Use a calculator to find how many pupils are at the school.

Pupils	Tally	Number
18		
19		

7. Thirty six packets of sweets are opened.

The number of sweets in each packet is shown in the table.

8	10	7	12	11	9	8	9	9	10	11	10
9	10	11	10	11	8	10	10	11	12	8	10
12	10	11	9	11	11	10	11	10	9	8	7

Make a Tally table to show this information.

8. Do a survey with twenty of your friends or family.

Decide what you want your survey to be about first (you decide !)

Make a tally table to show your information.

Pictographs

A graph can be made using pictures (**a pictograph**).
The graph **must** have a **key** which explains what each picture stands for.

Example

The **pictograph** below shows the number of primary 3 pupils who attended a lunchtime computer club.

The **key** shows that each man represents 2 pupils.

Key:  **stands for 2 pupils.**

Mon	
Tue	
Wed	
Thu	
Fri	

On Monday **6** pupils attended.

(Can you see that the answer is **NOT 3** ?)

On Tuesday **9** pupils attended.
(Can you see why the answer **IS 9** ?)

Exercise 2

1. Look at the **pictograph above**.
   - **a** How many pupils attended on
     - **i** Wednesday **ii** Thursday **iii** Friday ?
   - **b** How many pupils attended altogether ?

2. This pictograph shows the number of people waiting at a bus stop.

Key:  **stands for 2 people.**

Write down the number of people waiting at :-

a 1 pm **b** 2 pm **c** 3 pm

d 4 pm **e** 5 pm.

1pm	
2pm	
3pm	
4pm	
5pm	

3. This pictograph shows the number of goals scored by a team each month.

Aug	⚽ ⚽
Sept	⚽ ⚽ ⚽ ⚽
Oct	⚽ ½⚽
Nov	⚽ ⚽ ½⚽
Dec	¼⚽

Key: ⚽ stands for 4 goals.

a Write down how many goals were scored each month.

b What was the team's **worst** month ?

c How many goals did the team score altogether from **August** to **December** ?

4. The number of competitors in each event at the sports day is shown.

a Look at the key.

How many people does ⚲ stand for ?

Key: ⚲ stands for 5 people.

High Jump	⚲ ⚲
Long Jump	⚲ ⚲
100 m	⚲ ⚲ ⚲ ⚲
200 m	⚲ ⚲ ⚲ ⚲
800 m	⚲ ⚲ ⚲

b Write down how many competitors took part in each event.

c How many people took part in a jumping competition ?

d How many competitors took part altogether ?

5. This table shows the numbers of competitors last year.

High Jump	Long Jump	100 m	200 m	800 m
5	10	25	24	16

Make a pictograph to show this information.
(Use the **same key** as that used in question 4).

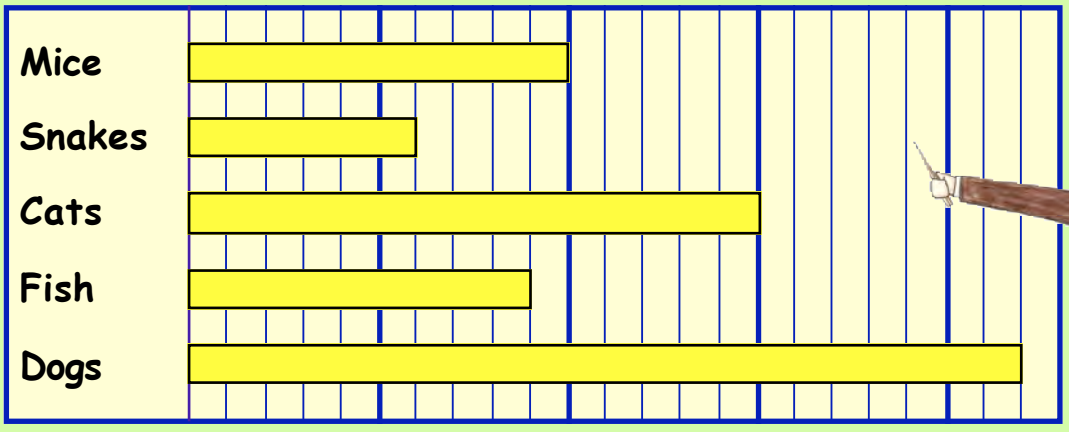
Bar Graphs

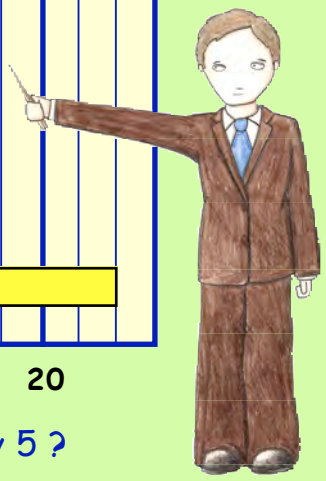
Bar graphs are like Pictographs but they use **bars** instead of **pictures**.

You must read the numbers on the lines to find the total of each bar.

Example

This bar graph shows the number of pets owned by Primary 5.





Can you see that :- **10 mice** are owned by Primary 5 ?

6 snakes are owned by Primary 5 ?

Exercise 3

1. Look at the bar graph above.

   a How many **cats** are owned by primary 5 ?

   b How many **fish** are owned by primary 5 ?

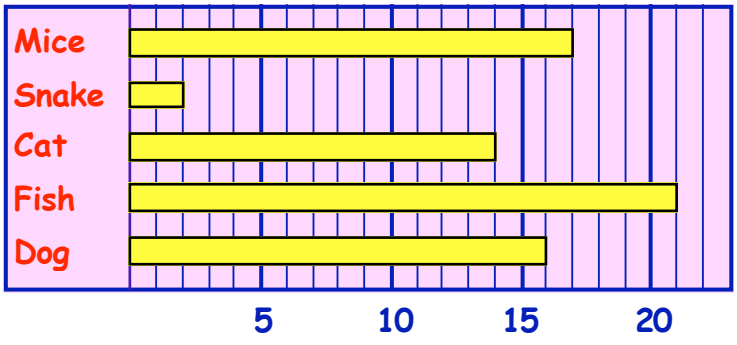
   c How many **dogs** are owned by primary 5 ?

   d How many pets are owned by primary 5 **altogether** ?

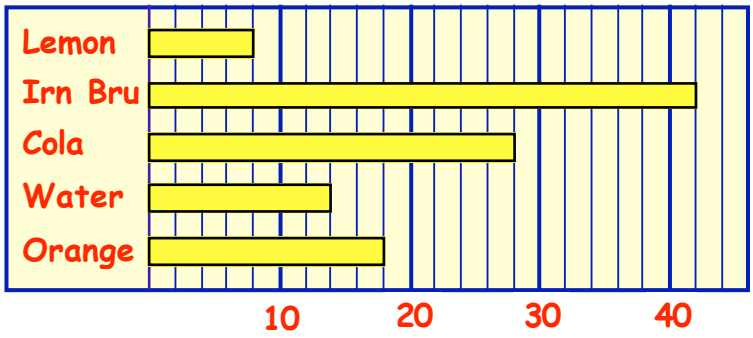
2. This **bar graph** shows the number pets owned by Primary 7.

   a Write down the number of each type of pet owned.

   b How many pets are owned by primary 7 altogether ?



3. This bar graph shows the number of **drink bottles** sold at the school tuck shop.



a How many bottles of **lemon** were sold ?
(Answer is **NOT** 4)

b Write down how many bottles of each type of drink were sold.

c How many **more** bottles of Irn Bru were sold than Orange ?

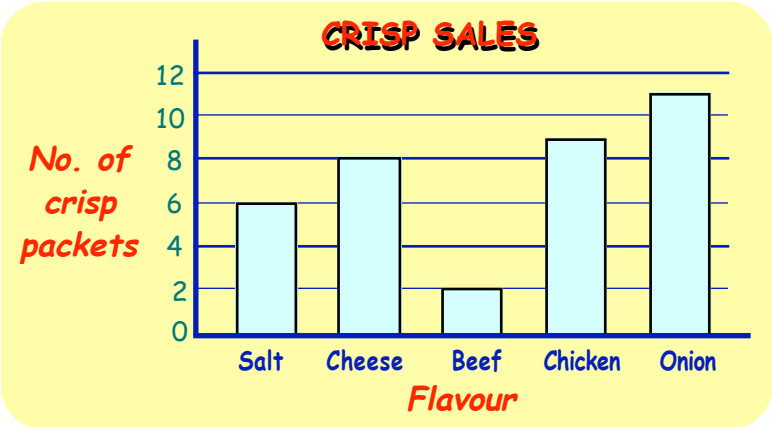
d How many bottles were sold altogether ?

Most bar graphs have bars that **go up** (**vertical**).

4. Packets of crisps were sold at the tuck shop one day.

The bar graph shows what type were sold.

Can you see that 6 packets of salt crisps were sold ?



a Write down the number of :-

i Cheese sold **ii** Beef sold

iii Chicken sold **iv** Onion sold.

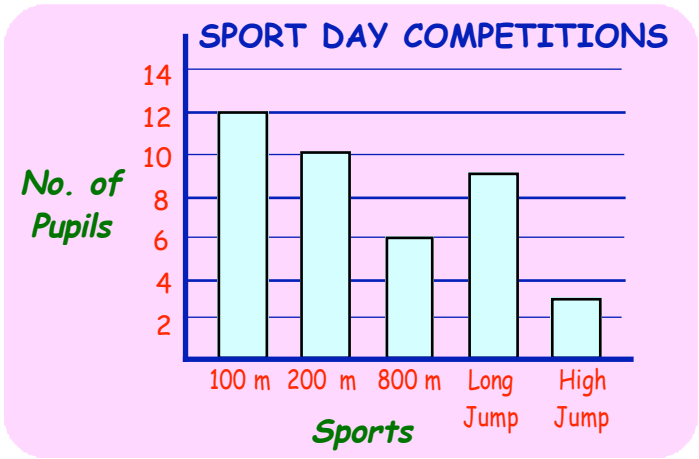
b How many **more** packets of Cheese were sold than Beef ?

c How many packets of crisps were sold **in total** ?

5. The bar graph shows the number of pupils taking part in sports day competitions.

a Write down the number of pupils who took part in **each** type of sport.

b How many pupils **in total** took part in the sports day ?

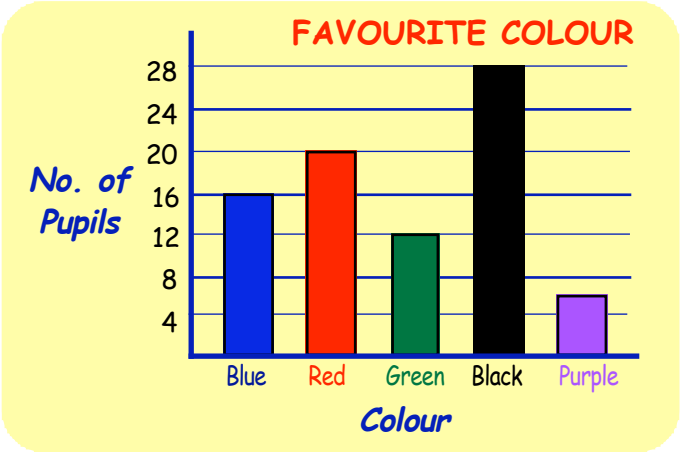


6. Pupils were asked their **favourite colour**.

The bar graph shows the results.

a Write down how many pupils chose **each** colour.

b How many pupils were asked **in total** ?

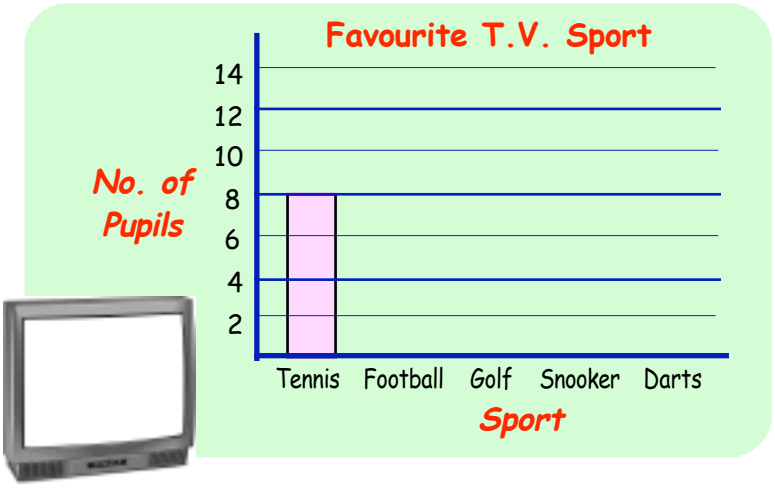


7. Pupils were asked to name their **favourite T.V. sport**.

The results are listed in the table shown.

Tennis	-	8
Football	-	14
Golf	-	10
Snooker	-	2
Darts	-	4

Copy and complete the **bar graph** using the table above.



8. Pupils were asked to name their **favourite schoolday**.

The results are shown in the table.

Make a **bar graph** to show this information.
(Remember to have a title and headings).

Monday	-	10
Tuesday	-	2
Wednesday	-	6
Thursday	-	11
Friday	-	13

9. The table shows a survey asking people to name their favourite ice-cream.

Vanilla - 16	Choco - 20	Toffee - 4
Berry - 28	Mint - 12	Coffee - 10

Make a bar graph to show this information.

10. Carry out a survey of your own. Make a bar graph to show your results.

Reading Tables

Exercise 4

1. The table shows the number of miles Terry cycled each day.

DAY	miles
Monday	7
Tuesday	6
Wednesday	4
Thursday	10
Friday	3

   a How many miles did Terry cycle on **Monday** ?

   b How many miles did Terry cycle on :-

      i Tuesday

      ii Wednesday

      iii Thursday

   c How many miles did Terry cycle **altogether** ?

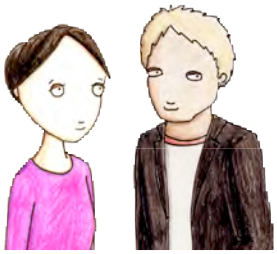
2. Mr and Mrs Todd had a meal in the "**Feast of Delights**" restaurant.

   The table shows what both of them ate.

	Starter	Main	Sweet
Mr T	Prawns	Steak	Ice-cream
Mrs T	Soup	Fish	Cake

   a What did Mrs Todd have for starter ?

   b What did Mr Todd have for his **main course** ?



   c Write down what each person had for their **sweet**.

3. Terry, the paper boy, delivers two different **newspapers** over a weekend.

   The table shows the number of newspapers he delivered.

	Fri	Sat	Sun
Times	15	17	22
Daily	18	24	24

   a How many ***Times*** newspapers did Terry deliver on :-

      i Friday ii Saturday iii Sunday ?

   b How many ***Daily*** newspapers did he deliver each day ?

   c How many newspapers did Terry deliver on Friday ?

   d How many newspapers did Terry deliver altogether :-

      i on Saturday ii on Sunday iii over the 3 days ?

4. The school **SPORTS DAY** has a timetable as shown.

Starting Times	Competition	Where it takes place
1pm	100 m race	Track
1.30pm	Javelin	Football park
2pm	Gymnastics	Games Hall
2.30pm	200 m race	Track

a What time does the **Javelin** competition start ?

b Where does the **Gymnastics** competition take place ?

c Ben is at the **Track** at 2.30pm.

What is he watching ?

d At what time and where will the **100 m** race take place ?

5. The local cinema times are shown in the advert.

	5 pm	7 pm	9 pm
Studio 1	Catlady	Batgirl	Supermum
Studio 2	Catlady	Supermum	Batgirl
Studio 3	Batgirl	Catlady	Batgirl

Can you see that Studio 2 at 9 pm is showing Batgirl ?

a Write what film is showing in :-

i **Studio 1** at 5 pm

ii **Studio 3** at 7 pm

iii **Studio 2** at 5 pm.

b List where and at what times I could see **Supermum**.

6. The table shows the prices of holidays.

	1 week	2 weeks	3 weeks	4 weeks
Majorca	£200	£250	£275	£300
Tenerife	£225	£325	£350	£400
Zante	£240	£290	£390	£450

a How much would it cost to got to :-

i **Majorca** for 2 weeks

ii **Zante** for 3 weeks

iii **Tenerife** for 4 weeks

b Sally spent £290 on her holiday.

Where did Sally go and **for how long** ?

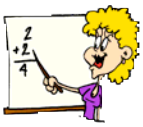
c Jack **and** Jill went to Majorca for 1 week.

What was the total cost ?

Topic in a Nutshell

1. A group of children were asked -
"What would you like to be when you grow up ?"

Model	Teacher	Artist	Bus Driver	Teacher
Teacher	Artist	Lawyer	Model	Model
Model	Teacher	Teacher	Teacher	Model
Teacher	Bus Driver	Bus Driver	Teacher	Bus Driver
Teacher	Model	Lawyer	Lawyer	Bus Driver
Model	Teacher	Lawyer	Teacher	Lawyer



a **Copy** and complete the tally table.

b How many children chose Bus Driver ?

c What was the **least** popular job ?

d How many **more** children chose teacher than model ?

Job	Tally	Number
Model		
Teacher		
Artist		
Bus Driver		
Lawyer		

2. The pictograph shows the result of the survey -
"What kind of food do you like ?"

Key:  **stands for 8 people**

Chinese	
Indian	
Italian	
French	
British	

a What kind of food was **most** popular ?

b Write down the number of people who liked the food of :-

i China ii India iii Italy iv France v Britain.

c How many **fewer** people preferred Italian to French food ?

d How many people took part in the survey ?

3. This table shows the fruit preferred by a primary 5 class.

Pear	Strawberry	Apple	Orange	Grape
8	6	10	1	5

Make a **pictograph** to show this information using **you own key**.

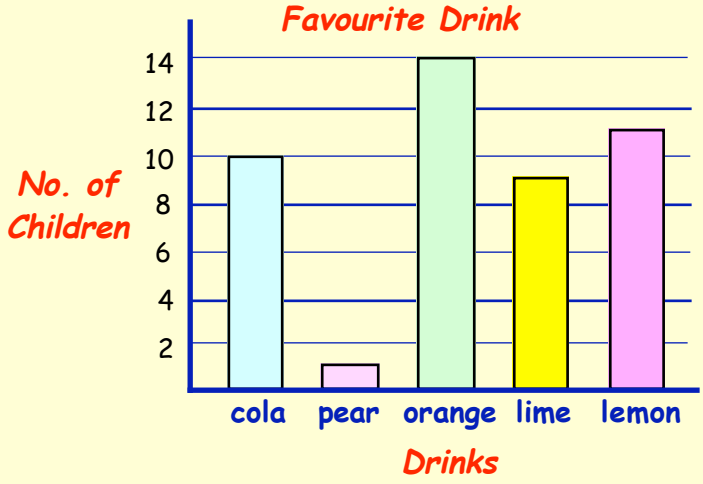
4. Children at a leisure centre were asked to name their favourite drink. The results are shown in the **bar graph** below.

a How many children chose :-

- **i** cola
- **ii** lime
- **iii** lemon ?

b How many **more** children preferred orange to pear ?

c How many children were asked in this survey ?



5. The table shows a survey asking people to name their favourite sportswear label.

Nocku	Nocku	Kappi	Speedo	Adiddo	Kappi	Kappi
Speedo	Nocku	Adiddo	Ombra	Nocku	Nocku	Nocku
Adiddo	Kappi	Adiddo	Speedo	Ombra	Nocku	Nocku
Kappi	Adiddo	Kappi	Ombra	Nocku	Nocku	Kappi

Draw a **bar graph** to show this information. (Tally marks might help).

(*Use the same scale as in Q4 - remember to label your diagram and give it a name.*)

6. Cinema ticket prices are shown in the table.

	Mon – Thu		Fri – Sun	
	Adult	Child	Adult	Child
Stalls	£8	£4	£10	£5
Circle	£7	£3	£8	£4
Upper Circle	£6	£2	£7	£3

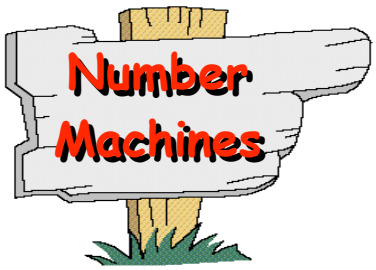
a How much would it cost for :-

- **i** one adult stalls ticket on **Monday** ?
- **ii** one child circle ticket on **Saturday** ?
- **iii** **Two** adult upper circle tickets on **Friday** ?

b Mr Percy **and** his daughter went to the cinema. It cost him £15.

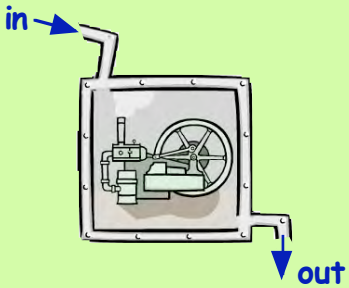
Name **which days** he could have gone and **where they sat** in the cinema.

Chapter 7

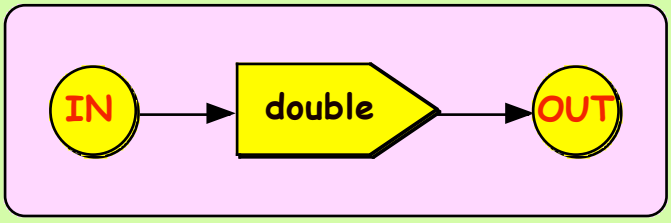


Number Machines

A **number machine** (or **function machine**) is the name for a mathematical rule which changes **one number** into **another**.



Example : The number machine below takes a number **IN** one side **doubles it** and pushes the answer **OUT** the other side.



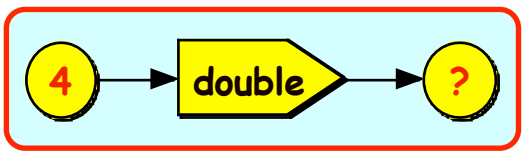
Jane put **IN** the number **6** :-

12 comes **OUT**

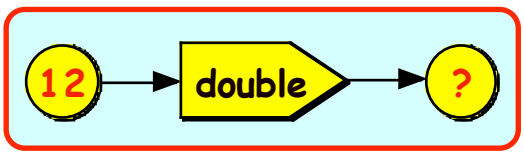
Exercise 1

1. What number will come **OUT** of each number machine :-

a



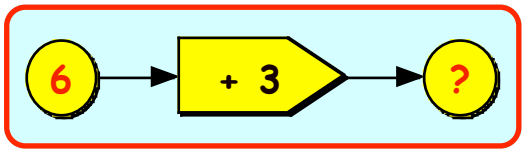
b



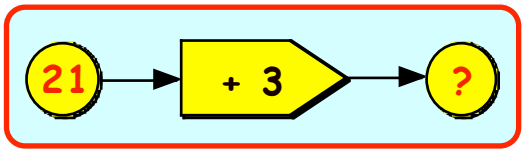
2. These number machines add 3 to any number put **IN**.

What number will come **OUT** in each of these machines :-

a

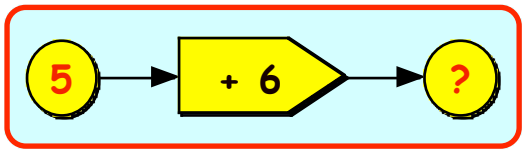


b

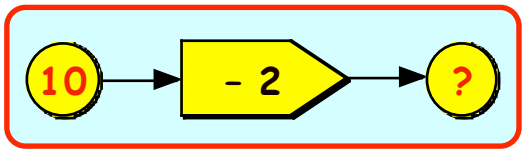


3. What number will come **OUT** of each number machine :-

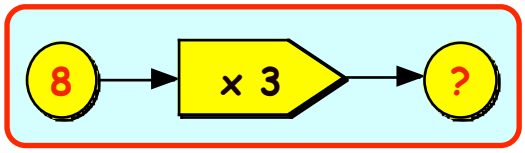
a



b



c



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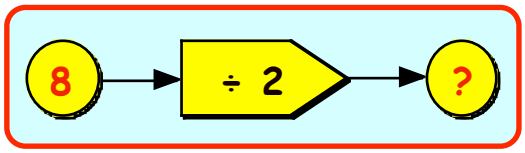
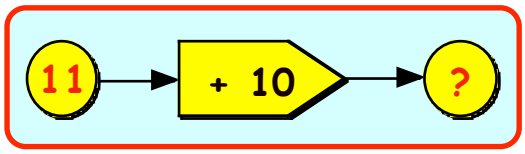


e



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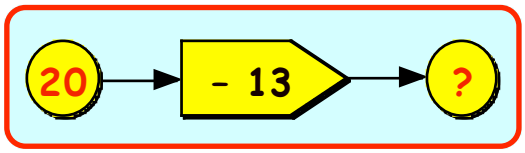

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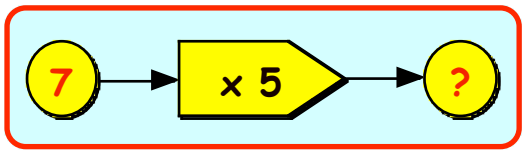

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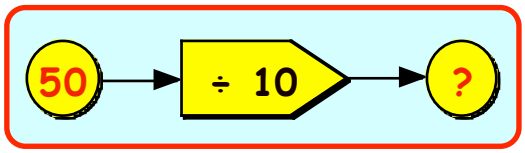
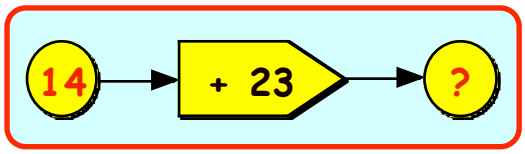
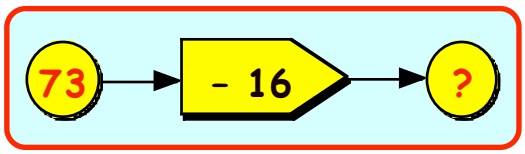


i

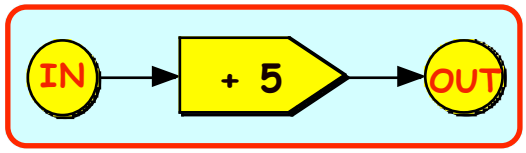


j



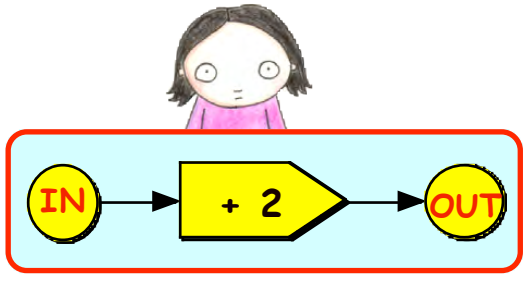
4. Look at this number machine.

What number comes **OUT** when you put **IN** the number :-



a 1 **b** 12 **c** 50 **d** 115 **e** 995 ?

5. Lucy makes up this number machine.
(Read the question **carefully**).



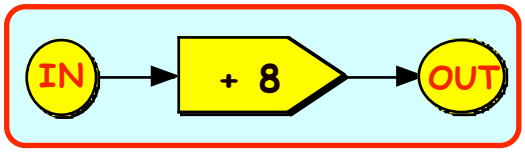
What number does Lucy put **IN** to get the following numbers **OUT** :-

a 6 (the answer is **NOT 8**)

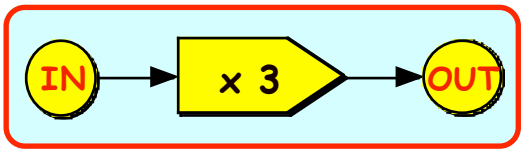
b 7 **c** 12 **d** 50 ?

6. Look at the two number machines below.

Machine A



Machine B



a What number **comes out** when **7** is **put into** machine **B** ?

b What comes **OUT** when these numbers are put **IN** :-

i 5 into machine A

ii 9 into machine B

iii 0 into machine B

iv 54 into machine A ?

c What number is put **IN** when these numbers come **OUT** :-

i 20 out of machine A

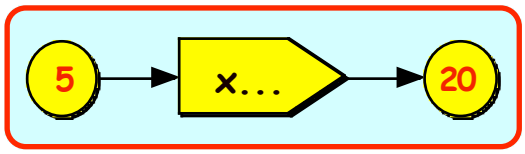
ii 12 out of machine B

iii 45 out of machine B

iv 107 out of machine A ?

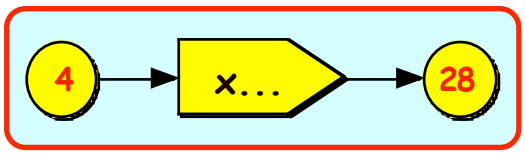
7. A number in this number machine is missing.

What is the missing number ?

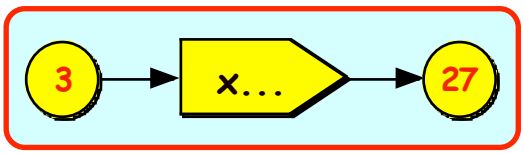


8. Write down the missing number in each machine below :-

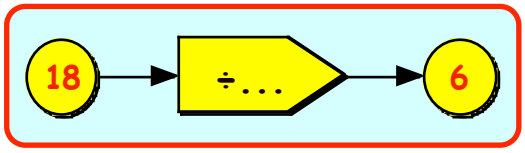
a



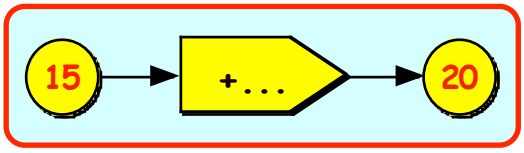
b



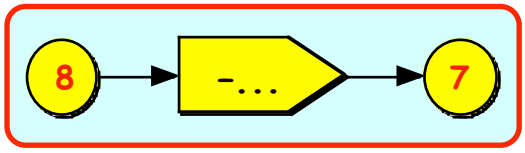
c



d



e



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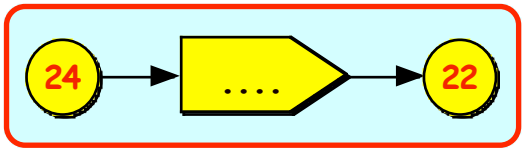
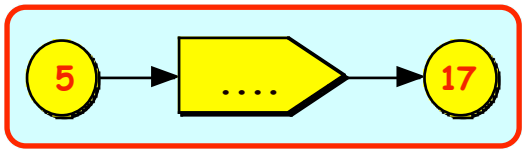
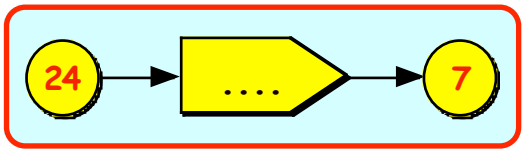


g



h



9. Look at the cost of these sweets.

1 sweet **9p**

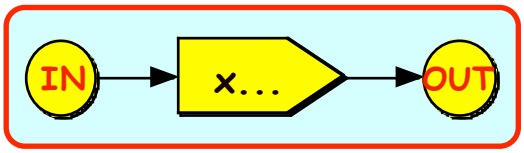
2 sweets **18p**

3 sweets **27p**

no of sweets	cost (p)
1 →	9p
2 →	....p
3 →	....p
4 →	....p
5 →	....p
6 →	....p

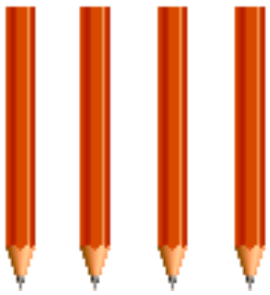
a **Copy** and complete the table.

b **Copy** and complete the number machine for the number of sweets and the cost.



c Use the number machine to find the cost of **12 sweets**.

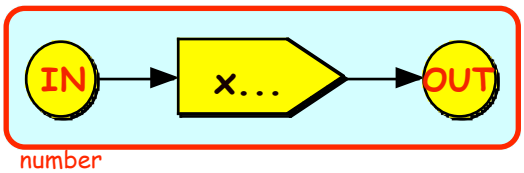
10. Each pupil in a class is given 4 pencils.



a **Copy** and complete the table below :-

No. of pupils	1	2	3	4	5	6
No. of pencils	4	8	...	...	...	...

b **Copy** and complete the number machine to show how many pencils are needed if you know the number of pupils.



number of pupils

c Use your number machine to find the number of pencils needed for a class of **30 pupils**.

11. The cost of a cake is £2·50.

£2·50

a Make a **number machine** similar to that in question 10 to show the cost of any number of cakes.

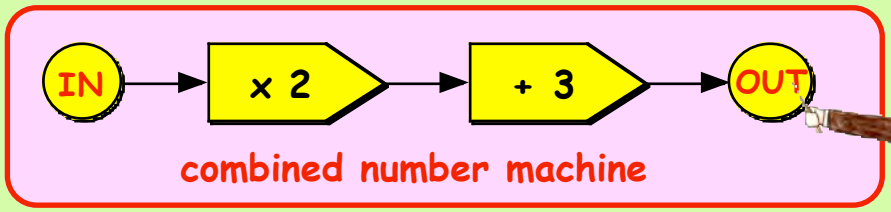
b Use your number machine to find the cost of :-

i 4 cakes **ii** 10 cakes.

Combined Number Machines

Combined number machines have two or more parts.

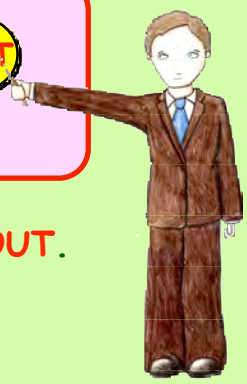
Example :



combined number machine

Jane put the number **5** **IN** this machine. She got **13** **OUT**.

She put the number **7** **IN**. She got **17** **OUT**.



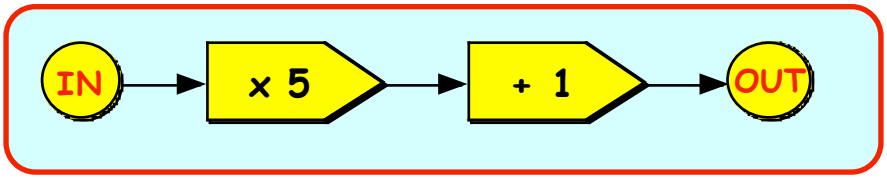
Exercise 2

1. Look at the number machine **above**.

What number comes **OUT** if Jane put **IN** :-

a 6 **b** 10 **c** 1 **d** 12 **e** 0 ?

2. Look at this combined number machine.

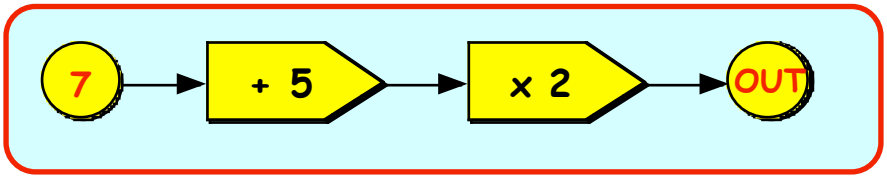


What number comes **OUT** when we put **IN** :-

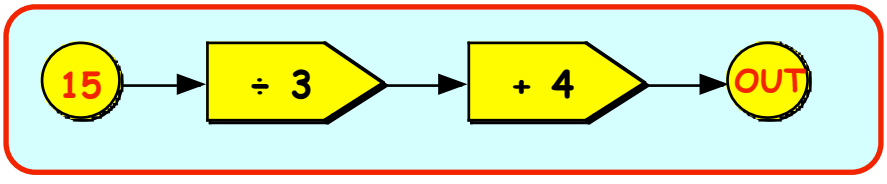
a 2 **b** 5 **c** 7 **d** 20 **e** 0 ?

3. Write down the number that comes **OUT** of each machine :-

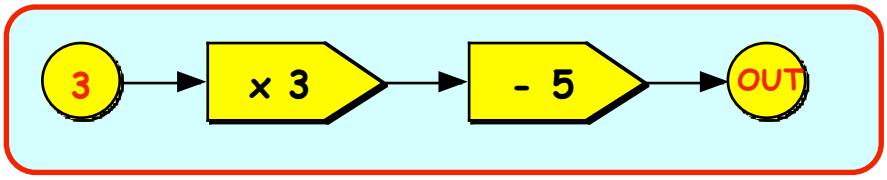
a



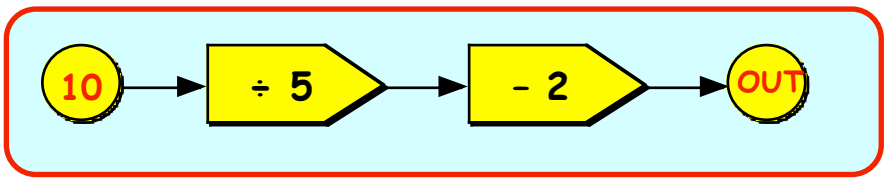
b



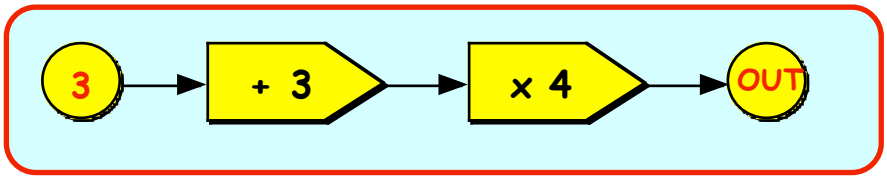
c



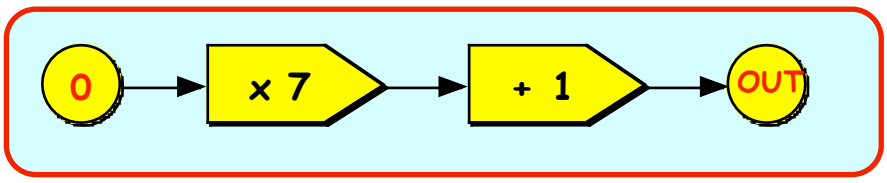
d



e

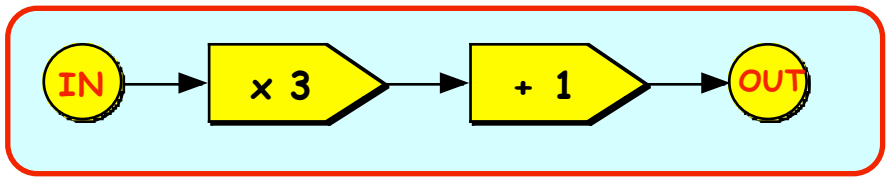


f

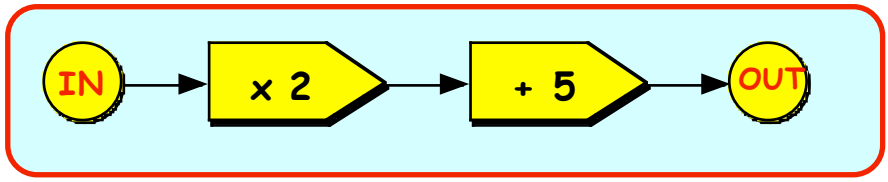


4. Shown are two combined number machines.

Machine A .....



Machine B .....



a What number comes out when **7** is put into machine **A** ?

b What comes **OUT** when these numbers are put **IN** :-

i 5 into machine **A**

ii 6 into machine **B**

iii 0 into machine **B**

iv 10 into machine **A** ?

c What number is put **IN** when these numbers come **OUT** :-

i 31 out of machine **A**

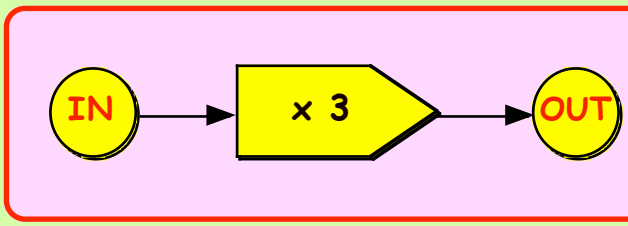
ii 15 out of machine **B**

d A number is put into both machines. The **same answer** comes out.

What number must have been put **IN** ? (* very difficult)

Algebra and Number Machines

Jane puts **letters** into this number machine.



She puts **IN** the letter ***a***. OUT comes ***a*** times **3** .... this is written as **3*a***.

She puts **IN** the letter ***k***. OUT comes ***k*** times **3** .... this is written as **3*k***.

Exercise 3

1. Use the number machine above.

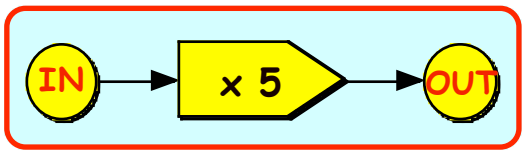
What comes **OUT** when Jane puts **IN** the letter :-

a *y* **b** *p* **c** *h* **d** *t*?

2. Look at this number machine.

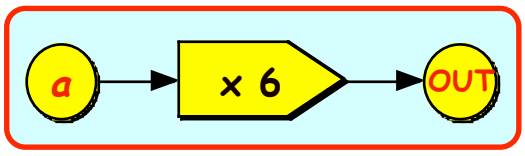
What comes OUT if Jane puts in :-

a *x* **b** *y* **c** *k*?

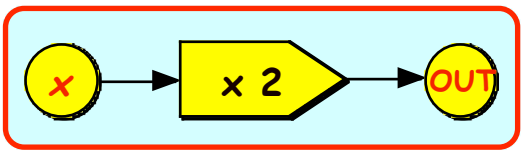


3. Write down what comes **OUT** in each number machine below :-

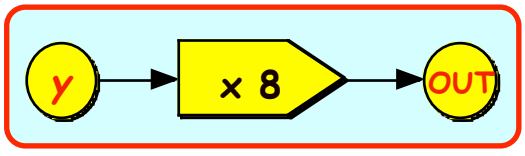
a



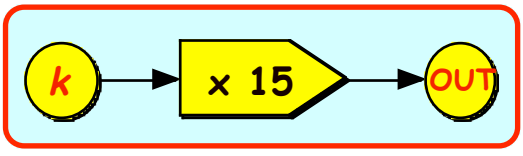
b



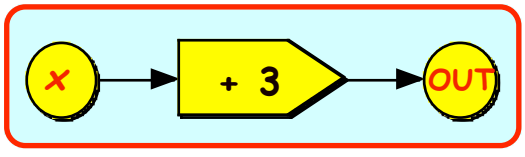
c



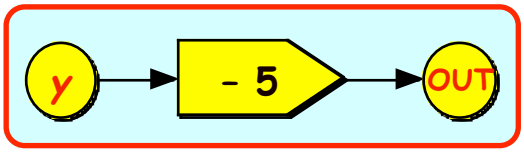
d



e



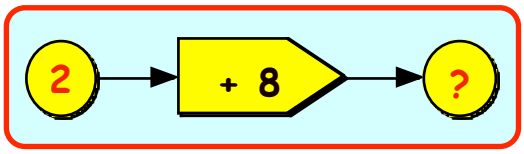
f



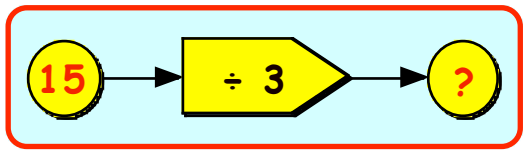
Topic in a Nutshell

1. Write down the number that comes **OUT** of each number machine :-

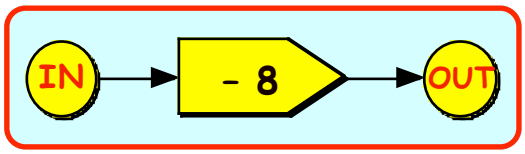
a



b



2. Look at this number machine.



a What number comes **OUT** when you put **IN** the number :-

i 12 **ii** 50 **iii** 8 **iv** 107 ?

b What number is put **IN** if the number **OUT** is :-

i 10 **ii** 20 **iii** 8 **iv** 78 ?

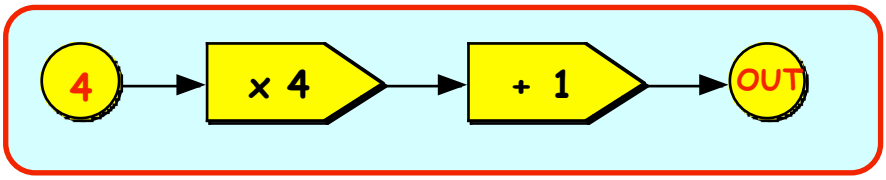
3. One pizza costs £3.

a Write down a **number machine** to show how to find the cost if you know the **number** of pizza's.

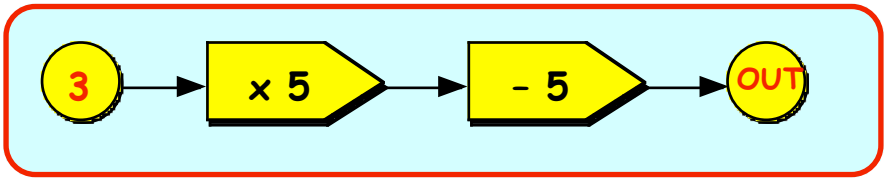
b Use your number machine to find the cost of eight pizza's.

4. Write down the number that comes **OUT** of each number machine :-

a



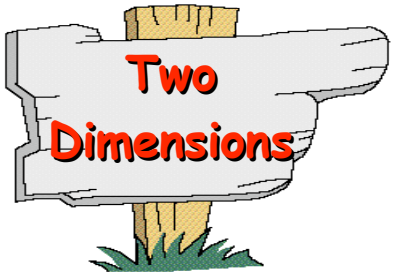
b



5. A number is put **IN** both number machines in question 4.
The **same** answer comes **OUT** both times.

What **number** must have been put in both machines ?

Chapter 8

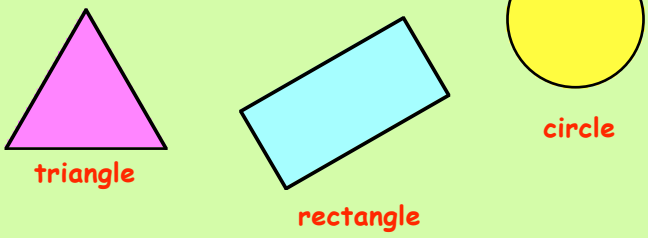


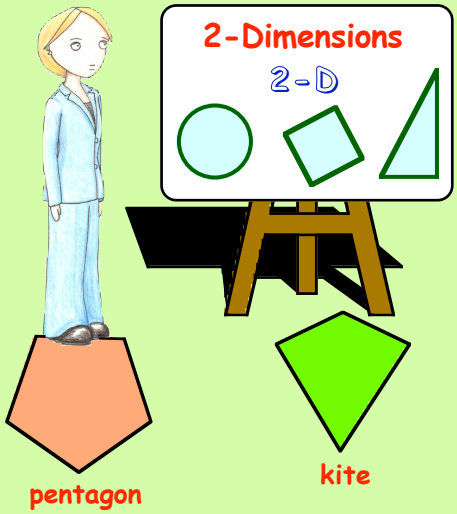
2 Dimensions

Shapes which are drawn on paper or on a blackboard or interactive whiteboard are called

FLAT shapes or **2-DIMENSIONAL** shapes.

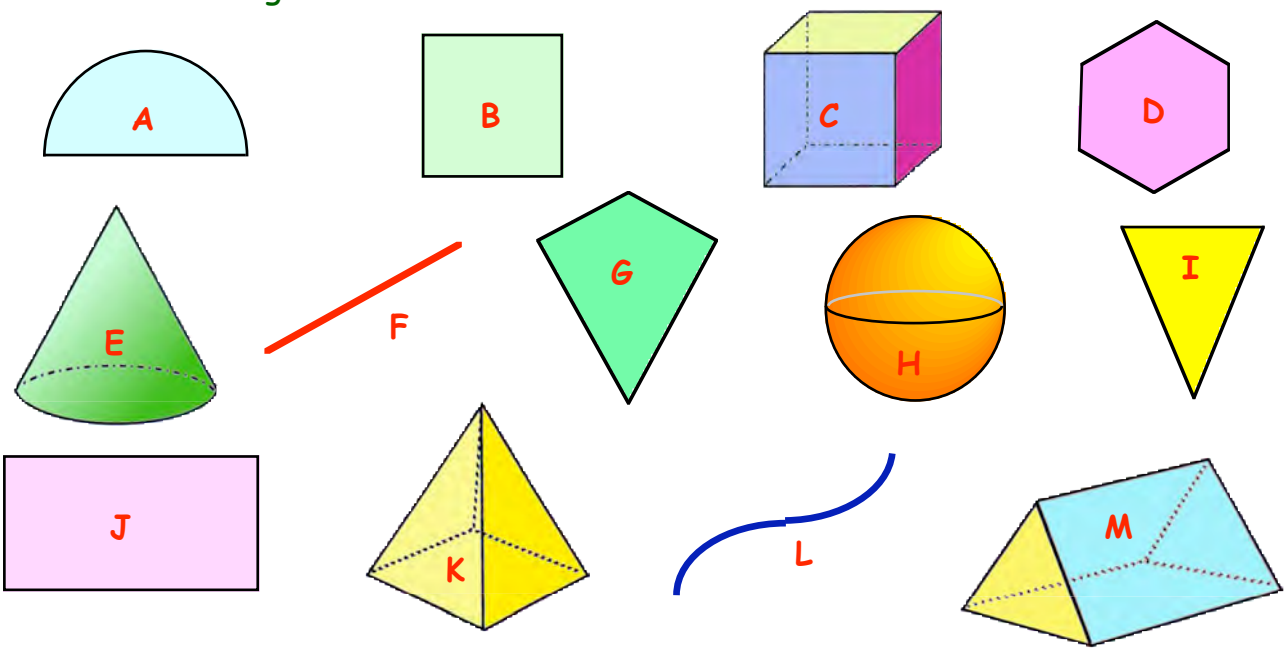
Examples :-





Exercise 1

1. Look at the figures drawn below :-



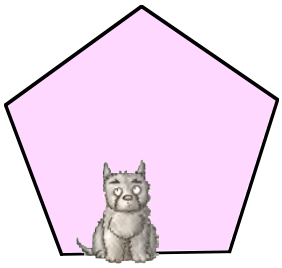
a Which of them are **2-dimensional** shapes ?

b Make a neat sketch of each 2-dimensional shape - write its name beside it.

c There are FIVE **3-dimensional** shapes (solid shapes). Can you name them ?

d Shape **F** is a **1-dimensional** shape. Which other shape is 1 dimensional ?

2. Look at this shape.

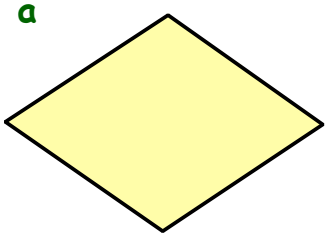


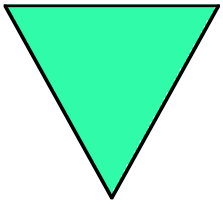
a Name this type of shape.

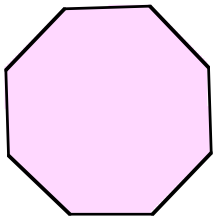
b How many **edges** does it have ?

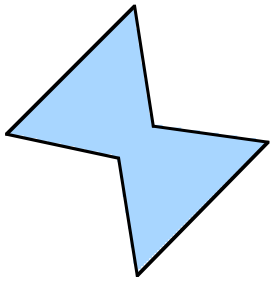
c How many **corners** does it have ?

3. Write down how many **edges** and **corners** each shape below has :-

a 

b 

c 

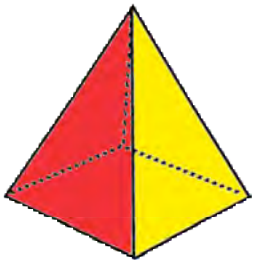
d 

4. This 3 dimensional shape is called a **CUBOID**.

a How many **faces** has it ?

b What shape is the **blue** face ?

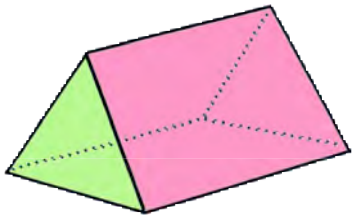
c What shape is the **red** face ?

5. 

This shape is called a **square based Pyramid**.

a What shape is the **bottom** face ?

b What shape is the **red** face ?

6. 

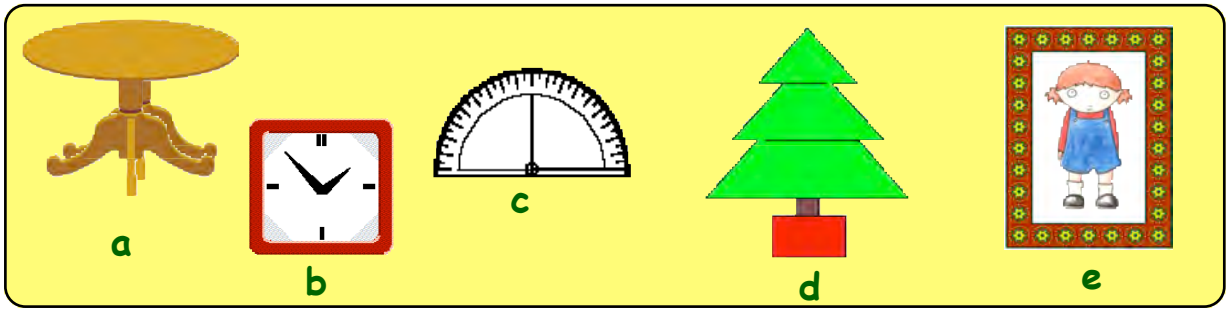
a Name this shape.

b What shape is the **green** face ?

c What shape is the **pink** face ?

7. Look at these shapes found in everday life.

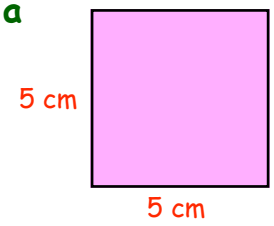
Write down the **2 dimensional shapes** (squares, circles, triangles, ...) that you think are in each shape.



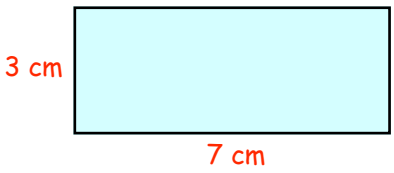
8. Shown below are small rough **sketches** of **2-dimensional** shapes.

Use a ruler to make accurate full sized drawings of each shape.

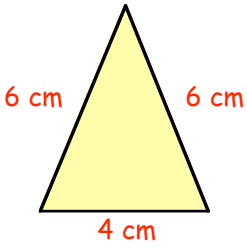
a



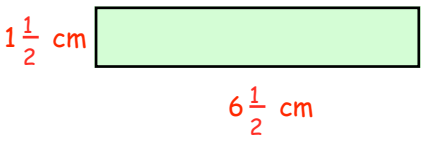
b



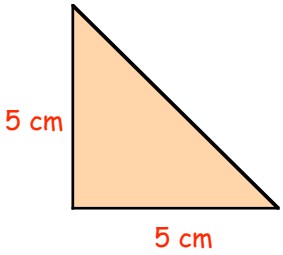
c



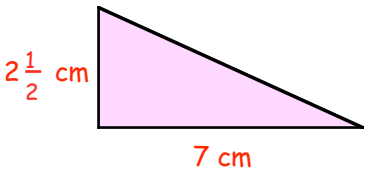
d



e

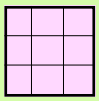


f

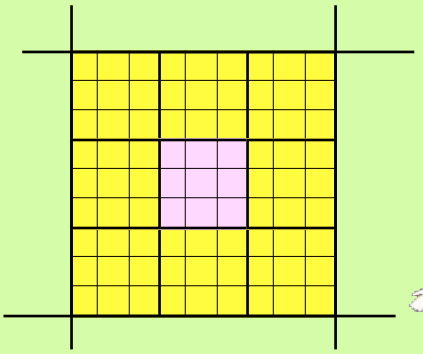


Tiling

Look at this simple shape.

square 

Can you see that if you have lots of these squares, you could fit them together and cover your jotter with them ?



A shape which can cover a page (**with no gaps**) is said to

"Tile the Page" [cover it].

W'Sheet 8·1

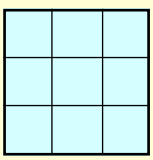
Exercise 2

(**You will need $\frac{1}{2}$ cm squared paper for this exercise**)

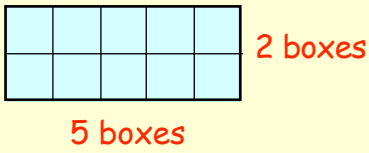
1. **a** In your jotter, draw the **square** and colour it in.

b Now, surround your square with 8 more of these squares to show how it "**tiles**" the page.

c Colour these squares using different colours.



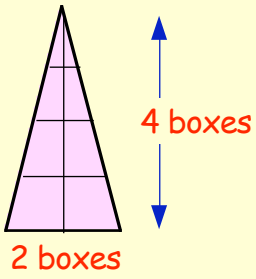
2. **a** In your jotter, draw this **rectangle** and colour it in.



b Surround your rectangle with other identical rectangles to show how it "**tiles**" the page.

c Colour these rectangles using different colours.

3.



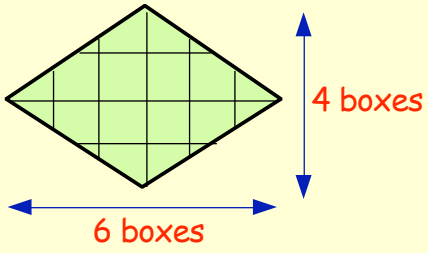
a This time, draw a triangle **2 boxes** wide and **4 boxes** high and colour it.

b Show how to "tile" the paper by surrounding it with identical triangles.
(*Some will have to be upside down*).

c Colour these in and create a nice pattern.

4. **a** Copy this diamond shape onto squared paper and colour it in.

(Do you know the mathematical name for this shape ?
hint :- it starts with **rh**.....)

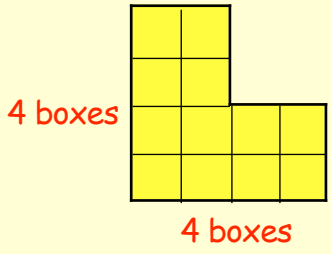


b Show how to tile the paper with this shape and colour your pattern.

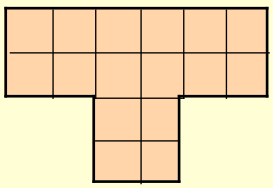
5. This **L-shape** is harder to tile.

a Make a neat copy of this L-shape and colour it in.

b Show how the shape can "tile" the paper completely surrounding it with identical tiles.



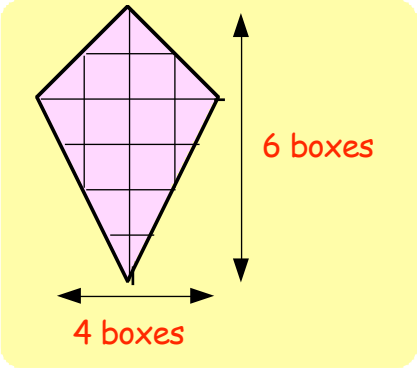
6.



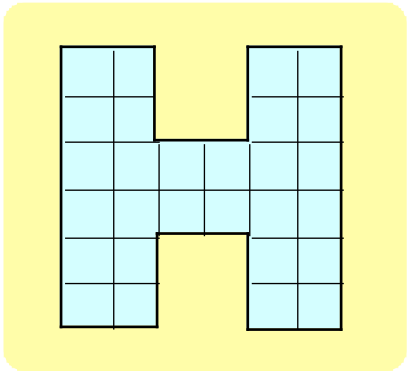
Draw this **T-shaped** tile and show how to tile the page by completely surrounding it with similar tiles.

7. **a** Draw this "**kite**" shaped tile.

b Show that it will tile by surrounding it completely using identical tiles.



8.



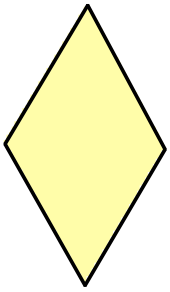
Hard !! Show how to tile part of your page with these **H-tiles**.

Colour your drawings.

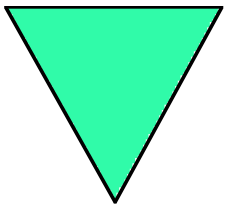
9. Ask your teacher if you can draw 1 or 2 of the shapes from Questions (1) - (7) on 1 cm paper and display the best drawings.

10. Look at each shape below.
Which shapes would make good tiles (write **yes** or **no**) :-

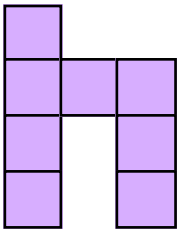
a



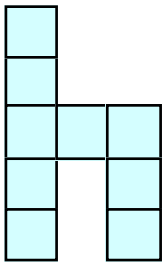
b



c



d



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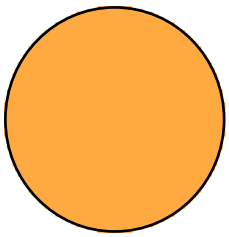

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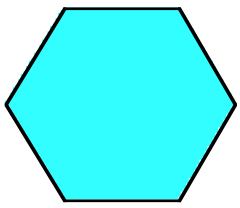
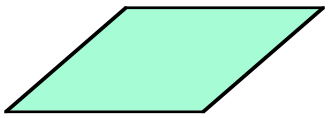
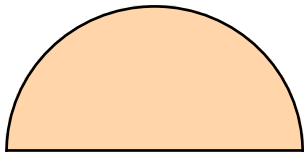


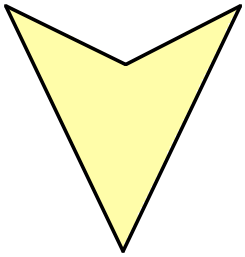
g



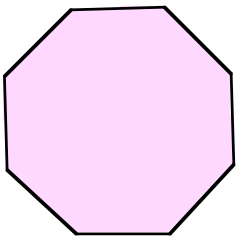
h



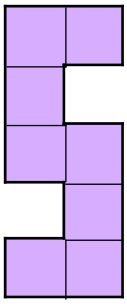
i



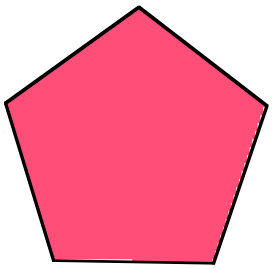
j



k



l



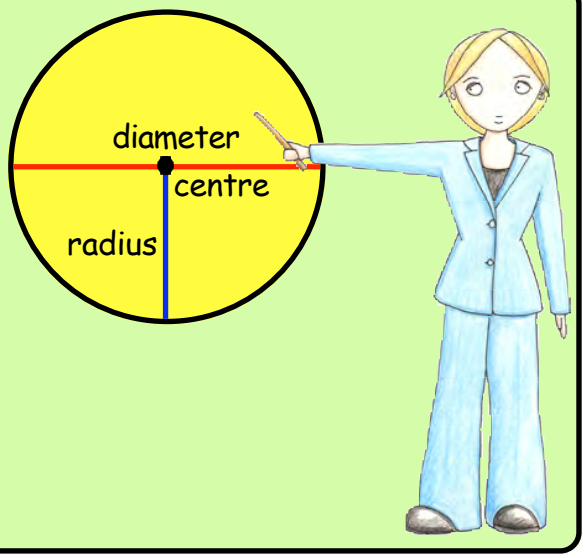
Circles

The **CIRCLE** is the most perfect of all mathematical shapes.

It has lots of lines of symmetry and looks the same no matter which way you view it.

The **RED** line right through the centre is called the **diameter** of the circle.

The **BLUE** line from the centre to the edge is called the **radius** of the circle.



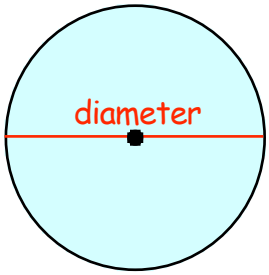
Exercise 3

1. Make a list of 10 objects, in the classroom, outside or at home which are **circular**.
   (*Circular means "in the shape of a circle"*).

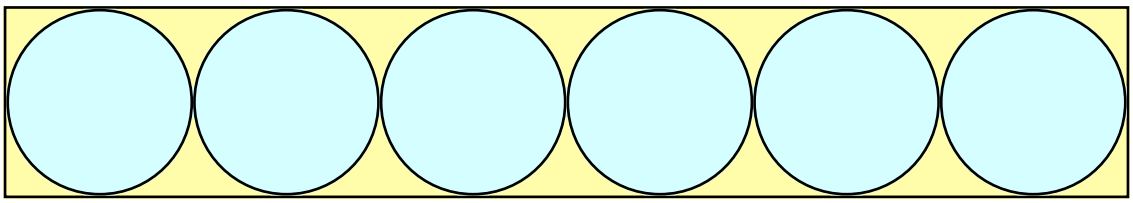
2. **a** Use a **2 pence** or **10 pence** coin to draw round and form a circle.

   b Draw a line through its centre and write in the word "**diameter**".

   c Measure the **diameter** of your circle (in mm).



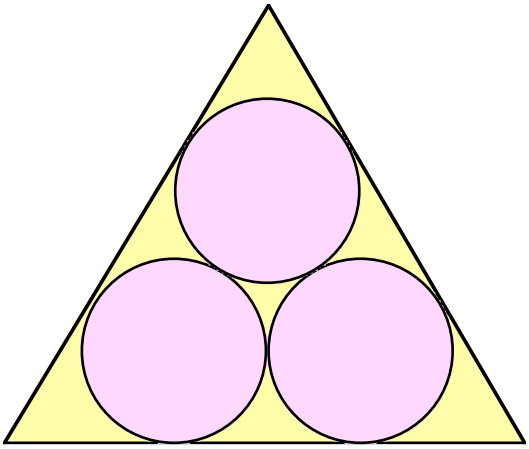
3. **a** Use a **coin** and a **ruler** to draw this pattern.

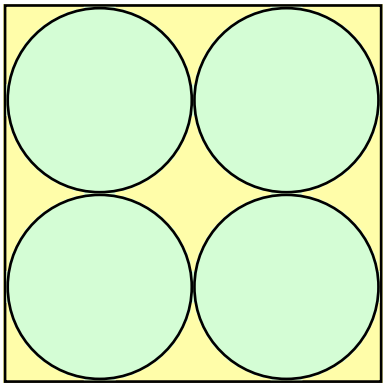


   b Colour your shape.

   c Measure and write down the **length** and the **breadth** of your shape.

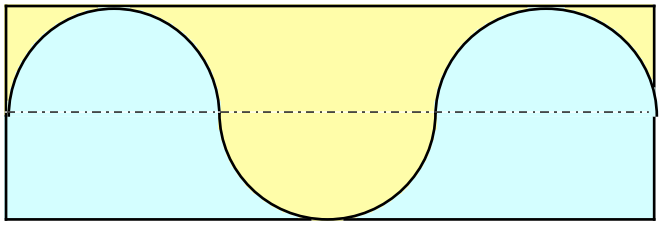
4. Use your **coin** and a **ruler** to draw this triangular shape and colour it in.
(*Hint - draw the circles first*)



5. 

Create this shape using **4 circles**.

6. Draw **half-way** round your coin to create this pattern formed from 2 "**half**" circles and a **rectangle**.

7. 

This one is quite difficult to make.

It is made from 3 **half-circles** and a **rectangle**.

Try it.

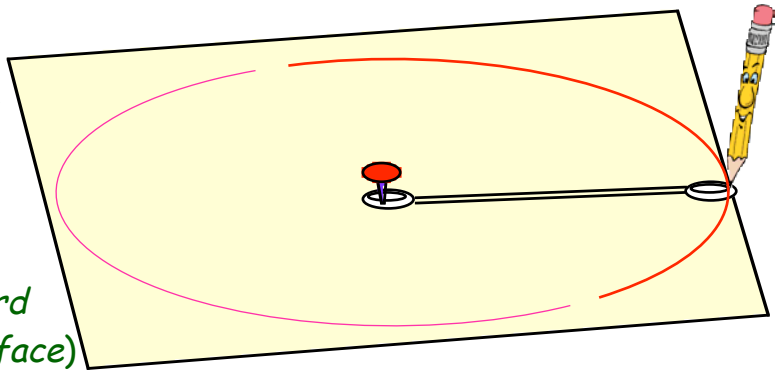
8. Now try to create 2 or 3 different patterns of your own using circles or half circles and show your teacher.

9. Find a large circle (a lid, cup) and create various patterns by drawing round the circles.
Show these to your teacher – you may like to redraw the best onto card and display them.

Optional :- It is possible to draw larger circles using a **pin**, a **piece of string** (wool or thread) and a **pencil**.
You will need a drawing pin and a short piece of string for this.

(**See next page**)

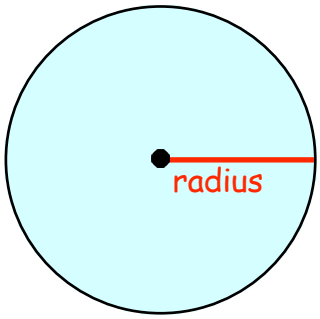
10. a Form a small loop at both ends of the piece of string.



b Push the pin through one loop and hold it against the piece of paper.
(*do not push the pin too hard or you may damage the surface*)

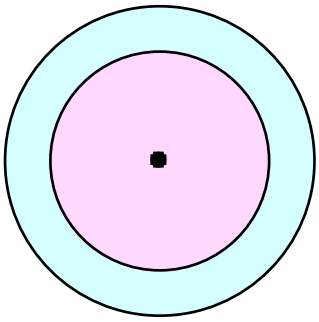
c Put the pencil point through the other loop and carefully draw round the pin.
(*keep the string tight at all times*)

– you should have drawn a fairly neat circle.



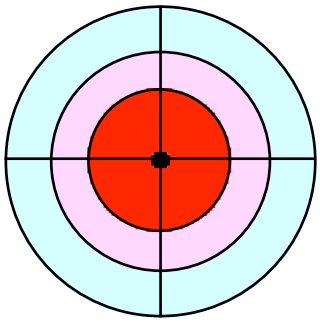
d Draw a line from the centre to the edge and write the word **RADIUS** beside it.

11.



By shortening the string a little, try to create this "**ring shape**" and colour it in.

12. Try to create this "bulls eye" pattern.

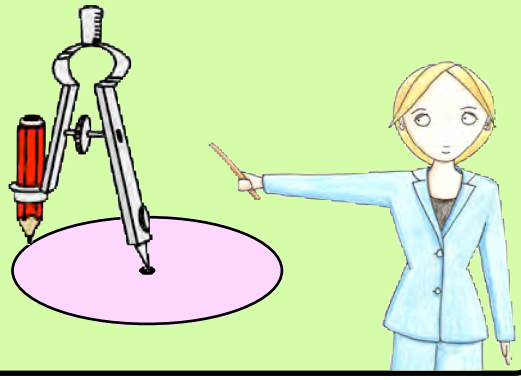


Using Compasses

A special mathematical instrument used to draw circles is called a

"**pair of compasses**".

By placing the point firmly on your jotter and lightly rotating the pencil, perfect circles can be created.



Exercise 4

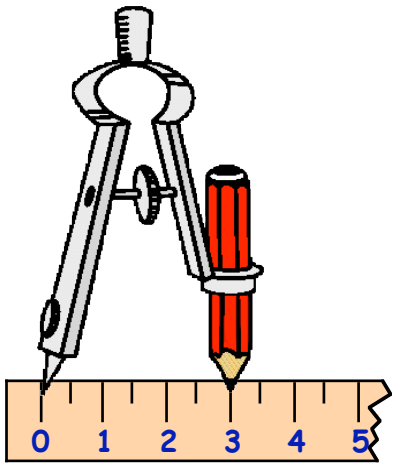
(You will need a pair of compasses and a ruler here)

1. Set your compasses so that the distance from the sharp point to the pencil point is **3 centimetres**.
(*this is called the **RADIUS** of the circle*)

   a Draw a neat circle with radius **3 cm**.

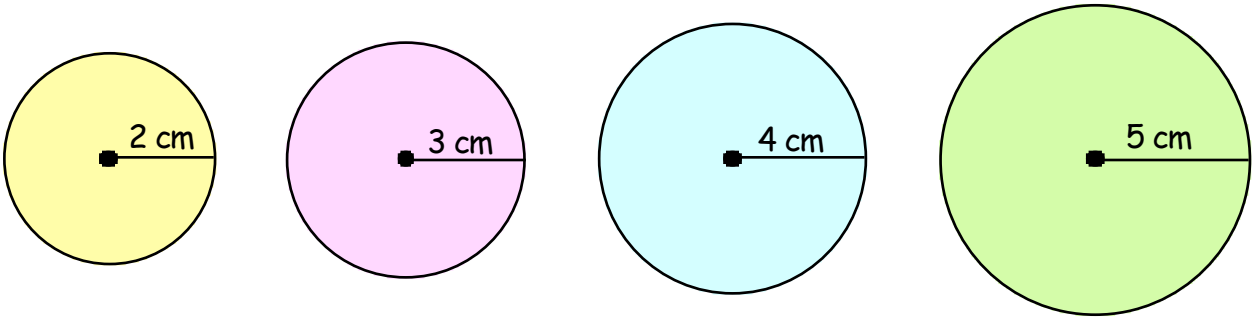
   b Draw in the radius and mark it with 3 cm.

   c Colour in your circle.

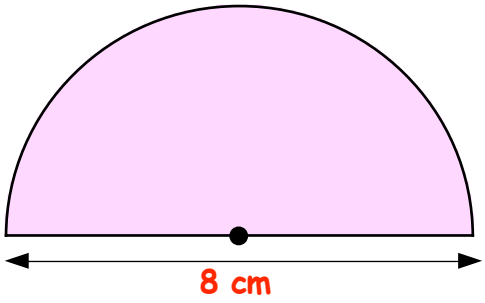


2. Use your compasses to draw a circle with radius **6 cm**.

3. Try to draw this set of circles.



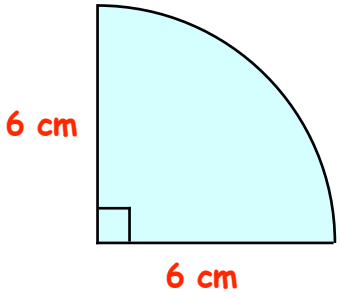
4.



Use your compasses and your ruler to draw this **half circle**.
(*what **radius** must you use ?*)

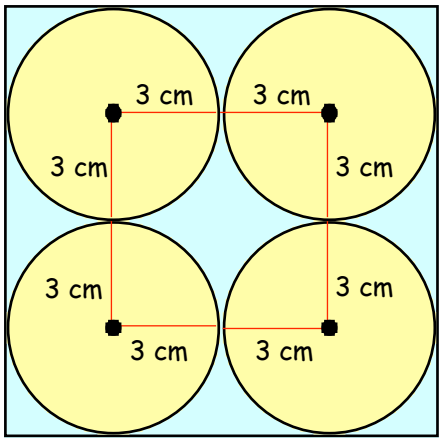
Colour your half circle.
(it is called a **semi-circle**
- **semi** means **half**)

5. Use your compasses to draw this **quarter circle**.

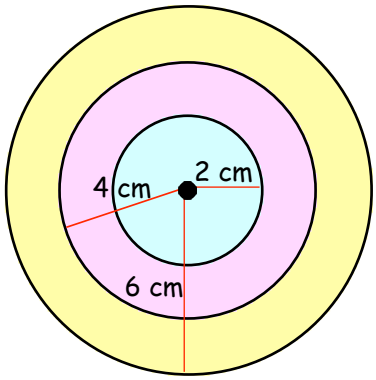


6. Try to draw each of the following shapes accurately and colour them in.

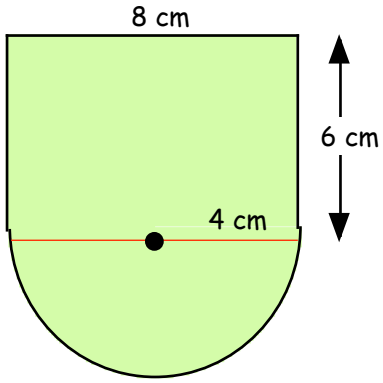
a



b



c



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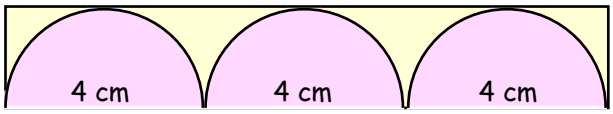
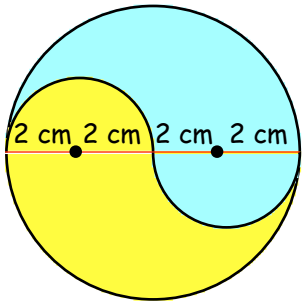
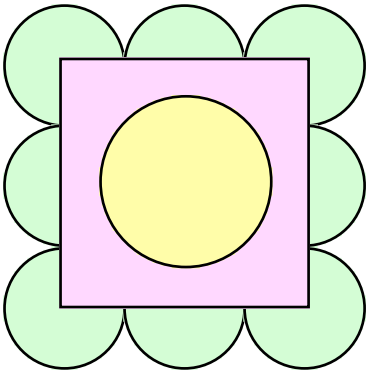


e



f

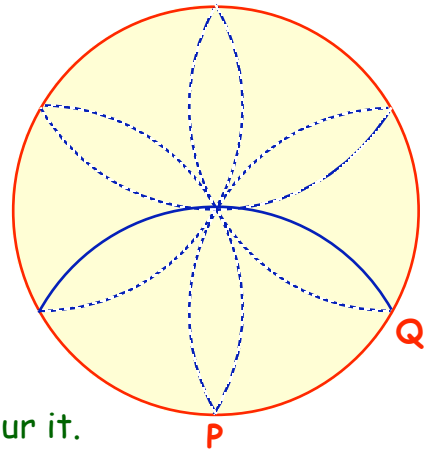


7. a Set your compasses to a radius of 4 cm and draw a whole circle.

b Keep the radius of 4 cm - put the compass point at **P** and draw the part circle (**blue**).
It meets the big circle at **Q**.

c Now move your compass point to **Q** and repeat.

d Repeat until you have drawn this shape and colour it.



8. Re-draw some of the above shapes on card and create your own designs to make a display.

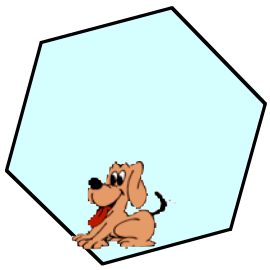
Topic in a Nutshell

1. Listed below are eight mathematical shapes.

   Write down the **four** which are **2-dimensional**.

   Circle **Cube** **Rectangle** **Sphere** **Kite** **Pentagon** **Pyramid** **Line**.

2. Look at this shape.



   a Name the shape.

   b How many **edges** does it have ?

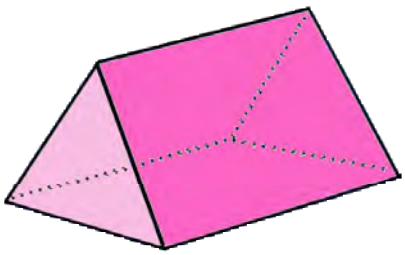
   c How many **corners** does it have ?

3. Think of a **cube** !

   a How many **faces** does it have ?

   b What **shape** are all of these faces ?

4. Here is a **triangular prism**.

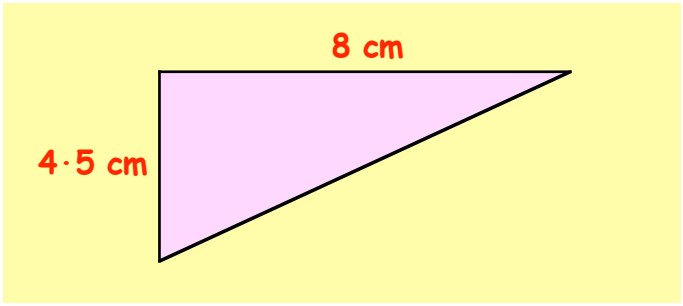


   a How many **faces** does it have ?

   b How many of these **faces** are rectangles ?

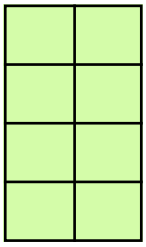
   c How many of the **faces** are triangles ?

5. On $^1/_2$ cm squared paper, make an accurate drawing of this triangle.

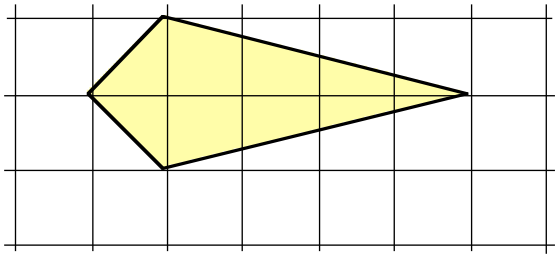


6. On $^1/_2$ cm squared paper, draw this rectangle in the centre of the page and colour it in.

   Surround your rectangle with 8 more similar rectangles and colour them in with different colours.

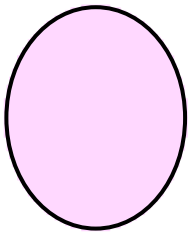


7. Draw this kite-shaped tile and show that it does "**tile**", by surrounding it completely with similar tiles.

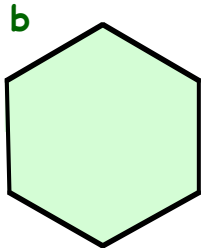


8. Which of the shapes shown below would make "**good tiles**" ?

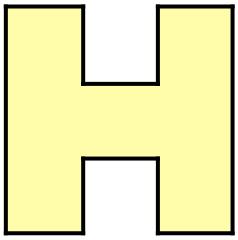
a



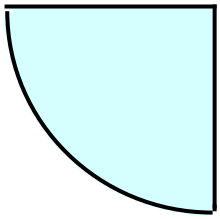
b



c



d

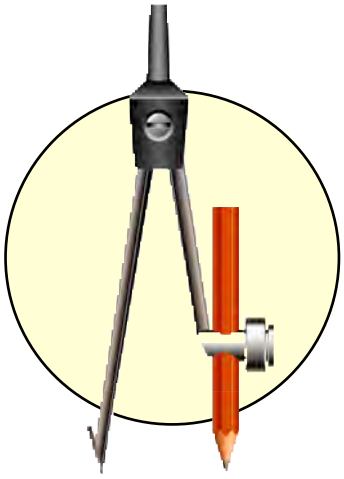


9. **a** Use a **Pair of Compasses** to draw a circle with radius 7 centimetres.

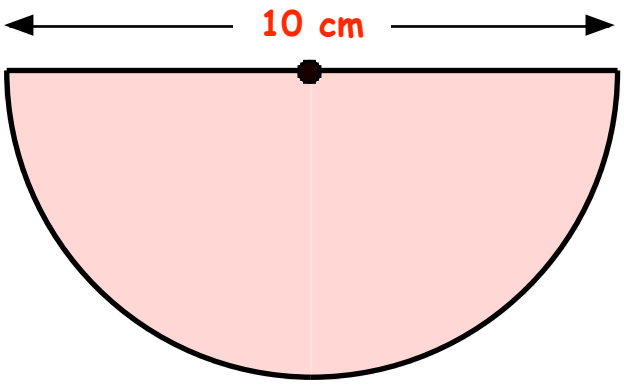
b Draw a line to show a diameter and write the word **diameter** along this line.

c Measure the diameter with a ruler.

d How does the diameter of any circle compare with its radius ?



10. Use your compasses to draw this semi-circle :-

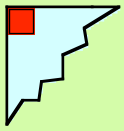


Chapter 9

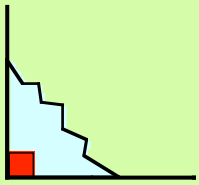
Angles

A Right Angle

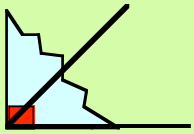
Tear a corner piece from the card, about 5 cm by 5 cm in size. This will be your **template** which you can use to find a right angle.



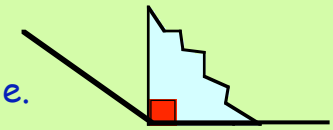
If your template fits exactly into an angle then the angle will be a right angle.
*(We mark it with a small **box**)*



The angle may be smaller than a right angle.



The angle may be larger than a right angle.

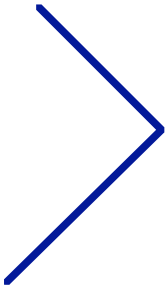


Exercise 1

1. Use your template to find out which of the following shapes are right angles.
   Write YES or NO.

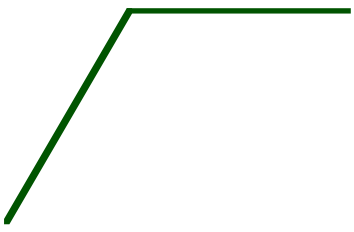
a

b

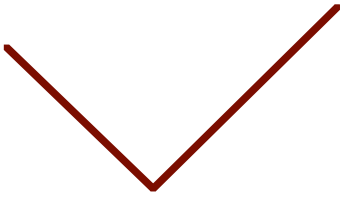


c

d



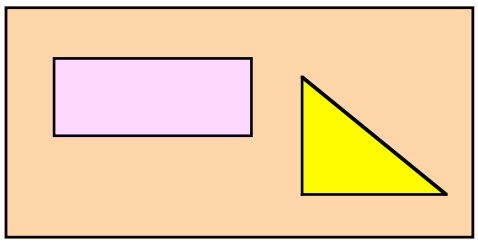
e



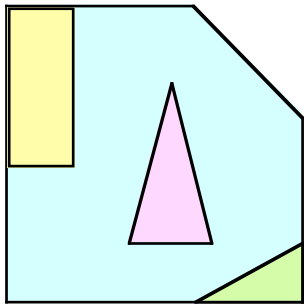
f

2. Using your template, write down how many right angles there are in the figures shown below :-

a



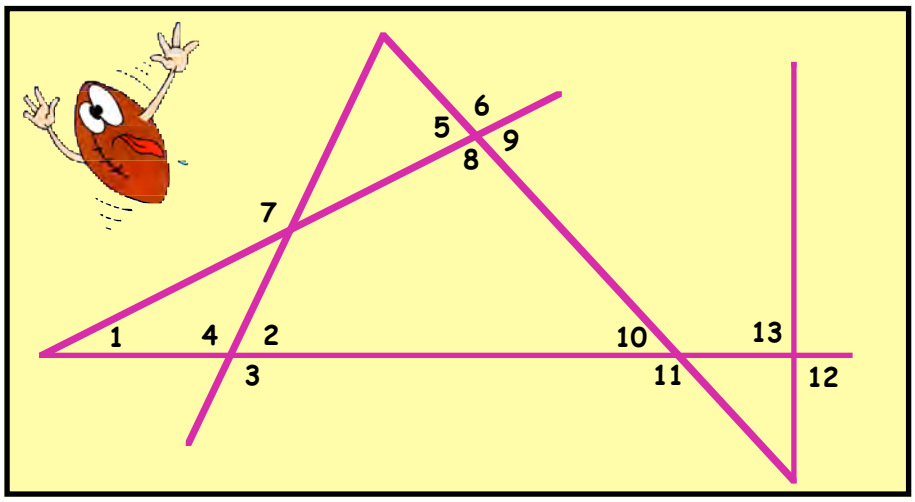
b



3. Here is the badge of the NewtonVale Rugby Club.

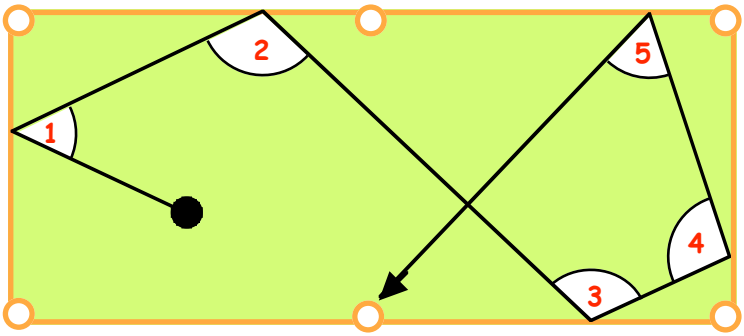
Use your template to decide if the angles are Right Angles (**R**). Bigger than a right angle (**B**) or Smaller than a right angle (**S**).

Answer.... **1** is **Smaller**. **2** is .....



4. Steve potted the black ball into a centre pocket to win a game of snooker.

The path the ball took showed how lucky Steve was to win.

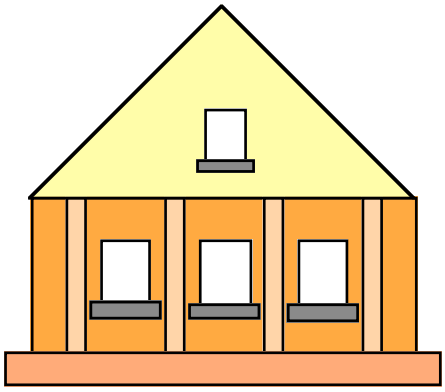


Use your template to find out which angles are :-

a right angled,
b bigger than a right angle,
c smaller than a right angle.

5. Look at the picture of a house.
How many **right angles** can you see ?

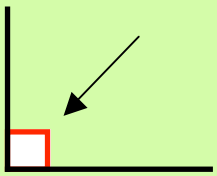
(at least 60 !)



An angle is measured in degrees (°).

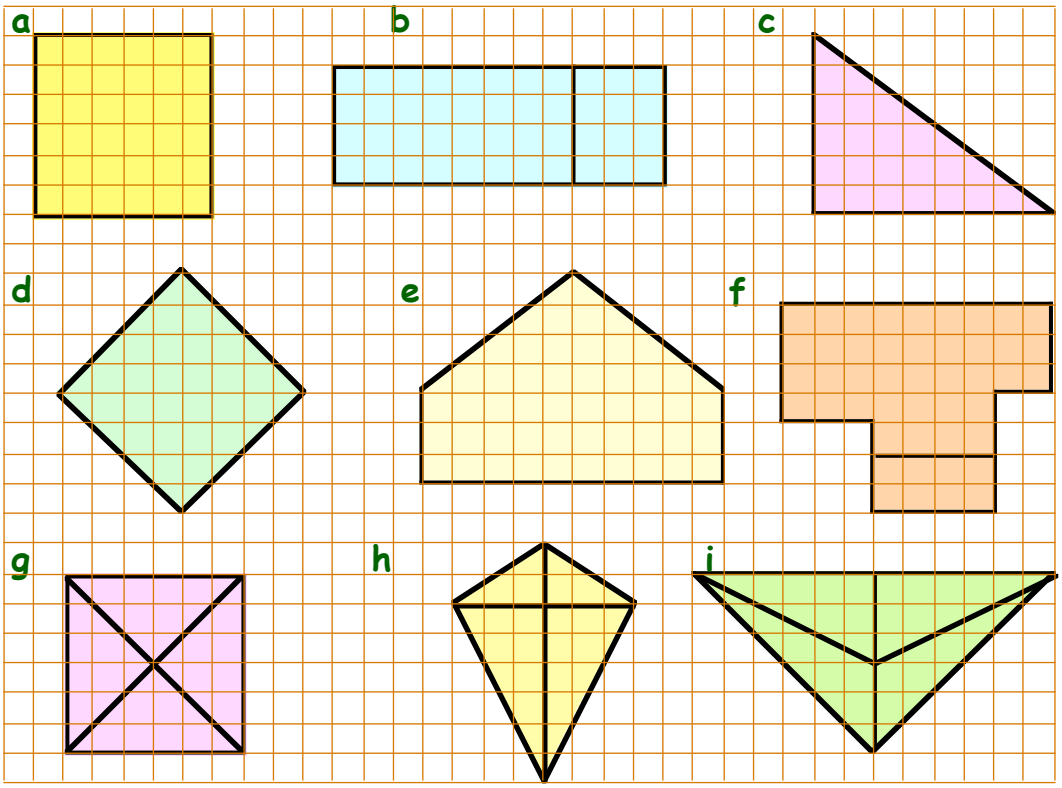
A right angle measures 90°.

When we draw a right angle, we mark its corner with a small box.



6. Copy the following shapes onto squared paper and mark each right angle with a box.

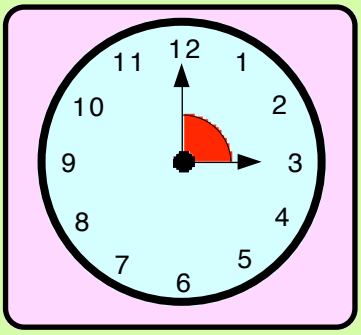
W'Sheet 9·1

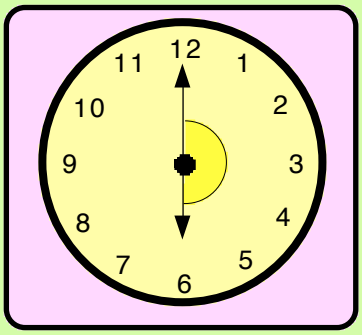


Quarter-turn, Half-turn and Complete Turn

As the hand of a clock moves from the 12 round to the 3 it sweeps through a right angle - **90°**.

This is known as a **Quarter-turn**.



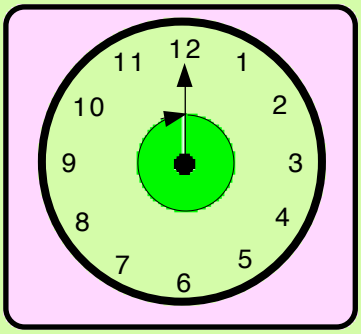


As the hand of a clock moves from the 12 round to the 6 it sweeps through 2 right angles - 2 x 90° = **180°**.

This is known as a **Half-turn**.

As the hand of a clock moves from the 12 right round to the 12 again it sweeps through 4 right angles - 4 x 90° = **360°**.

This is known as a **Complete-turn**.
or **One Revolution**.



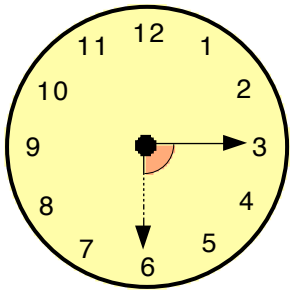
Exercise 2

1. How many degrees are there in a :-

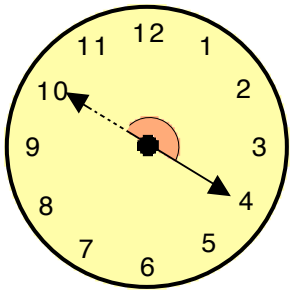
   a quarter-turn **b** half-turn **c** complete turn ?

2. How many degrees does the minute hand move through on these clock faces ?

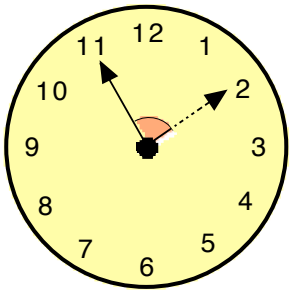
a



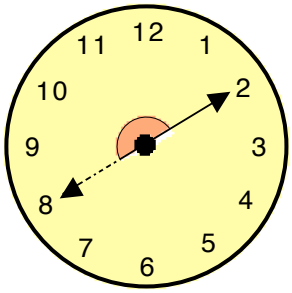
b



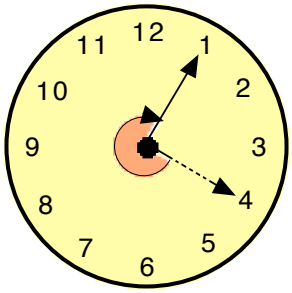
c



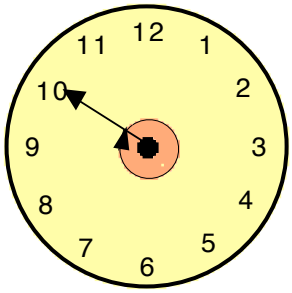
d



e



f



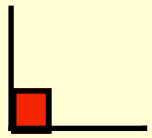
3. On a clock face, how many degrees does the minute hand sweep through when it moves **clockwise** from the :-

a **6** round to the **9** **b** **7** round to the **1** **c** **2** round to the **5**

d **3** round to the **12** **e** **5** round to the **8** **f** **8** round to the **5**

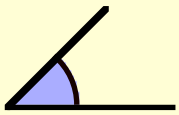
g **4** round to the **4** **h** **1** round to the **10** **i** **12** round to the **1** ?

Types of Angles



This angle is called a **right angle**.

It measures exactly 90°.



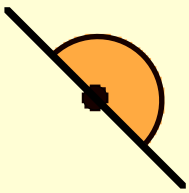
This angle is called an **acute angle**.

It is smaller than 90°.

This angle is called an **obtuse angle**.

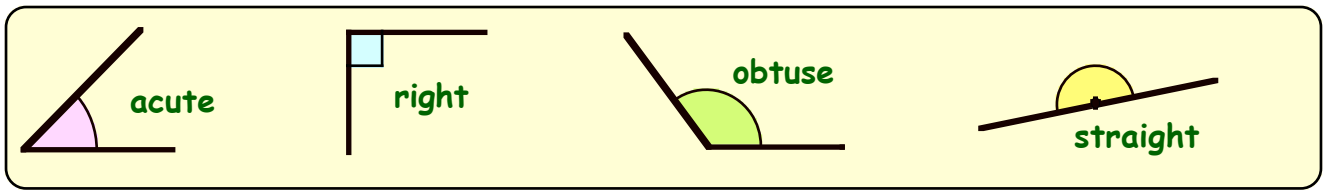
It is larger than one right angle
but smaller than two right angles.

It measures larger than 90° but smaller than 180°.



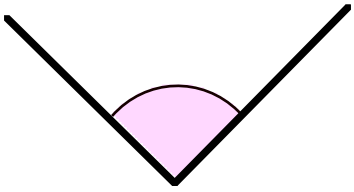
This angle is called a **straight angle**.

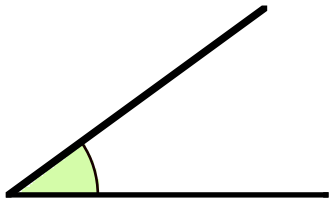
It is formed from two right angles
and measures exactly 180°.

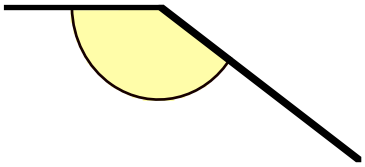


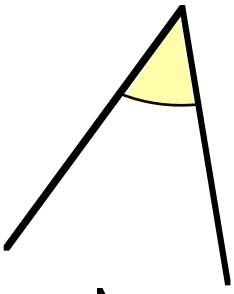
Exercise 3

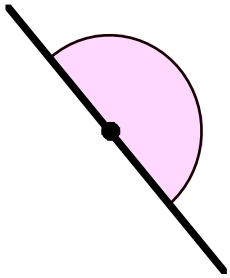
1. Use a word from the list above to describe the coloured angles below :-

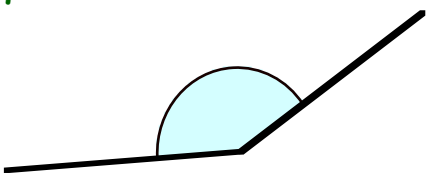
a 

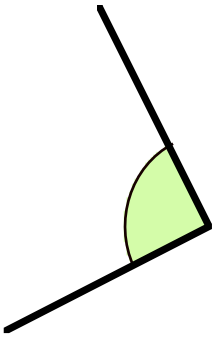
b 

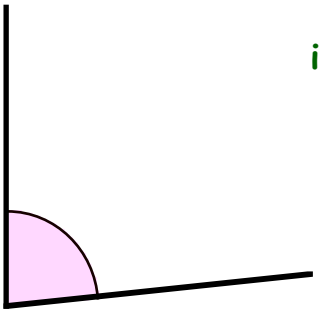
c 

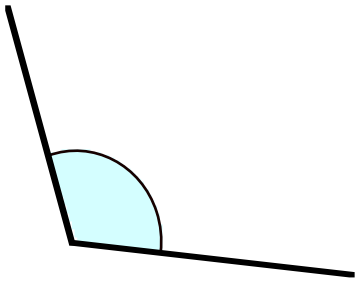
d 

e 

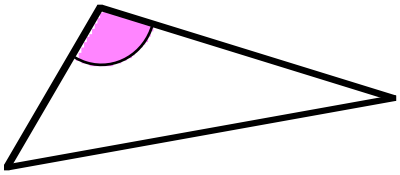
f 

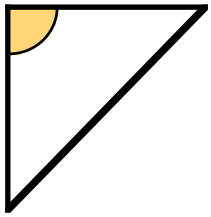
g 

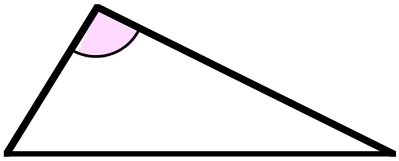
h 

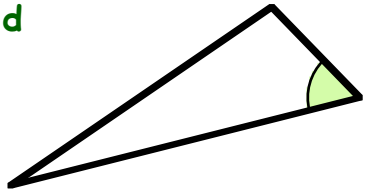
i 

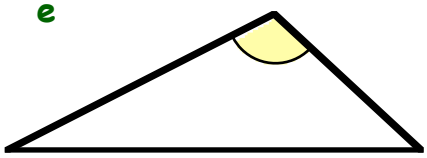
2. What **type** of angle is shown coloured in the following triangles :-

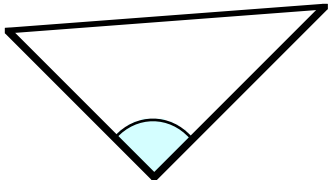
a 

b 

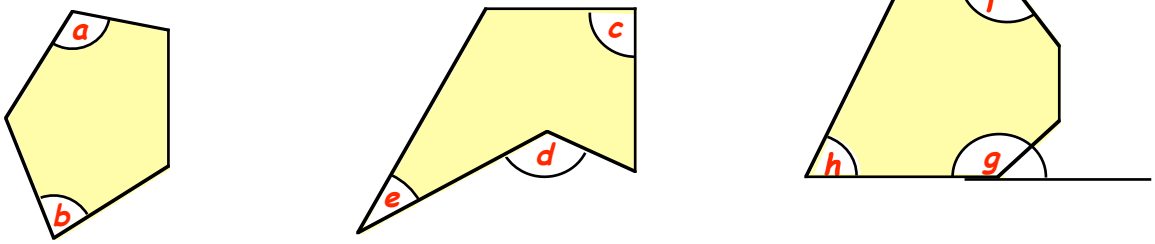
c 

d 

e 

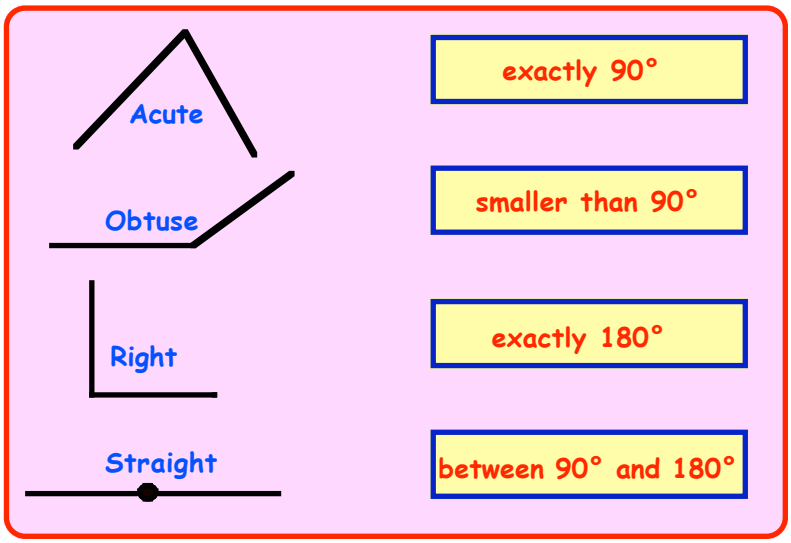
f 

3. Look at the angles marked **a**, **b**, **c**, **d**, **e**, **f**, **g** and **h**.
Write down what type of angle each one is :-



4. **Copy** the diagrams shown opposite.

Match the **type** of angle with its **correct size** by drawing **arrows** between them.



5. Write down which of these angle sizes are **less** than **90°** :-

40°	100°	145°	25°	62°	172°	88°	91°

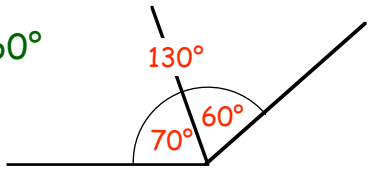
6. Write down which of these angle sizes are **bigger** than **90°** but **less** than 180° :-

65°	105°	178°	87°	150°	189°	92°	5°

7. Write down whether these angles are **acute**, **obtuse**, **right** or **straight** :-

a	20°	**b**	120°	**c**	75°	**d**	90°
e	135°	**f**	5°	**g**	179°	**h**	84°
i	180°	**j**	100°	**k**	1°	**l**	137°

8. When the acute angle 70° is added to the acute angle 60° an **obtuse angle** is made (130°).

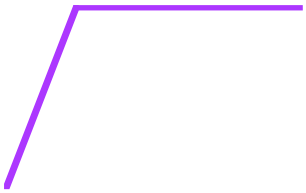
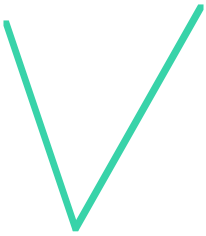
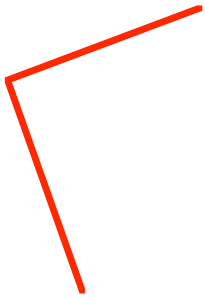


What kind (type) of angle is made when you add :-

a	60° + 50°	**b**	40° + 30°	**c**	90° + 20°
d	90° + 90°	**e**	70° + 80°	**f**	45° + 45°
g	70° + 110°	**h**	25° + 64°	**i**	25° + 65° ?

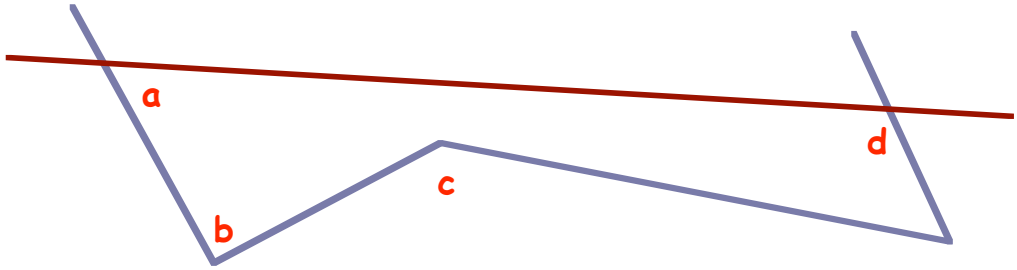
Topic in a Nutshell

1. Use your right-angled template to find out which of these angles are right angles. Answer **YES** or **NO**.

a  **b**  **c** 

2. Use your template to decide if angle **a**, **b**, **c** and **d** in the shape below is

Right Angled (**R**) Bigger than a right angle (**B**) Smaller than a right angle (**S**)



3. How many **degrees** are there in a :-

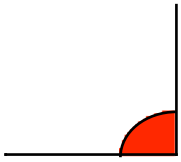
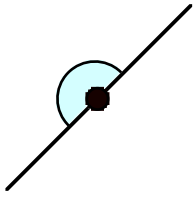
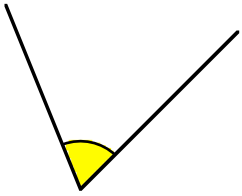
a right angle **b** straight angle **c** quarter-turn

d half-turn **e** complete turn ?

4. On a clock face, how many degrees does the minute hand turn through when it moves **clockwise** from the :-

a **1** round to the **4** **b** **2** round to the **8** **c** **3** round to the **3** ?

5. Use a word from - **acute**, **right**, **obtuse** or **straight** to describe the coloured angles :-

a  **b**  **c**  **d** 

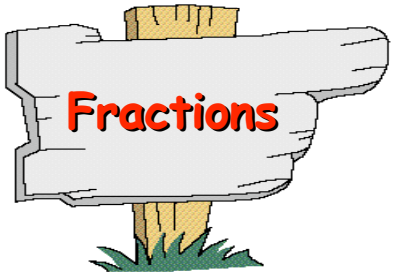
6. Write down whether these angles are **acute**, **right**, **obtuse** or **straight** :-

a 30° **b** 140° **c** 90° **d** 3°

e 178° **f** 180° **g** 89° **h** 91°.

Chapter 10

Calculators should NOT be used anywhere in this chapter.

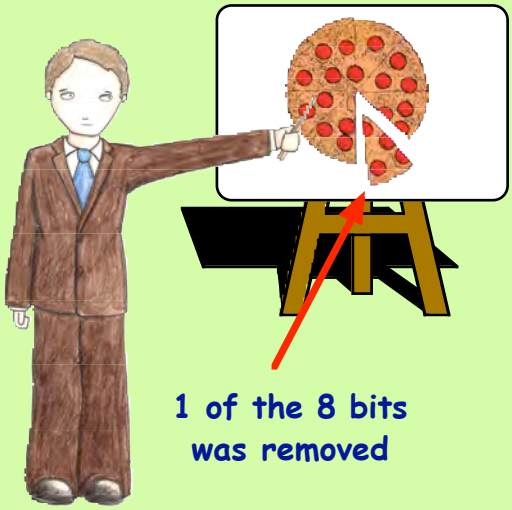


What is a Fraction ?

Imagine you have a pizza and cut it into **8** equal bits.

Each **bit** is "1 out of the 8" bits.

We can write this as a **fraction** as "**one eighth**" or :- $\frac{1}{8}$



1 of the 8 bits was removed

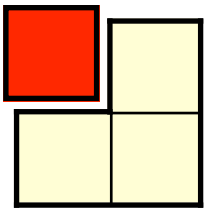
this tells you how many bits the shape was cut into

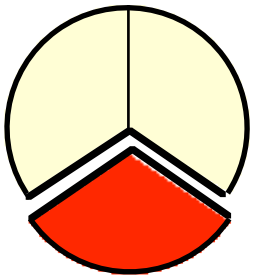
this tells you how many bits you are interested in

$\frac{1}{8}$

Exercise 1

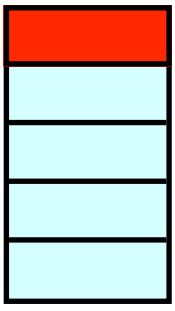
1. What fraction of this square is coloured **red** ?

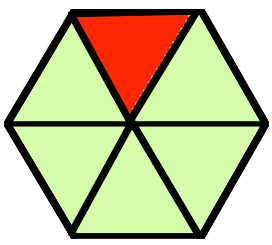


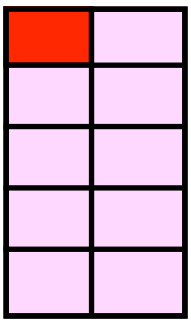
2 

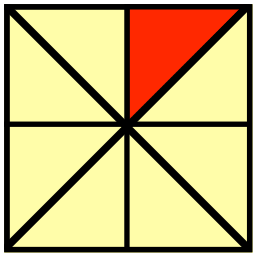
What fraction of this circle is coloured **red** ?

3. What fraction of each shape is the **red** bit.

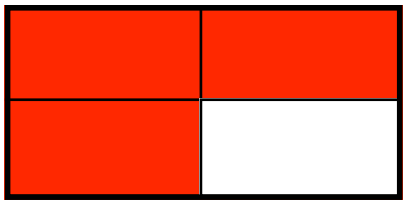
a 

b 

c 

d 

4. This rectangle has been split into 4 parts.

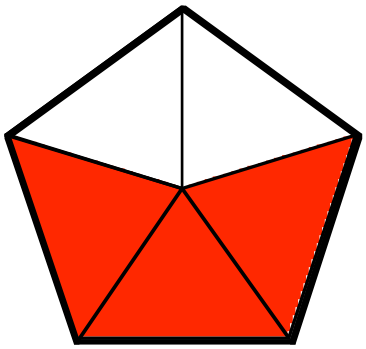


Copy these 2 sentences and complete them :-

" ..... of the **4 parts** of the rectangle are **red**".

=> "This means that $\frac{\cdots}{4}$ of the rectangle is **red**".

5.



a Name of this shape ?

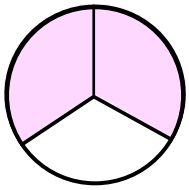
b How many parts has it been split into ?

c How many parts are **red** ?

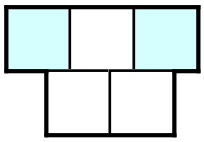
d What fraction of the shape is **red** ?

6. What fraction of each shape is coloured ?

a



b



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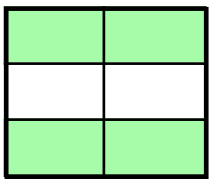

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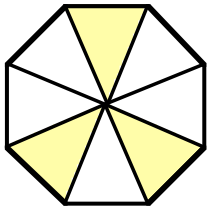
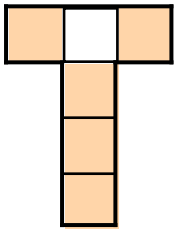


e



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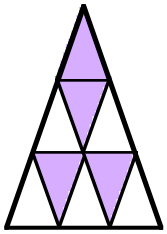

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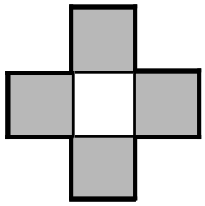
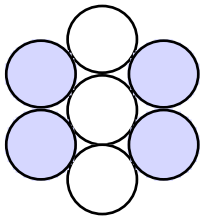


h

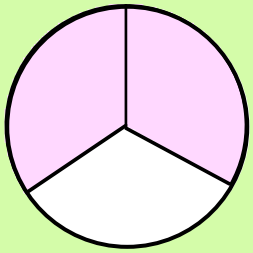


Look again at the eight shapes in question 6 above.

Can you see that for question **6 a** :-

- $\frac{2}{3}$ of the shape is coloured ?

=> So - $\frac{1}{3}$ of the shape is **NOT** coloured ?



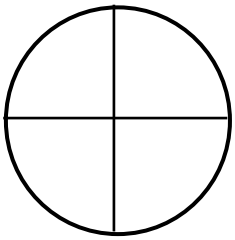
7. **a** What fraction of shape **6 b** (above) is **NOT** coloured ?

b Write down the fraction of each shape in **question 6** which is **NOT** coloured ?

W'Sheet 10·1

8. **a** Make a neat copy of this circle.
(*use a coin or circular object to draw it*)

b Use coloured pencils to show $\frac{3}{4}$ of it in **red**.

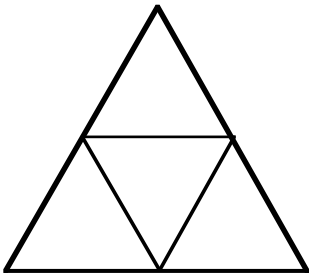


9.

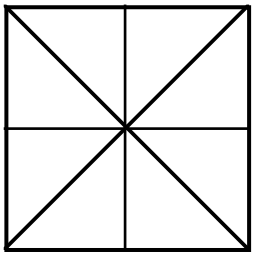
a Use a ruler to make a neat drawing of this rectangle.

b Colour $\frac{5}{8}$ of it **blue**.

10. Trace, or draw this triangle and colour $\frac{3}{4}$ of it **brown**.



11.



a Draw this square. Split it as shown.

b Colour in $\frac{5}{8}$ of it **orange**.

Of the **5** children at the party,
2 of them were boys.

Can you see that :-

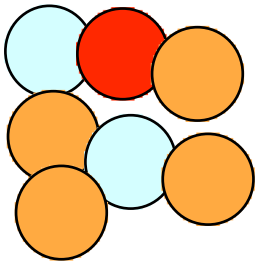
"**2** out of the **5** were boys" ?

or, written as a **fraction** :-

"$\frac{2}{5}$ of the children were **boys**"

12. $\frac{2}{5}$ of the children at the party were **boys**. What fraction were girls ?

13.



Of the 7 counters, 1 is **red**, 2 are **blue** and the rest are **orange**.

a What **fraction** (of the 7) is **red** ?

b What fraction is **blue** ?

c What fraction is **orange** ?

14. These are all the coins in Lucy's purse.

a How many coins are there altogether ?

b How many of them are 2p's ?

c What **fraction** of them are 2p's ?

d What **fraction** of them are 5p's ?

e What **fraction** of them are 20p's ?

15.

Frani's motorcycle journey lasted 10 minutes.
Of this, he was on the motorway for 7 minutes.

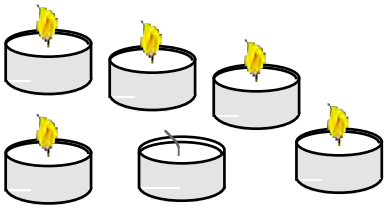
What fraction of the 10 minute trip
was Frani on the motorway ?

16. Tim gets £5 pocket money every week.

Last week he spent £3 of it in MacBurgers.

What **fraction** of his pocket money did
Tim spend in MacBurgers ?

17.



a What **fraction** of these candles are lit ?

b What **fraction** is **NOT** lit ?

18. The eye-colours of 12 girls are shown below.

Jane - **blue**	Lucy - **brown**	Alice - **brown**	Mari - **blue**
Annie - **brown**	Karen - **blue**	Nicki - **brown**	Lynn - **green**
Paula - **green**	Shona - **brown**	April - **blue**	Cath - **green**

a What fraction of the girls had **blue** eyes ?

b What fraction had **brown** eyes ?

c What fraction of the girls had **green** eyes ?

d What fraction did **NOT** have **blue** eyes ?

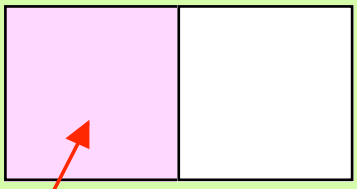
19. **a** Write down all the days of the week.

b Which days make up the **week-end** ?

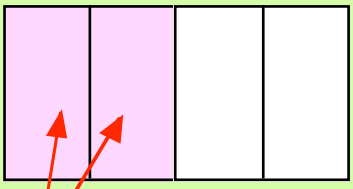
c What fraction of a whole week is the week-end ?

Equivalent Fractions

This rectangle has been divided up in **TWO** different ways :-

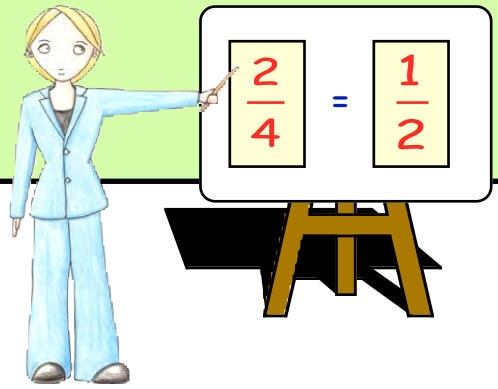


1 out of the 2 bits is shaded **pink** = $\frac{1}{2}$

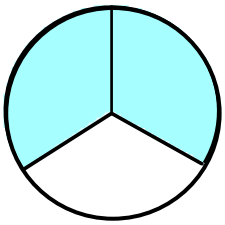


2 out of the 4 bits are shaded **pink** = $\frac{2}{4}$

Can you see from the diagrams that the two fractions $\frac{1}{2}$ and $\frac{2}{4}$ are **EQUAL** ?

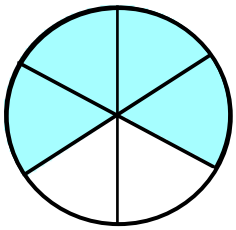


Exercise 2



1. This circle has been divided into 3 equal parts.

   a What fraction of the circle is coloured **blue** ?

   b 

   The same circle has been divided into 6 parts this time.

   What fraction this time is coloured **blue** ?

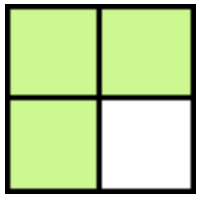
   Can you see that the same amount has been coloured **blue** both times ?

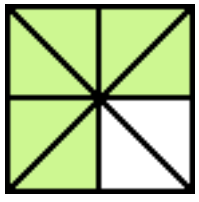
   c **Copy** this sentence and finish it :-

   "The 2 diagrams show that the fractions $\frac{2}{3} = \frac{\cdots}{6}$ are **equivalent**".

   ("**equivalent**" means "**the same as**").

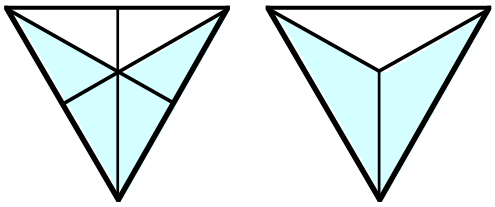
2. Use the two drawings opposite to write down the 2 fractions that are shown to be **equivalent** to each other.



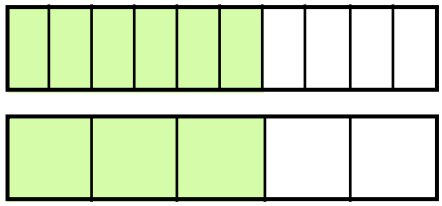


3. Use each pair of drawings below to write down the 2 fractions that are shown to be **equivalent** to each other.

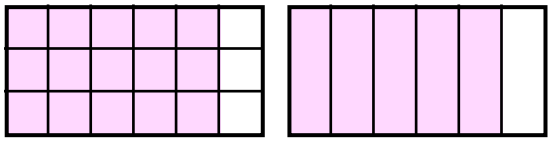
a



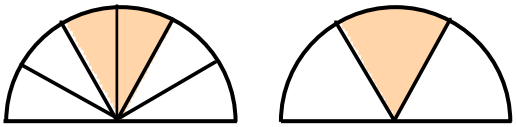
b



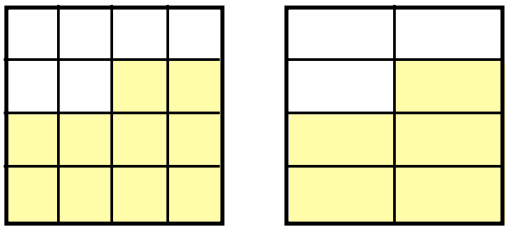
c



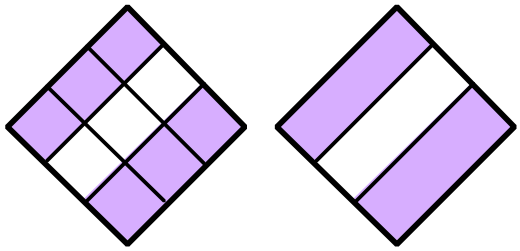
d



e



f

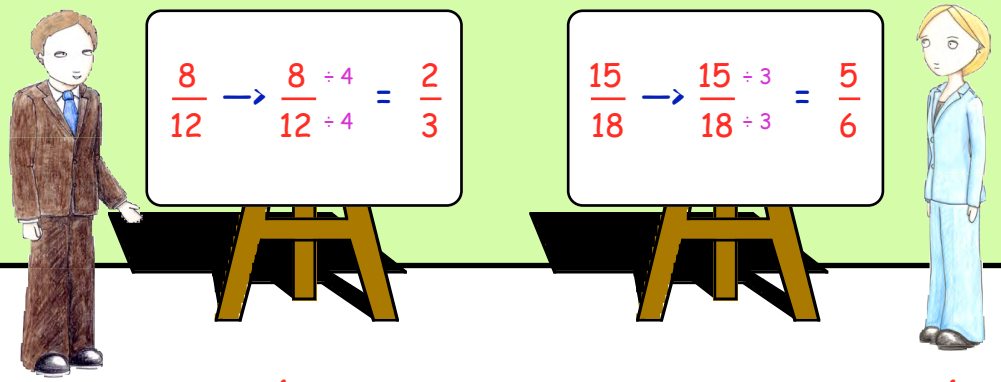


It is possible to **simplify** a fraction like $\frac{6}{10}$ as long as both the "**top**" part and the "**bottom**" part of the fraction can both be divided by the same number.

=> To simplify $\frac{6}{10}$, can you see that **6** and **10** are part of the **x 2 table** ?

=> **divide** both the 6 and the 10 (by 2) => $\frac{6}{10} \rightarrow \frac{6 \div 2}{10 \div 2} = \frac{3}{5}$

Two more examples :-



4. Simplify the fraction $\frac{4}{10}$ by dividing the **4** and the **10** by 2. $(\frac{4 \div 2}{10 \div 2} = \frac{\cdots}{5})$

5. Simplify the fraction $\frac{5}{15}$ by dividing the **5** and the **15** by 5. $(\frac{5 \div 5}{15 \div 5} = \frac{\cdots}{\cdots})$

6. Simplify each of the following by dividing top and bottom numbers by **2** :-

a $\frac{8}{10}$ **b** $\frac{4}{14}$ **c** $\frac{12}{22}$ **d** $\frac{10}{18}$.

7. Simplify each of the following by dividing top and bottom numbers by **3** :-

a $\frac{9}{12}$ **b** $\frac{3}{21}$ **c** $\frac{6}{15}$ **d** $\frac{21}{24}$.

8. Simplify each of the following by dividing top and bottom numbers by **5** :-

a $\frac{5}{15}$ **b** $\frac{10}{25}$ **c** $\frac{30}{35}$ **d** $\frac{15}{40}$.

9. Simplify the fraction $\frac{9}{15}$. (*Hint :- 9 and 15 are part of the x .... table*).

10. **(Knowing your tables really helps here)*****
Simplify each of the following fractions **as far as possible** by dividing the top and the bottom parts by the same number each time :-

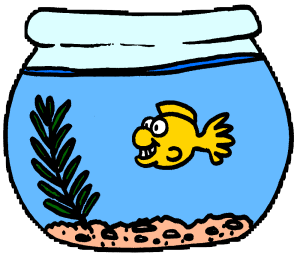
a $\frac{2}{10}$ **b** $\frac{3}{15}$ **c** $\frac{4}{12}$ **d** $\frac{5}{25}$

e $\frac{4}{18}$ **f** $\frac{12}{18}$ **g** $\frac{10}{30}$ **h** $\frac{15}{20}$

i $\frac{21}{28}$ **j** $\frac{20}{25}$ **k** $\frac{50}{60}$ **l** $\frac{24}{30}$

m $\frac{16}{24}$ **n** $\frac{7}{35}$ **o** $\frac{9}{21}$ **p** $\frac{10}{45}$

11. 5 of Lucy's 10 goldfish died in the bowl.



a Write this as a fraction. ($\frac{\ldots}{10}$)

b Now simplify this fraction.

12.

Ben had 30 pence. He spent 20 pence on a drink.

a What fraction of his money did Ben spend ?

b Simplify your answer.

13. Terry was cycling the **12 kilometres** to the coast.
He got a puncture and stopped after **10 kilometres**.

a What fraction of the journey to the coast had Terry cycled before stopping ?

b Simplify this fraction.

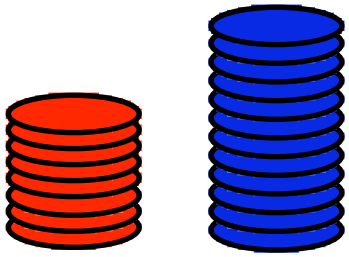
From now on, you must **always** simplify any fraction you get as an answer.

You must **never** leave it "un-simplified".

14. There are 12 months in a year.

What fraction of a year are the Summer months ?
(*June, July and August*)

15.



A bag contails 8 **red** counters and 12 **blue** ones.

a How many counters are there altogether ?

b What fraction of the counters are **red** ?

c What fraction are **blue** ?

16. Lucy had 6 pence, Nick had 4 pence and Ben had 10 pence.

a How much had they altogether ?

b What fraction of the total amount did Lucy have ?

c What fraction did Nick have ?

d What fraction did Ben have ?

17. Gemma wrote down how long she spent doing various things last Monday.

Gemma's Monday
Slept - 8 hours
School - 6 hours
Watched T.V. - 4 hours
Played outside - 3 hours
Did Homework - 1 hour
Ate meals - 2 hours

a How many hours are there in a day ?

b What fraction of the day did Gemma sleep ?

c Write down what fraction of Monday Gemma spent -

i at school **ii** watching T.V.
iii playing outside **iv** doing homework
v eating ?

Fraction of a Quantity

To find a fraction (like a $\frac{1}{2}$) of something —> you **divide**.

—> $\frac{1}{2}$ of 12p means "12p **divided by** 2" = 6p.

—> $\frac{1}{3}$ of 21p means "21p **divided by** 3" = 7p

—> $\frac{1}{8}$ of 40p means "40p **divided by** 8" = 5p.

$\frac{1}{2}$ of 12p
=> 12p ÷ 2
= 6p

divide divide divide

Exercise 3

1. **Copy** and complete :-

   "$\frac{1}{2}$ of 20p means "20p **divided by 2**" = ... **p**".

2. **Copy** and complete :-

   "$\frac{1}{4}$ of 36 cm means "36 cm **divided by** ..." = ... **cm**"

3. Find :-

a	$\frac{1}{2}$ of 80p	**b**	$\frac{1}{3}$ of 21 metres	**c**	$\frac{1}{5}$ of 45 grams
d	$\frac{1}{10}$ of £40	**e**	$\frac{1}{4}$ of 24 litres	**f**	$\frac{1}{6}$ of £66
g	$\frac{1}{8}$ of 32 cm	**h**	$\frac{1}{7}$ of 28p	**i**	$\frac{1}{3}$ of 39p

4. 24 friends were watching Scotland play football on T.V.

   $\frac{1}{3}$ of them were women.

   a How many women were watching the game ?

   b How many men must there have been ?

5. It is 36 miles from my home town to Edinburgh by train.

The train broke down when I was only $\frac{1}{4}$ way along the journey.

a How far had I travelled ?

b How far was I then from Edinburgh ?

6. Lucy's mum got a bunch of 30 flowers from her dad on her birthday.

$\frac{1}{5}$ of them were red roses.

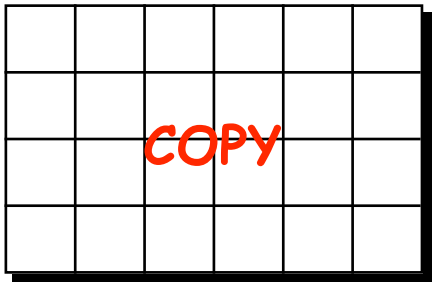
How many red roses were there ?

7. 

Most people sleep for about $\frac{1}{3}$ of each day.

How many hours is this ?

8. Draw this rectangle (24 squares) on squared paper.



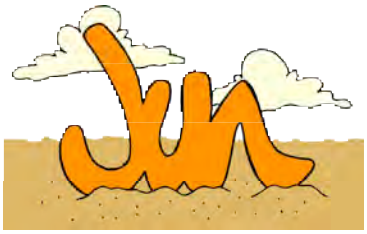
a What is $\frac{1}{6}$ of 24 ?

b Colour $\frac{1}{6}$ of the rectangle red.

c Colour $\frac{1}{8}$ of it blue and $\frac{1}{4}$ of it yellow.

d How many of the 24 squares are **not** coloured at all ?

9. **a** How many days are there in June ?



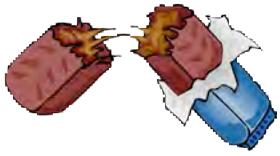
b It rained on $\frac{1}{6}$ of these days.

How many days was this ?

c I was on holiday for $\frac{1}{3}$ of June. For how long was I on holiday ?

10. **A problem** :- Of the money I had in my pocket, I spent $\frac{1}{6}$ of it on sweets.

The sweets cost 9 pence.

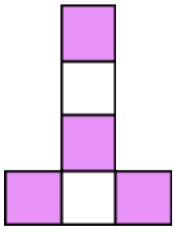


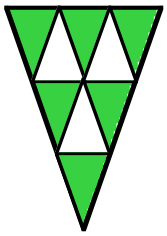
a How much money must I have had to begin with ?

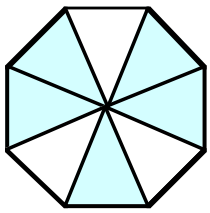
b How much money will I then have left ?

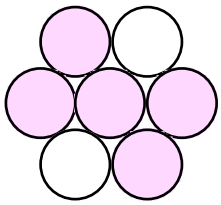
Topic in a Nutshell

1. Say what fraction of each shape is coloured :-

a 

b 

c 

d 

2. 

Shown are 4 bananas, 5 lemons and 2 pears.

a What **fraction** of the fruit is **bananas** ?

b What **fraction** of the fruit is **lemons** ?

c What **fraction** is **neither bananas nor lemons** ?

3. Write down 2 fractions which are **equivalent** to $\frac{2}{3}$.

4. Simplify each of the following fractions by dividing the top and bottom parts by a number each time :-

a $\frac{2}{8}$ **b** $\frac{10}{30}$ **c** $\frac{6}{8}$ **d** $\frac{10}{12}$.

5. 

Ben had **90** pence. He bought two waffles for **60** pence.

a What fraction of his money did Ben **have left** ?

b Simplify your answer.

6. Find the following quantities :-

a $\frac{1}{2}$ of 30p **b** $\frac{1}{3}$ of £18 **c** $\frac{1}{5}$ of 40 kg

d $\frac{1}{10}$ of 80 cm **e** $\frac{1}{4}$ of 28 litres **f** $\frac{1}{6}$ of 42 grams

7. Charlie went on holiday for 15 days.

a He went sunbathing on $\frac{1}{3}$ of these days.

How many days was that ?

b On $\frac{1}{5}$ of the days he sunbathed, his skin got burned.

On how many days did his skin get burned ?

Chapter 11

Position and Movement

Placement & Movement

Alan | Dave | Colin

Jean | Donna | Erin

Teacher

From where the teacher is standing :-

Jean is **in front of** Alan

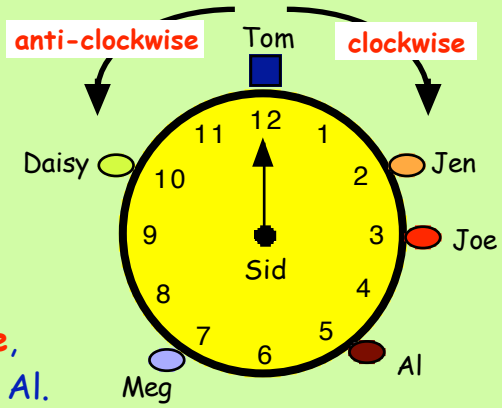
Dave is **behind** Donna

Dave is **to the left of** Colin

Erin is **to the right of** Donna.

Sid points to Tom.
When he turns **clockwise**,
the 2nd person
he points to is Joe.

Again, Sid points to Tom.
When he turns **anti-clockwise**,
the 3rd person he points to is Al.

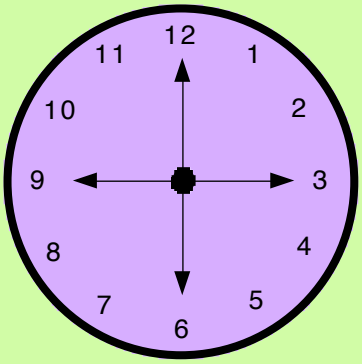


A **quarter turn** (**90°**) **clockwise** takes the 12 to the 3.

A **quarter turn** (**90°**) **anti-clockwise** takes the 12 to the 9.

A **half turn** (**180°**) any way takes the 12 to the 6.

A **complete turn** (**360°**) either way takes the 12 on to the 12.



Exercise 1

1. Here is a teacher's seating plan for a small classroom.

Sam	Bert	May	Ted
Don	Joe	Ann	Sid
Flo	Alice	John	Terry

Teacher

As the teacher looks at the plan, say who is sitting :-

a **behind** John.

b **in front of** Bert.

c **to the left of** Ann.

d **to the right of** May.

e **2 seats behind** Flo.

f **3 seats to the right of** Don.

2. The picture shows the display in a butcher's shop window.

Name what is :-

a **below** the ham.

b **above** the kebabs.

c **first right** from the lamb.

d **to the left** of the salami.

e **2 above** the pie.

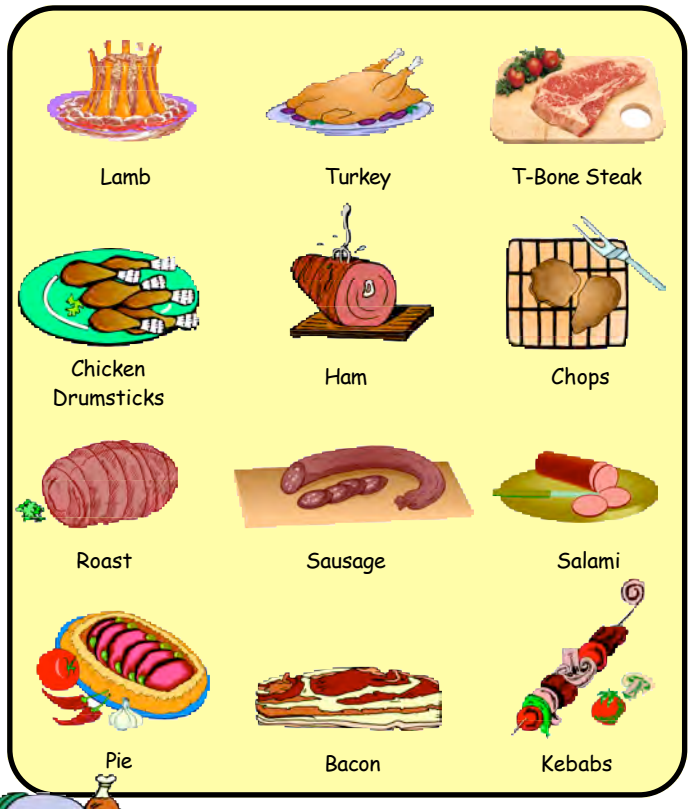
f **3 below** the T-bone steak.

g **3 above** the bacon rashers.

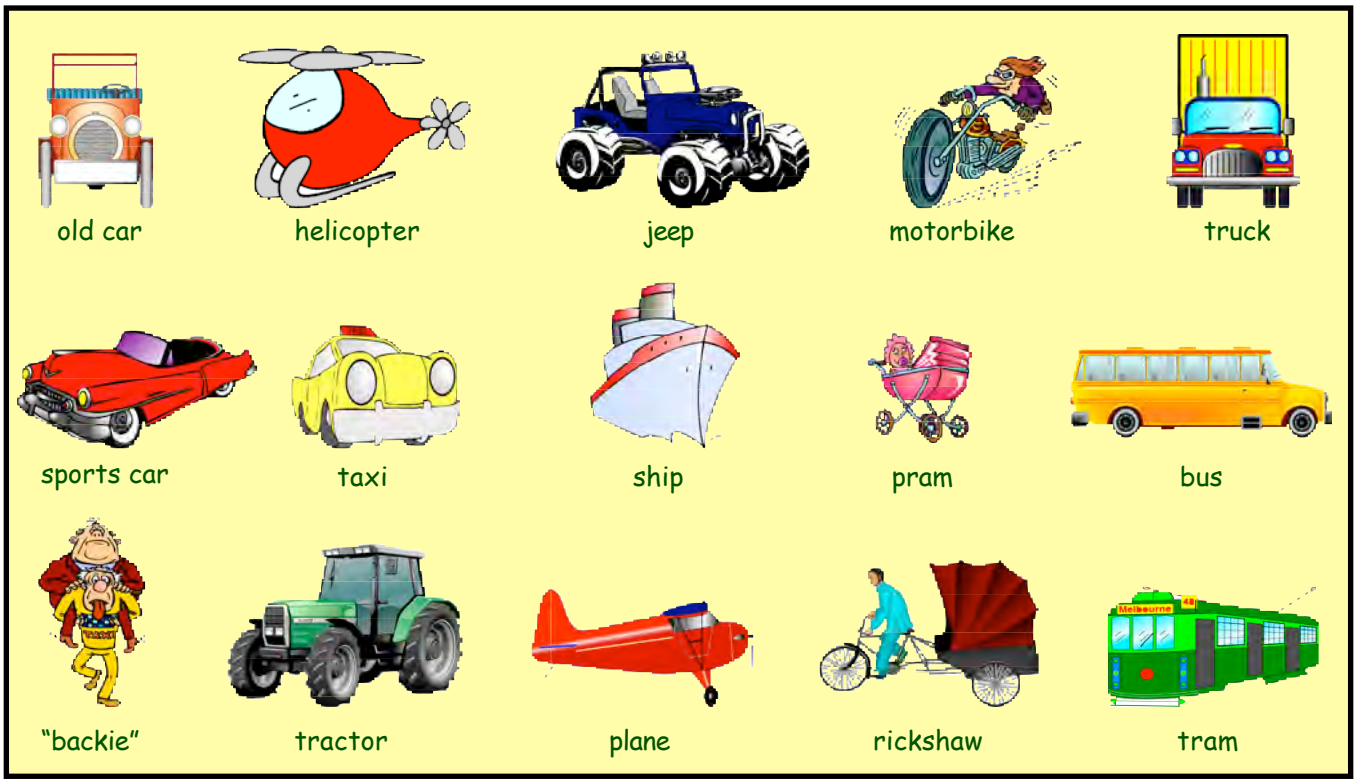
h **2nd right** of chicken drums.

i Describe where the **pie** is in relation to the **drumsticks**.

j Describe where the **roast** is in relation to the **salami**.



Look at the types of travel shown below.



3. Describe what is :-

a **1 above** the **yellow taxi**. **b** **just below** the **bus**.

c **first right** of the **blue jeep**. **d** **2nd to the left** of the **tram**.

e **1 below** the **sports car**. **f** **2nd to the right** of the **tractor**.

g **3rd left** of the bus. **h** **1 to the left and 1 up** from the **tram**.

i **1 to the right and 1 down** from the **helicopter**.

j **2 up and 3 to the left** from the **rickshaw**.

4. Describe fully how would you get from :-

a the **ship** to the **bus** ? **b** the **truck** to the **helicopter** ?

c the **sports car** to the **pram** ? **d** the **tram** to the old **old car** ?

5. If you were **sitting in** each of these, and **facing front**,

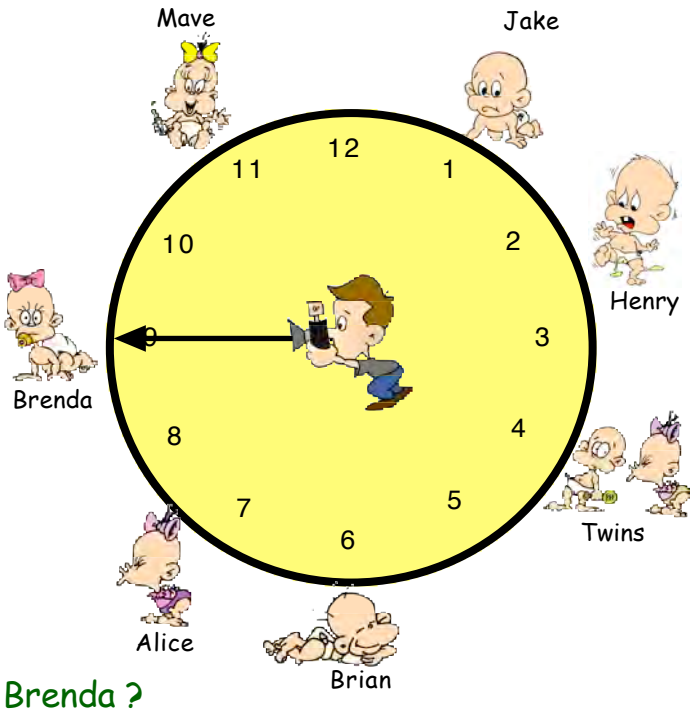
a what would be **on your left** if you were in the **taxi** ?

b what would be **on your right** if you were in the **tram** ?

c what would be **2nd on your left** if you were in the **plane** ?

d what would be **2nd on your left** if you were in the **old car** ?

6. A photographer is at the nursery school, taking pictures.
He takes **Brenda's** picture first.



a Turning **clockwise** :-

i whose turn is it **next** ?

ii after that, he moves on **3 places** - whose turn now ?

iii then, he moves on a **further 2 places** - whose turn now ?

b Turning **anti-clockwise** :-

i whose is the **first baby** the photographer points to after Brenda ?

ii after that, he moves **on 3 places** - whose turn now ?

iii then, he moves on a **further 3 places**, but he is puzzled - why ?

c Who has **not** had their picture taken, either clockwise or anti-clockwise ?

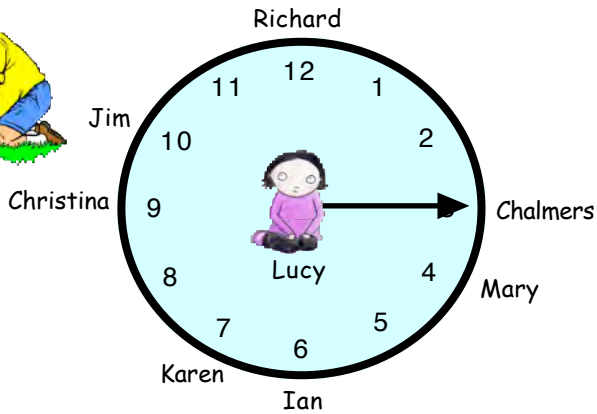
d Brian crawls **clockwise** round the circle.

Who is the **fourth person** he comes to ?

e Henry crawls **anti-clockwise** round the circle.

Who is the **sixth person** he comes to ?

7. Some children are playing a game of "dares" in the garden.
Lucy is in the **middle**. She first points to **Chalmers**.



a From Chalmers, Lucy makes **a quarter turn clockwise**.

Who is she now pointing to ?

b Lucy then points to Richard and makes **a quarter turn anti-clockwise**.

Who is she now pointing to ?

c Lucy then points to Jim and makes **a quarter turn anti-clockwise**.

Who is she pointing to now ?

d Lucy points to Mary and makes **a half turn**.

Who is she now pointing to ?

e She now points to Ian and makes **a complete turn**.

Who is she pointing to ?

f Lucy points to Karen and then decides to point to Jim.

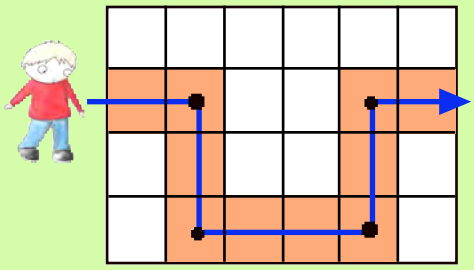
Describe **two different kinds of turn** Lucy could make to do this.

Features of a Journey

Describing a Journey

Ben is playing in a maze.
He has been given the instructions
so he can follow the coloured
pathway
out of the maze.

Example

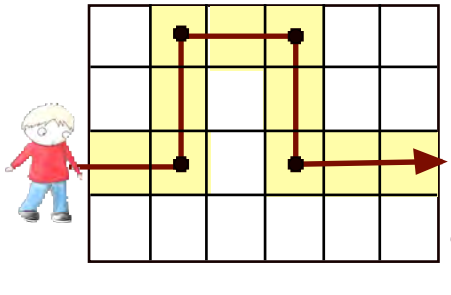


Take 2 steps forward
Turn right
Take 2 steps forward
Turn left
Take 3 steps forward
Turn left
Take 2 steps forward
Turn right
Take 2 steps forward

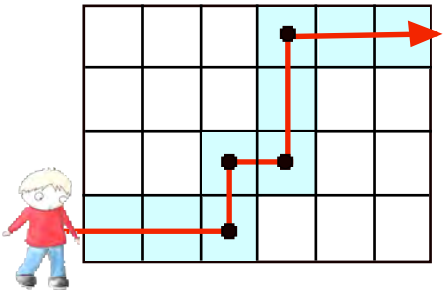
Exercise 2

1. Write clear instructions for each pathway through the maze for Ben :-

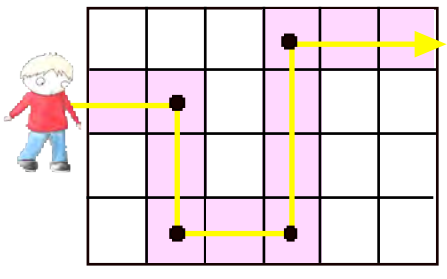
a



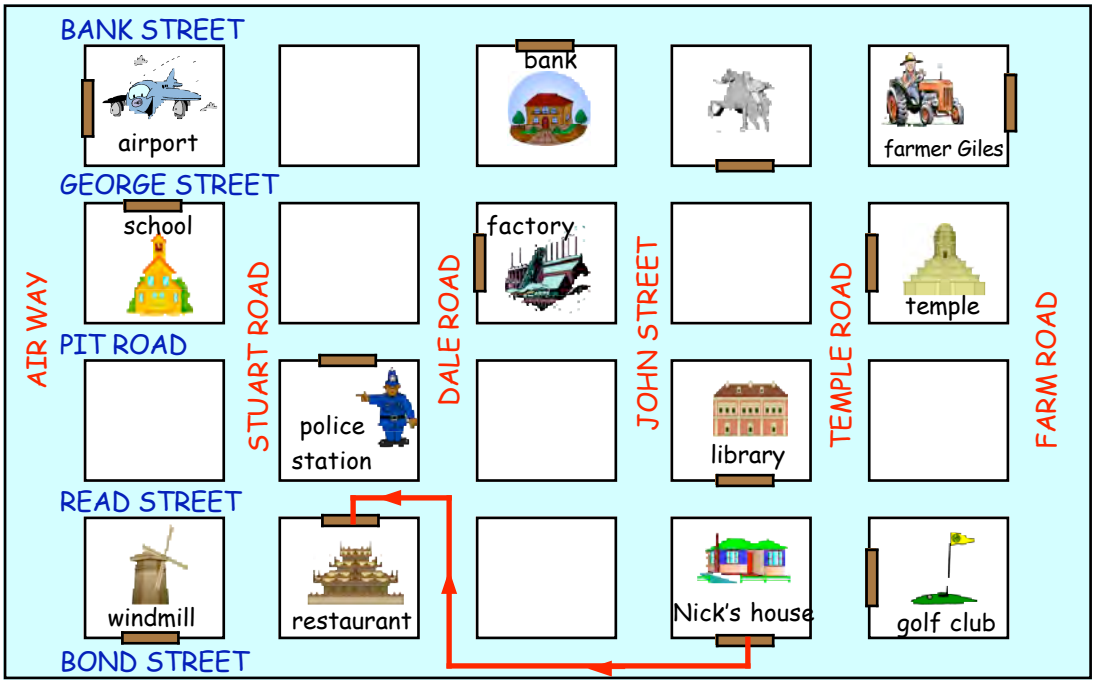
b



c



2. This is a map of the village where Nick lives.



When Nick goes to the Chinese Restaurant he comes out of his house, **turns right** along Bond Street, **turns 2nd right** into Dale Road, then **1st left** into Read Street. The restaurant is the **1st building on the left**.

a Nick wants to go to the **temple**.

Copy and complete these directions for his journey :-
Come out of Nick's house, turn left into ..... **Street**., turn **1st** ..... into ..... **Road**. The temple is the ..... building on the right.

b Nick has to go to the **bank**.

Copy and complete these directions for this journey :-
Come out of Nick's house, turn right into ..... **St**., turn 1st ..... into ..... St. Walk along John St. and take the ..... road on the left. This is .....St. The bank is the ..... building on the ..... .

c Nick wants to go and visit the **windmill**.

Write down directions for Nick, from his **house** to the **windmill**.

d Nick comes out of the **library** and heads for the **airport**.

Write down directions for him, from the **library** to the **airport**.

e Nick visits his dad at the factory each day on his way home from school.

Describe his journey home from **school**, going to his dad's **factory**.

f PC Plodd leaves the **police station** to go to pick up **Farmer Giles**.

They both then head for the **golf club**. Plan one possible journey.

3. Look at the map of **Westlea**. To get from the **fire station** to the **shops** -

"come out of the fire station, turn left & go forward 5 spaces.
Now turn left and go forward 2 spaces - you're at the shops !"

Write one set of instructions on how to get from :-

a the shops to the police station.

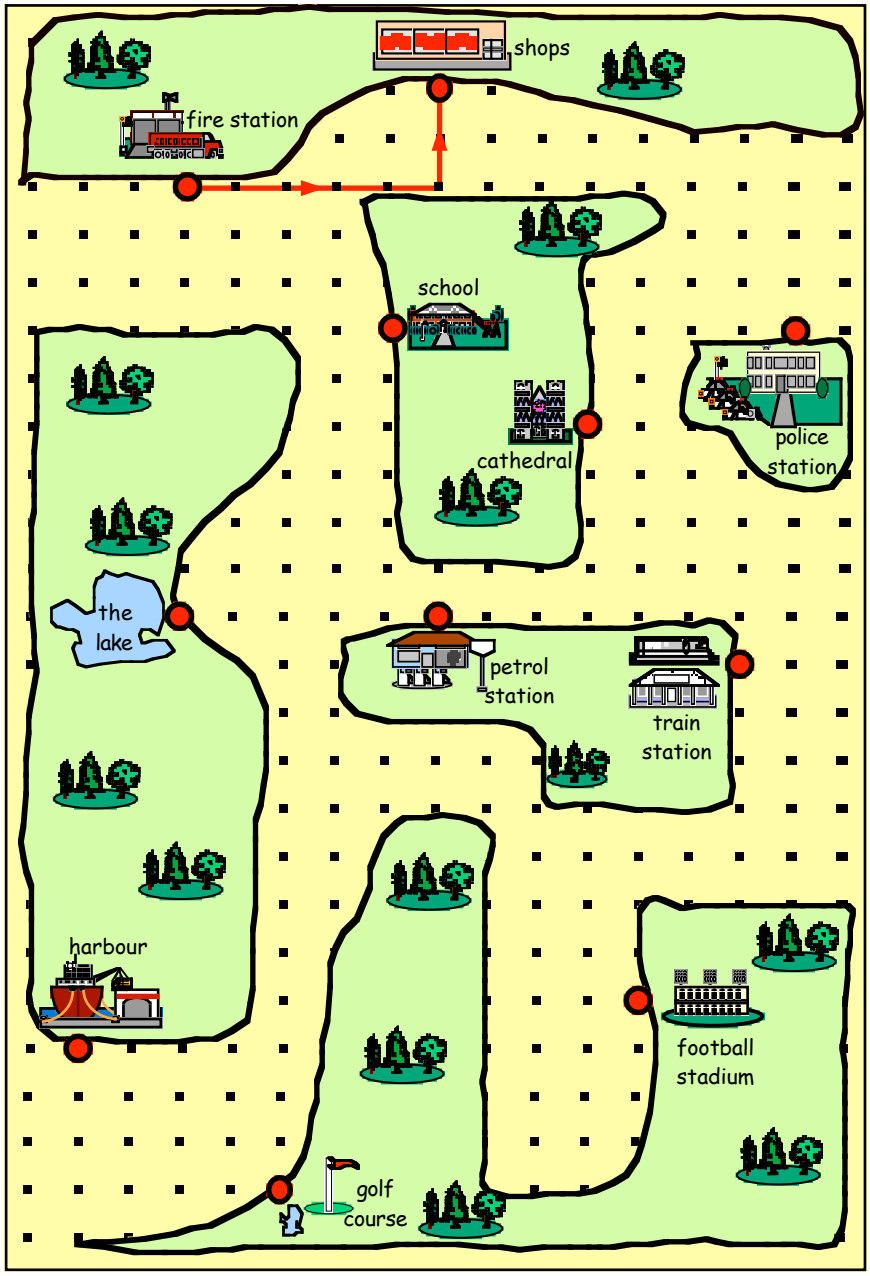
b the school to the golf course.

c the train station to the football stadium.

d the petrol station to the harbour.

A copy of this map is available as

W'Sheet 11·1



4. Follow these routes on the map **with your finger** and say where they end.

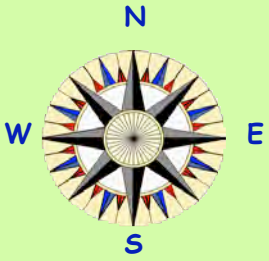
a "Come out of the cathedral; turn right; go forward 4 spaces; turn right; go forward 3 spaces; turn left - **where are you ?**"

b "Come forward 3 spaces out of the Lake; turn left and go on 9 spaces; turn left and go forward 3 spaces - **what is on your right ?**"

c "Come 2 spaces out of the football stadium; turn right and go forward 4 spaces; turn left and go forward 5 spaces; turn left again and again go forward 5 spaces; turn right and go forward 4 spaces; look right - **what's there ?**"

Compass Points

You should already know that the 4 main points of the compass are :- NORTH, SOUTH, EAST & WEST



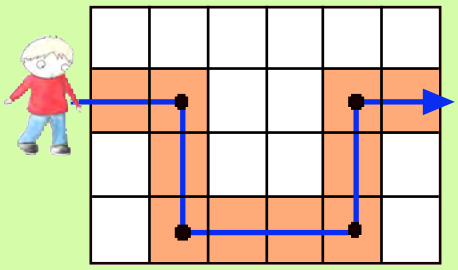
Remember :-

360° = 1 full turn

180° = $\frac{1}{2}$ turn

90° = $\frac{1}{4}$ turn

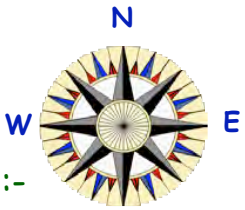
Example - Back to the maze again !



Go East 2 squares
Go South 2 squares
Go East 3 squares
Go North 2 squares
Go East 2 squares

This time our instructions were given using compass points.

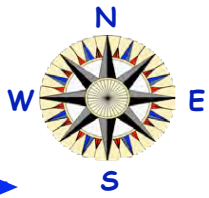
Exercise 3



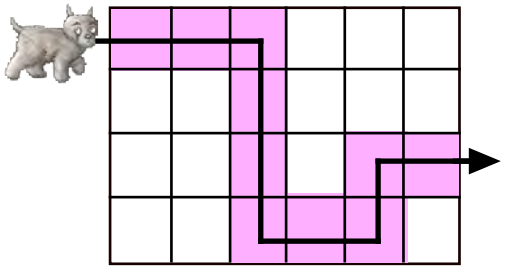
1. In which direction would Ben end up facing if he was facing :-
   - a **North** and turned through **180°** ?
   - b **West** and turned through **90° clockwise** ?
   - c **South** and turned through **90° anti-clockwise** ?
   - d **East** and turned through a **three quarter turn clockwise** ?
   - e **North** and made a complete turn of **360°** ?

2. How many degrees would Ravi have to turn through if he was facing :-
   - a **East** and turned **clockwise** to face **South** ?
   - b **West** and turned to face **East** ?
   - c **North** and turned **anti-clockwise** to face **West** ?
   - d **South** and turned **clockwise** to face **East** ?
   - e **West** and made a **complete turn** to face **West** again ?

3. Give instructions using the points of the compass to help Spot, Nick, Tiddles and Lucy through the mazes :-



a



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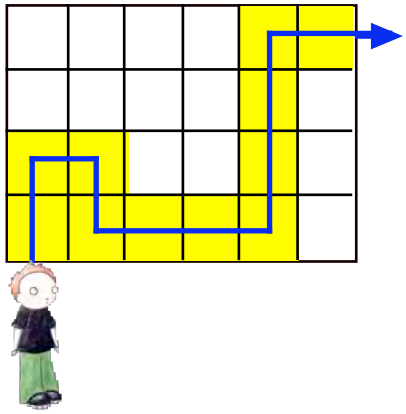
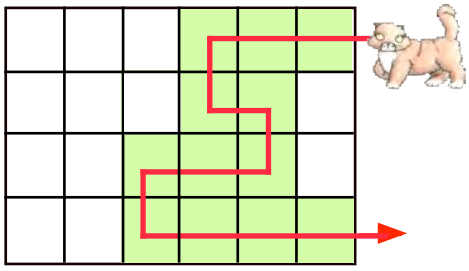
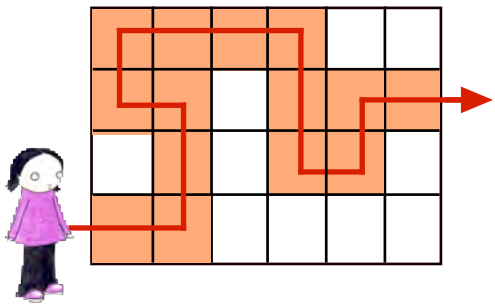


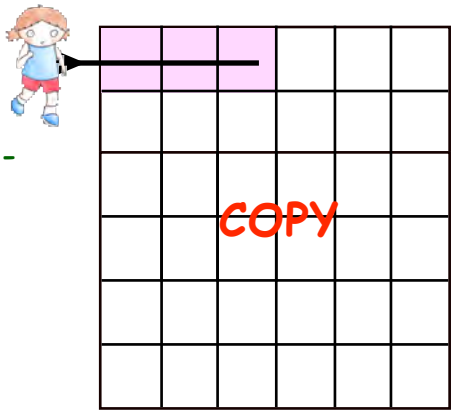
c



d



4. Draw up a 6 by 6 grid like the one shown.
Now Jane has to find the pathway out of the maze starting at the top left-hand corner.



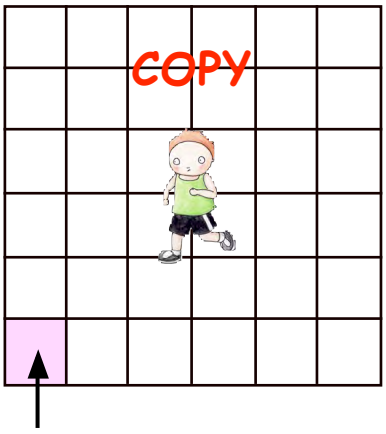
Draw Jane's pathway following these instructions :-

- Go 3 boxes **East**.
- Go 5 boxes **South**.
- Go 2 boxes **East**.
- Go 4 boxes **North**.
- Go 2 boxes **East** to get out of the maze !

5. Draw up another 6 by 6 grid.

Draw another pathway following these instructions :-

- Start at the bottom left-hand box, facing **North**.
- Go 2 boxes **North**. then 3 boxes **East**.
- Now Go 2 boxes **North** and 1 then box **East**.
- Go 1 box **North** again and then 3 boxes **West**.
- Go 2 more boxes **North** to get out of the maze !



6. Look at the map of the **Carribean**.

The pirates are sailing from island to island in search of hidden treasure.

You have to find where each voyage **ends**.

a Leave **Palm Tree Island** harbour;

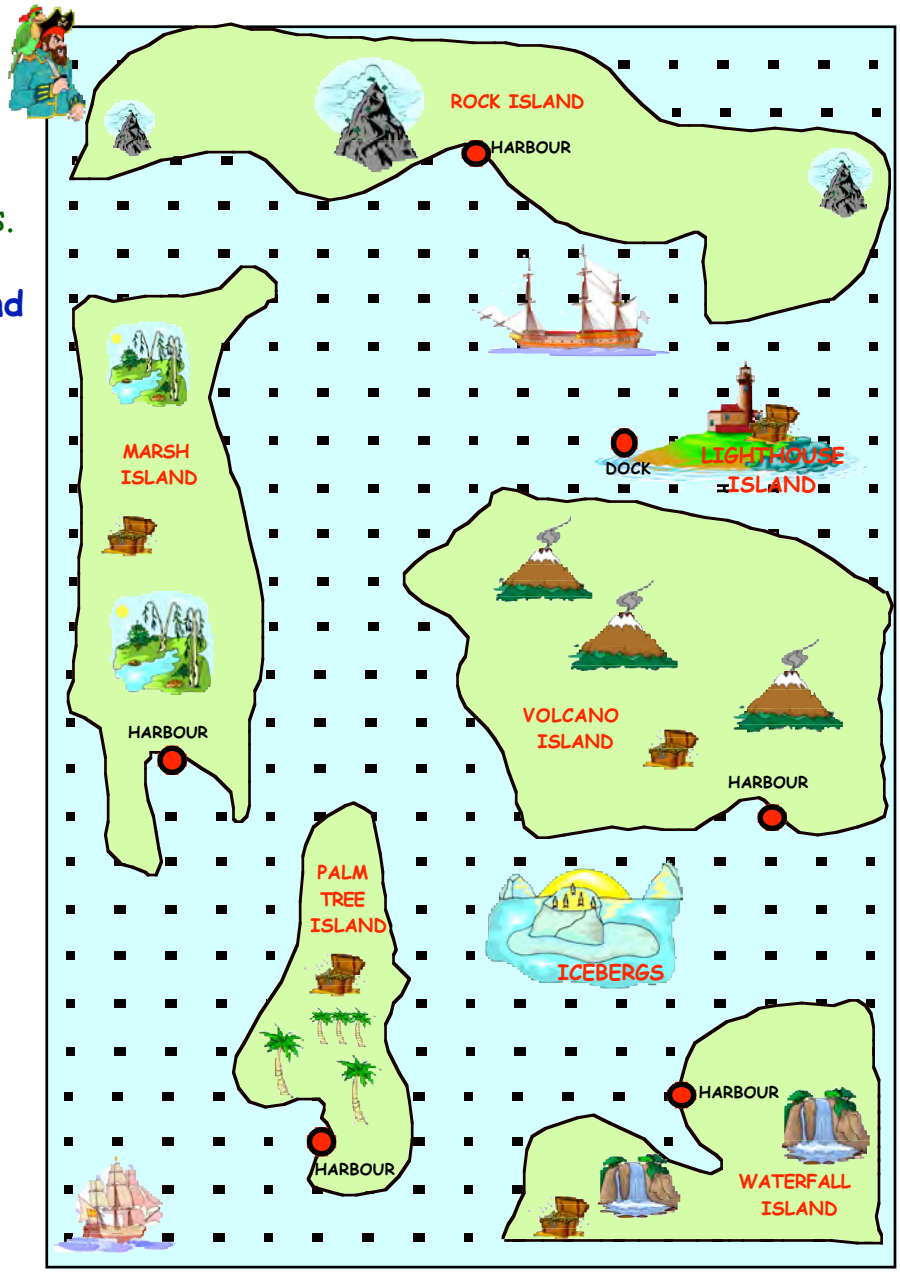
Go **West** 3 spaces;
then **North** 8 spaces.

b Leave **Volcano Island** harbour;

head **South** 1 space;
West 7 spaces;
North 5 spaces;
West 1 space;
North 4 spaces
then 5 spaces **East**.

c Leave **Rock Island** harbour;

Go 7 spaces **South**;
2 spaces **West**;
6 spaces **South**;
2 spaces **East**;
4 spaces **South**;
then 2 spaces **East**.
OOPS !



A copy of this map is available as

W'Sheet 11·2

7. Use your map for question 6 to plot a route from **Waterfall Island** harbour to **Rock Island** harbour.
You must use the points of the compass to describe your journey.

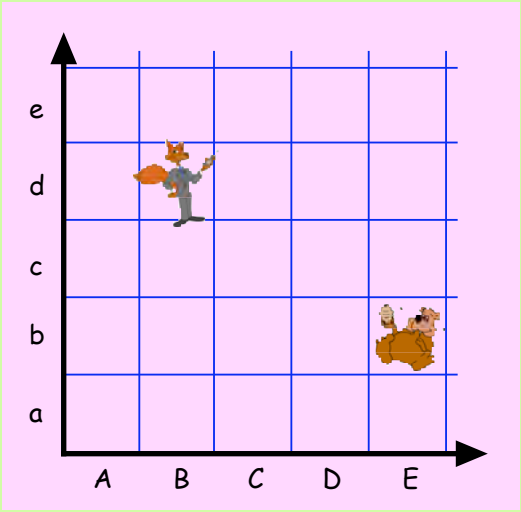
Coordinate Grids

The position of an object or point can be described by using a **COORDINATE GRID**.

The position of an object or point can either be given by stating

- which **square** the object is sitting in, or
- which **two lines** the point is on.

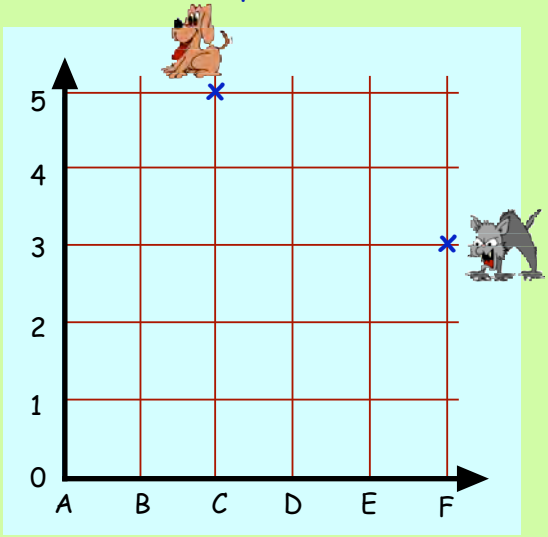
Example 1



The position of the fox is **Bd**.

The position of the bear is **Eb**.

Example 2



The position of the dog is **C5**.

The position of the cat is **F3**.

Exercise 4

1. Four areas in a zoo are shown in the coordinate grid.

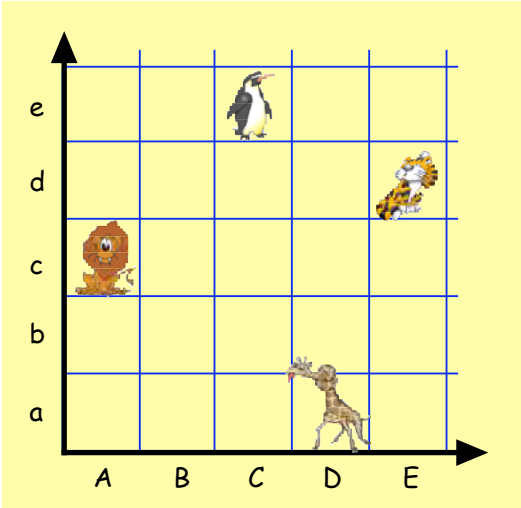
Write down the position of :-

a the **lion**.

b the **penguin**.

c the **tiger**.

d the **giraffe**.



2. Six subject rooms in a school are shown in the coordinate grid.

Write down the position of :-

a Mathematics **M**.

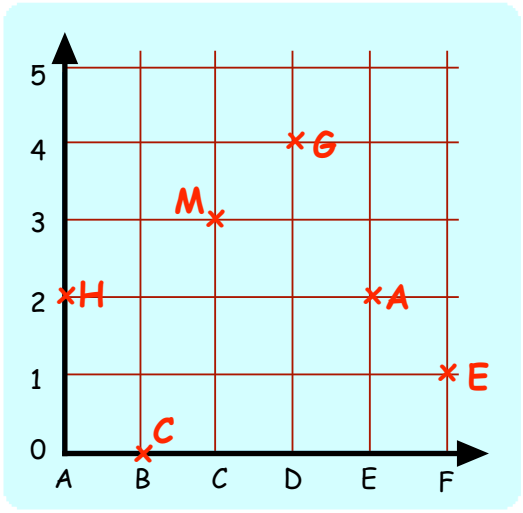
b English **E**.

c Geography **G**.

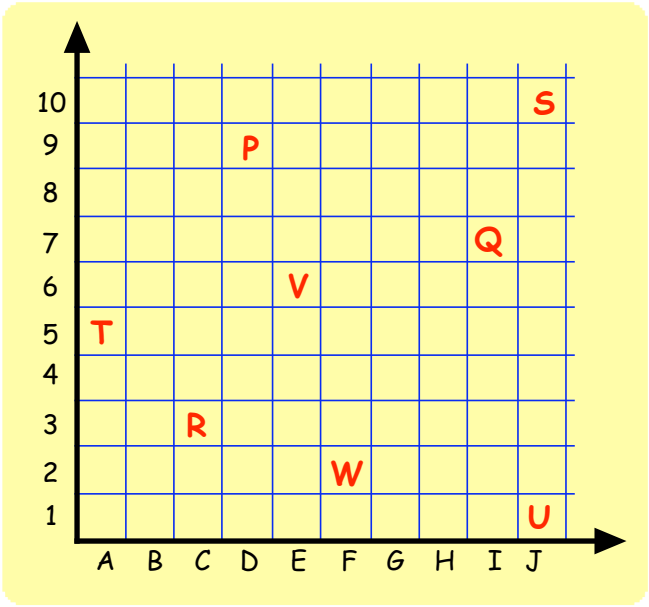
d History **H**.

e Art **A**.

f Computing **C**.



3.



The letter **P** is in position **D9**.

Write down the positions of the other capital letters :-

Q, **R**, **S**, **T**, **U**, **V** and **W**.

4. Eight soldiers are out on a training exercise in a field.

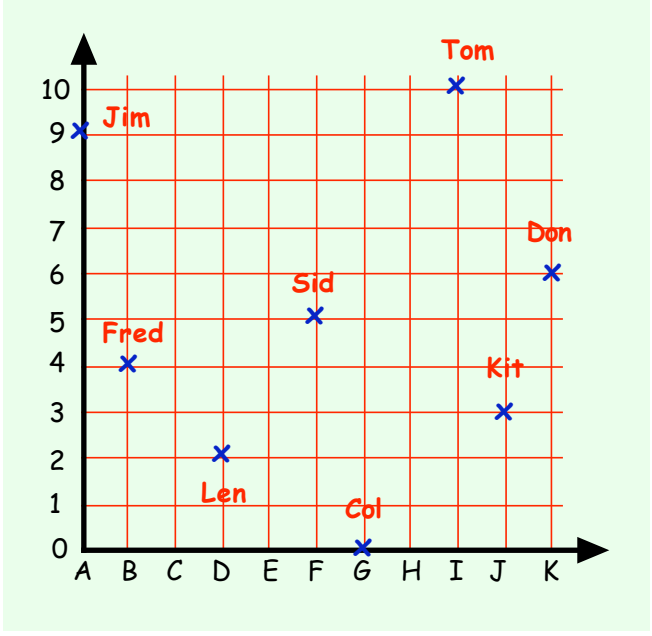
Name the soldier who is in position :-

a **D2**. **b** **B4**.

c **A9**. **d** **J3**.

e **K6**. **f** **F5**.

g **I10**. **h** **G0**.



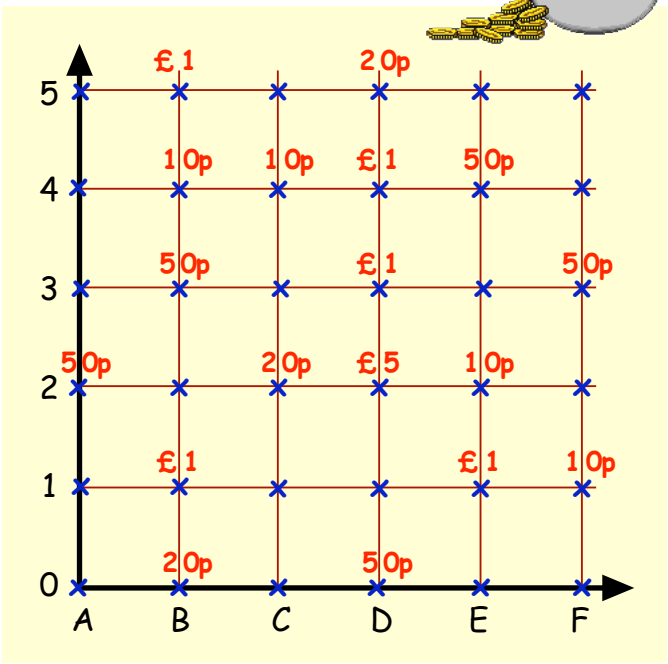
5. At the school fayre Joyce was in charge of a stall where you could win cash prizes.

You had to push a pin through a hole on a piece of card.

Some of the positions had no prizes !

For example :-

land on **B1** - win £1, land on **C0** - lose.



a What did you win if you pushed the pin through position :-

i **D3** **ii** **E4**

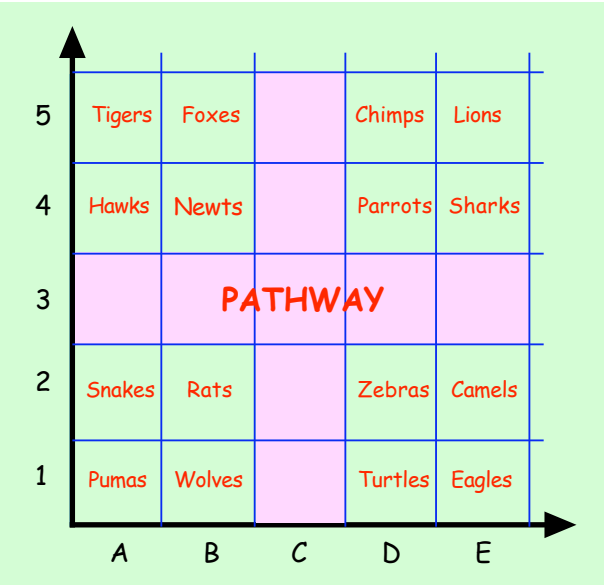
iii **B2** **iv** **F3**

v **C1** **vi** **A0** ?

b Which positions give a **10p** prize ? (List all of them).

c What was the top prize and what was its position ?

6.



A small zoo has been built as shown on the grid.

a In this zoo, name :-

i 3 members of the cat family.

ii 3 birds.

b What kind of sea creature appeared in "**Jaws**" ?
Write down its position.

c "**Cunning as a ...**"
Write down its name and position.

d What kind of creature is a **cobra** ?
Write down the position of where it might live in the zoo.

e What is the position on the pathway between the foxes and the chimps ?

Coordinates for Fun

Exercise 5

Pictures can be drawn using coordinates.
Make a coordinate grid for each picture (you are guided as to what size).
Plot the **points** in order and join them up as you move from one point to the next.

W'Sheet 11·3

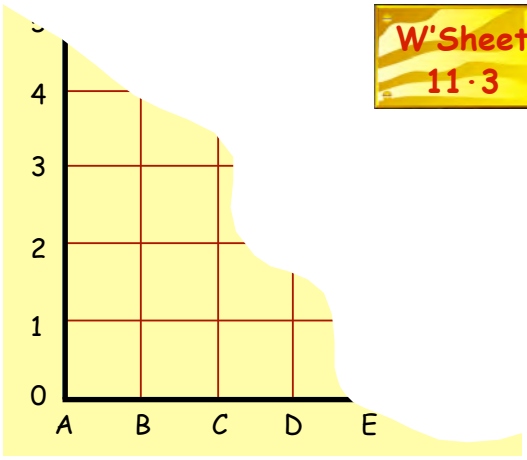
1. Letters across - **A - I.**
Numbers upwards - **0 - 8.**

Set 1 - **D2 D3 F3 F2 D2.**

Set 2 - **B4 B6 H6 H4 B4.**

Set 3 - **D7 D8 F8 F7 D7.**

What **mathematical** sign is this ?



2. Letters across - **A - I.**
Numbers upwards - **0 - 8.**

Set 1 - **D1 D3 B3 B5 D5 D7 F7 F5 H5 H3 F3 F1 D1.**

What **mathematical** sign is this ?

3. Letters across - **A - Q.**
Numbers upwards - **0 - 20.** **LARGE PICTURE**

Set 1 - **D2 D10 F12 F4 D2.**

Set 2 - **F4 H3 J3 L4 L16 J15 H15 F16 F12.**

Set 3 - **L12 N10 N2 L4.**

Set 4 - **F16 I20 L16.**

Set 5 - **I11 I1.** What **flying object** is this ?

4. Letters **A - L.**
Upwards **0 - 11.**

Set 1 - **D3 E3 F4 G3 H3 H6 D6 D3.**

Set 2 - **D6 D9 C8 B9 D11 E11 F10 G11 H11 J9 I8 H9 H6.**

This has to do with **football**. What is it ?

5. Letters across **A - M.**

Numbers upwards **0 - 11.**

Set 1 - **F11 E10 G10 F11.**

Set 2 - **E10 E8 G8 G10.**

Set 3 - **E8 D8 D4 H4 H8 G8.**

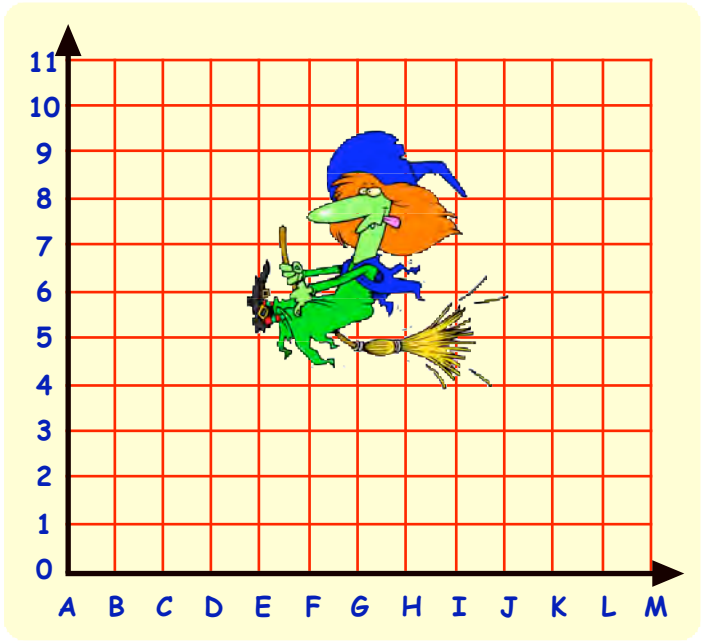
Set 4 - **D8 B6 B5 C5 C6 D7.**

Set 5 - **H8 J6 J5 I5 I6 H7.**

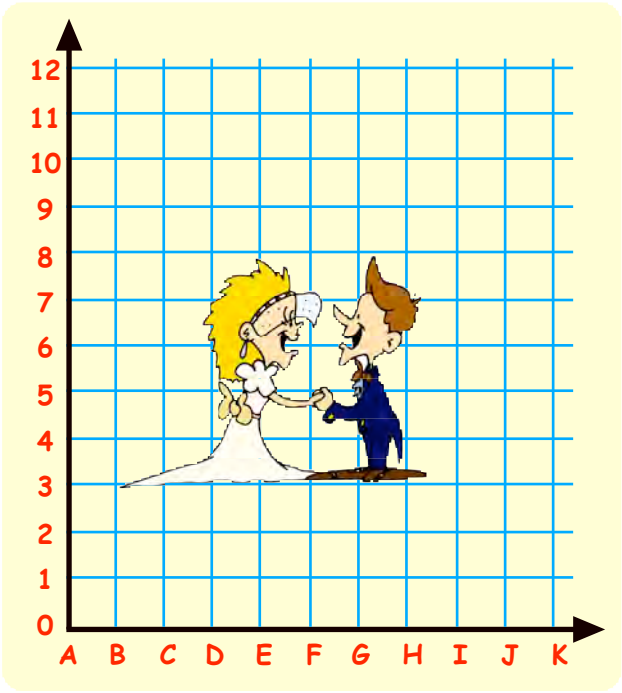
Set 6 - **D4 D3 C3 C2 F2 F4**

Set 7 - **F2 I2 I3 H3 H4.**

He was in the **Wizard of Oz**.
Who is he ?



6.



Letters across **A - K.**

Numbers upwards **0 - 12.**

Set 1 - **F12 E9 G9 F12.**

Set 2 - **G9 H8 D8 E9.**

Set 3 - **D8 D2 H2 H8.**

Set 4 - **E2 E4 G4 G2.**

Set 5 - **D2 B2 B6 D7.**

Set 6 - **H2 J2 J6 H7.**

Set 7 - **F4 F2.**

It's a **building**. What kind ?

7. Letters across **A - I.**

Numbers upwards **0 - 11.**

Set 1 - **E11 F11 F9 H7 H3 G2 D2 C3 C7 E9 E11.**

Set 2 - **F10 E10.**

Set 3 - **D6 D4.**

Set 4 - **D5 E5.**

Set 5 - **E6 E4.**

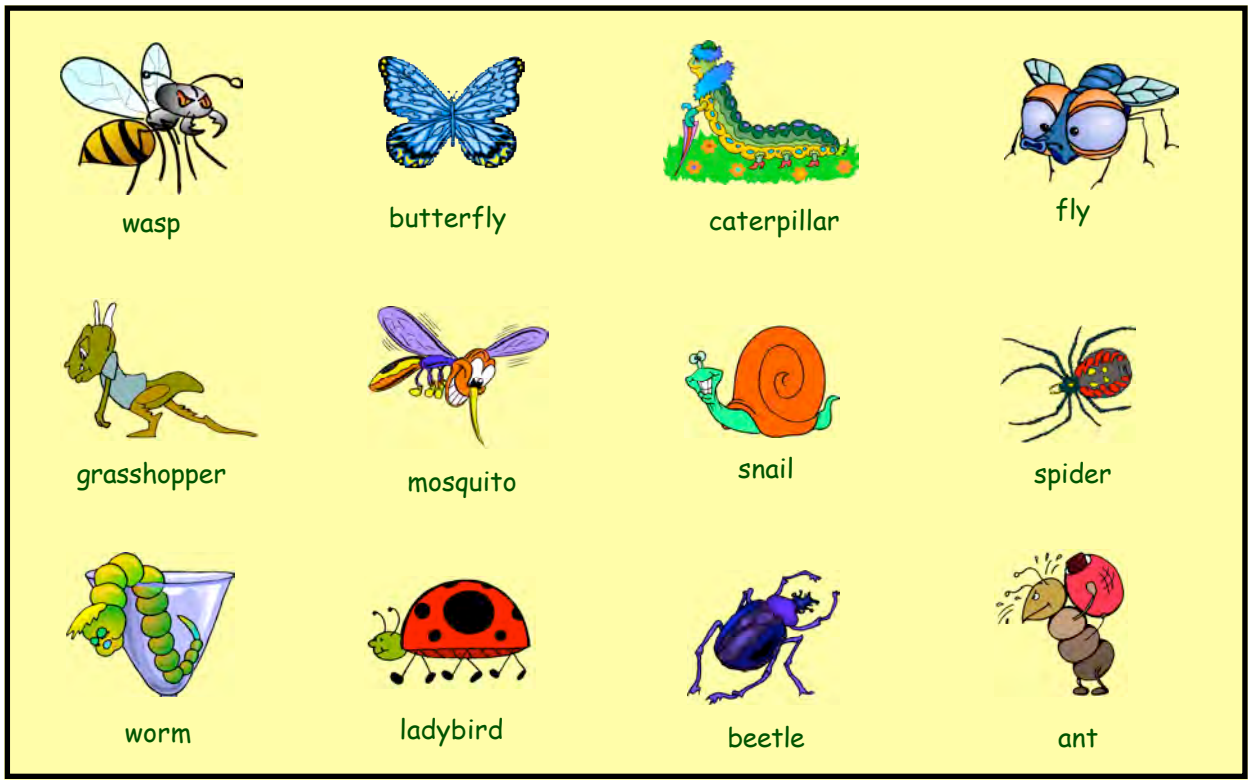
Set 6 - **F6 G6 G5 F5.**

Set 7 - **F4 F6.**

Have this with your **burger** ?

Topic in a Nutshell

1. Look at the type of insects shown below.



a Describe what insect is :-

i **1 above** the **mosquito**. **ii** **2 below** the **caterpillar**.

iii **first right** of the **snail**. **iv** **3rd to the left** of the **fly**.

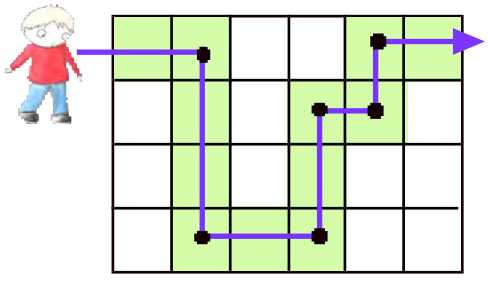
v **2 down and 2 to the right** of the **butterfly**.

b If you are the **snail** and are looking at the **mosquito** - what insect would you be looking at if you made a **quarter-turn clockwise** ?

c If you are the **mosquito** and are looking at the **ladybird** - what insect would you be looking at if you made a **quarter-turn anticlockwise** ?

2. Write clear instructions on how to get Ben through the maze. Start with ...

"**forward 2 spaces** then ...."



3. Now write another set of instructions for Ben to get him through the same maze, this time using the **points of the compass** :-

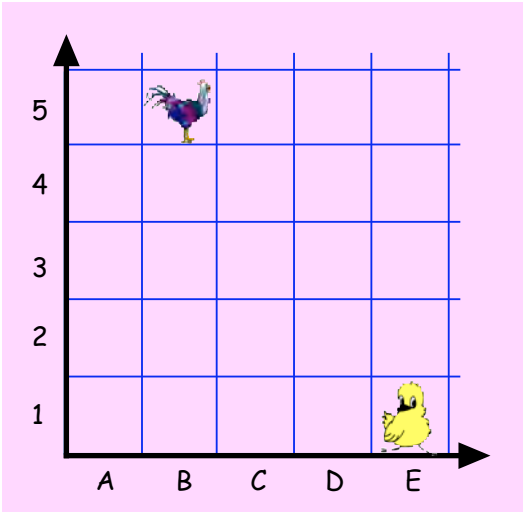
e.g. "Go **East** 2 squares, ..."

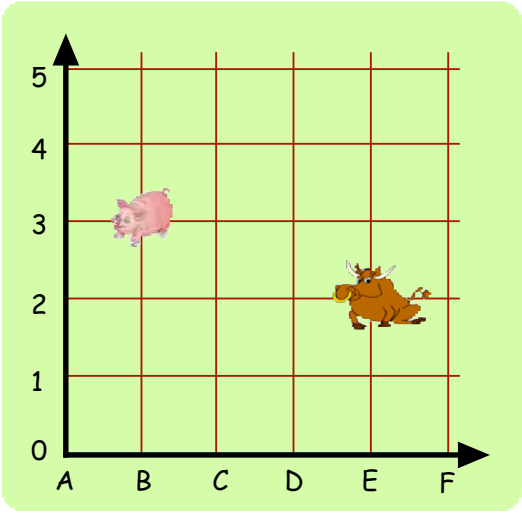
4. **a** If I was facing **North** and turned through **90° anticlockwise**, in which direction would I then be facing ?

b How many degrees will I have to turn through if I am facing West and want to face **East** ?

5. Write down the coordinate positions of the :-

a rooster **b** chick **c** pig **d** bull.

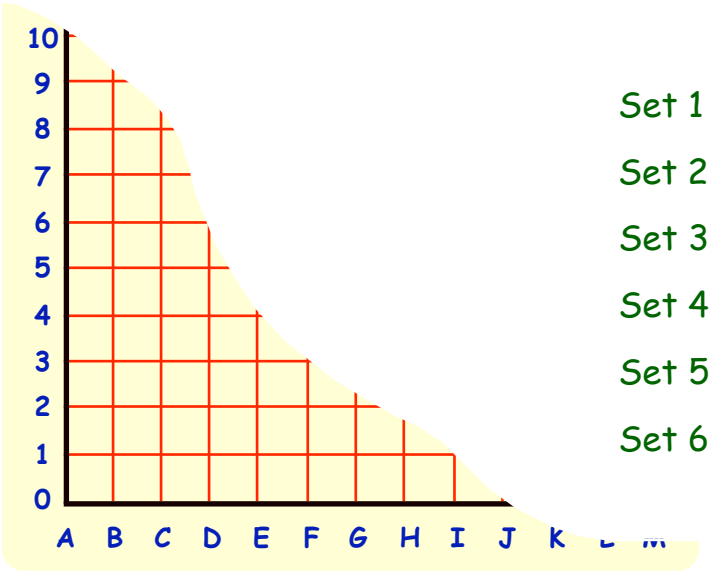




6. **You draw** one more for fun !

Letters across **A - N.**

Numbers upwards **0 - 11.**



Set 1 - **B7 D3 L3 M7 B7.**

Set 2 - **D7 D10.** draw a  at D10

Set 3 - **F7 F8.** draw a  at F8

Set 4 - **H7 H9.** draw a  at H9

Set 5 - **J7 J11.** draw a  at J 11

Set 6 - **L7 L9.** draw a  at L9

What is it this time ?

Chapter 12

Calculators should NOT be used anywhere in this chapter.

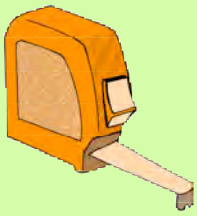
Length & Area

Estimating Length

When measuring a length or distance, you can use many different devices.

A **ruler** measures small lengths in **centimetres** (**cm**).

A **tape** measures larger lengths in **metres** (**m**)



A car **odometer** measures in **kilometres** (**km**)

Exercise 1

1. Would you use a **ruler**, **tape measure** or a car **odometer** to measure :-

   a the length of this **book**

   b the height of your **classroom**

   c your own **height**

   d the length of the **corridor**

   e the length of your **thumb**

   f how far from **Glasgow** to **Edinburgh** ?

2. **Estimate** (guess) the length or distance of each part in **question 1**.

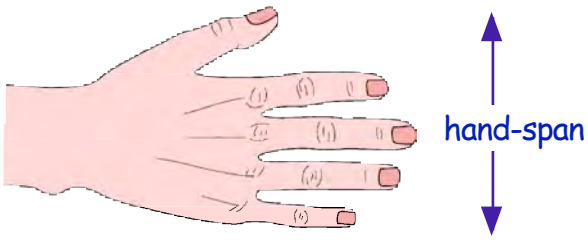
3. Spread out your hand on a sheet of paper and draw around it.

   Estimate the length of :-

   a your hand-span

   b your longest finger

   c your pinky finger.



4. Measure each of the three lengths in **question 3**.

5. Put your foot on a sheet of paper and draw around it.

Estimate :-

a the length of your foot

b the width of your foot.

c Now **measure** both and check how close you were.

6. **Estimate** the length of each coloured line to the **nearest centimetre** :-

a

b

c

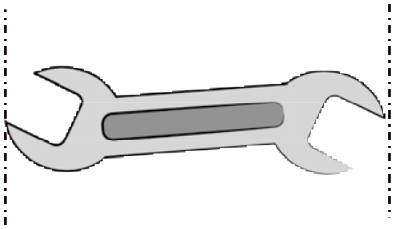
d

e

Now **measure** each of the lines and check how close you were.

7. Estimate the length of each object below in centimetres :-

a



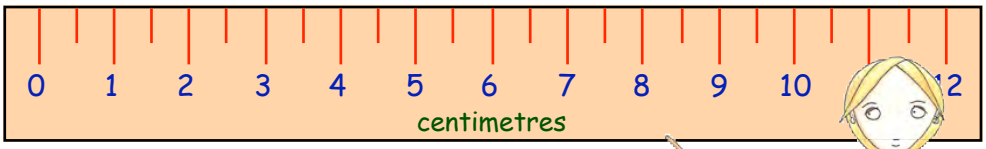
b

c

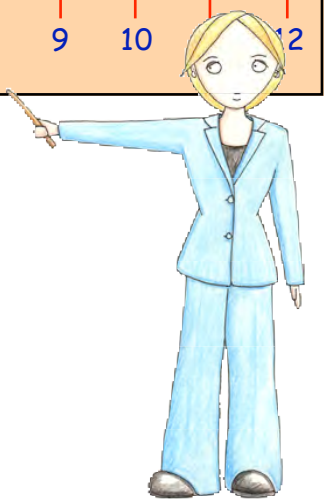
d

Now **measure** each of the objects and check how close you were.

Drawing



Exercise 2



1. Use a **ruler** to draw a line of length :-

   a 3 centimetres **b** 7 centimetres

   c 9 centimetres **d** 6 centimetres

   e 1 centimetre **f** 16 centimetres.

2. Use a ruler to draw a line of length :-

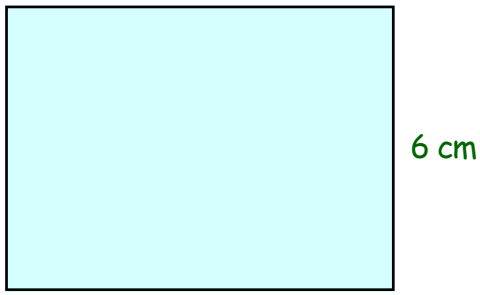
   a $2\frac{1}{2}$ cm **b** $4\frac{1}{2}$ cm **c** $5\frac{1}{2}$ cm **d** $10\frac{1}{2}$ cm.

3. Shown below are **sketches** of rectangles.

   Draw each rectangle **accurately**.

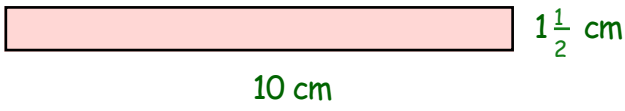
a

b



c

d



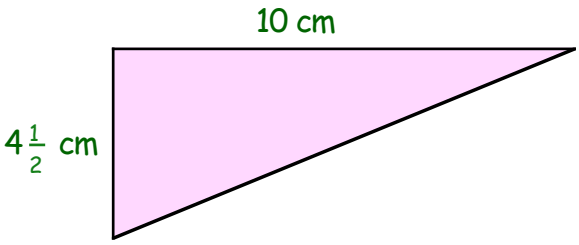
4. Draw each of the following shapes **accurately** :-

   a a **rectangle** with length 6 cm and breadth 2 cm.

   b a **square** with side 7 cm.

5. Look at this sketch of a right angled triangle.

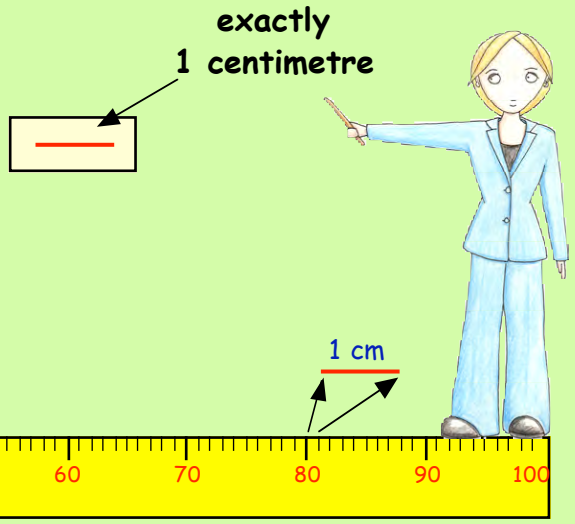
   Draw it accurately.



Units of Length

Remember :-

A **centimetre** is a standard unit of length.
It is about the width of your **pinky nail**.



A **metre** is exactly **100 centimetres**.

This is about the distance from the ground up to a door handle.

Exercise 3

1. **Remember,** **1 metre = 100 cm.** How many **centimetres** are in :-

a	1 metre	**b**	2 metres	**c**	3 metres	**d**	4 metres
e	8 metres	**f**	5 metres	**g**	9 metres	**h**	10 metres ?

2. How many **centimetres** are in :-

a	$\frac{1}{2}$ metre	**b**	$1\frac{1}{2}$ metres	**c**	$2\frac{1}{2}$ metres	**d**	$5\frac{1}{2}$ metres
e	$7\frac{1}{2}$ metres	**f**	$9\frac{1}{2}$ metres	**g**	$10\frac{1}{2}$ metres	**h**	$12\frac{1}{2}$ metres
i	$\frac{1}{4}$ metre	**j**	$1\frac{1}{4}$ metres	**k**	$2\frac{1}{4}$ metres	**l**	$4\frac{1}{4}$ metres ?

3. **Remember,** **100 cm = 1 metre.** How many **metres** are in :-

a	500 cm	**b**	700 cm	**c**	900 cm	**d**	1000 cm
e	600 cm	**f**	1200 cm	**g**	1500 cm	**h**	2300 cm ?

4. How many **metres** are in :-

a	50 cm	**b**	250 cm	**c**	650 cm	**d**	850 cm
e	150 cm	**f**	950 cm	**g**	1150 cm	**h**	1450 cm
i	25 cm	**j**	325 cm	**k**	525 cm	**l**	1025 cm ?

Remember :- 1 metre 25 centimetres = 1 m 25 cm = 125 cm

5. **Copy** and complete :-

a 1 metre 75 centimetres = 1 m 75 cm = ... **cm**

b 1 metre 53 centimetres = ... m ... cm = ... **cm**

c 2 metres 25 centimetres = ... m ... cm = ... **cm**

d 5 metres 20 centimetres = ... m ... cm = ... **cm**

Be very careful with these :-

e 1 metre 5 centimetres = ... m ... cm = ... **cm**

f 7 metres 8 centimetre = ... m ... cm = ... **cm**

g 10 metres 1 centimetre = ... m ... cm = ... **cm.**

6. **Copy** and complete :-

a 215 cm = 2 m 15 cm = 2 metres ... centimetres

b 475 cm = 4 m ... cm = ... metres ... centimetres

c 709 cm = ... m ... cm = ... metres ... centimetres

d 208 cm = ... m ... cm = ...

e 1050 cm = ... = ...

f 2003 cm = ... = ...

7. **a** A snail crawls along a garden path
5 metres 45 centimetres long.

How many **centimetres** did the snail crawl ?

b

A toy car runs along a track
with length 365 centimetres.

How many **metres and centimetres** is this ?

c Nick sprinted for 20 metres and 8 centimetres.

How many centimetres did he sprint ?

Problems involving Length

Remember 

Exercise 4

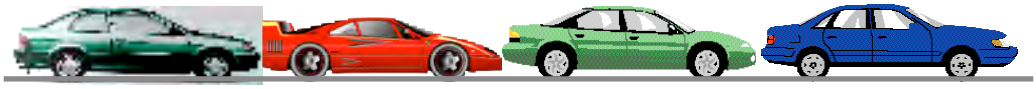
1. **a** Put these lengths in order, **smallest** first :-

1 m 34 cm, 99 cm, 1 metre 29 centimetres, 170 cm.

b Put these lengths in order, **largest** first :-

127 cm, 1 m 19 cm, 130 cm, 1 metre 9 centimetres.

2. Four toy cars are placed in a line bumper to bumper.



Their lengths are 9 cm, 7 cm, 11 cm and 14 cm.

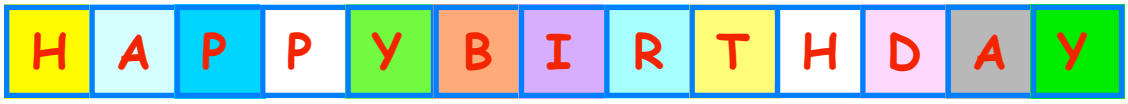
What is the **total length** of all the cars ?

3. A plank of wood is 225 cm long.

A piece, 70 cm, is cut off.

What is the **length** of the plank now ?

4. A birthday banner is made from 13 sheets of paper. Each piece is 9 cm long.



What is the **total length** of the banner ?

5. 

A tortoise walks 450 centimetres.

It takes a rest, then walks $2\frac{1}{2}$ metres.

How many metres **in total** did the tortoise walk ?

6. Emily has a roll of cable 10 metres long.

She cuts **4 lengths** of cable from the roll :-

3 metres, 270 centimetres, $1\frac{1}{2}$ metres and 1 metre 40 centimetres.

a What is the **total length** (in cm) of the four lengths of cable ?

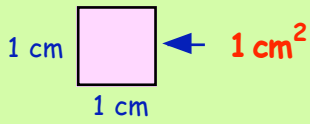
b How many centimetres of cable are left on the roll ?

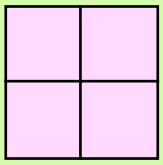
Area

The **area** of a shape is the **AMOUNT OF SPACE IT COVERS.**

The area of a box 1 cm by 1 cm has an area of : 1 square centimetre.

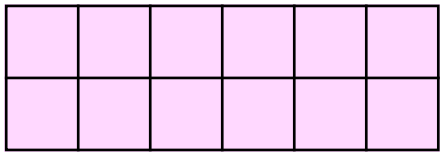
This is written as :- **1 cm²**



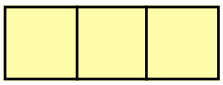
Example :-  This shape has an area of **4 cm²**

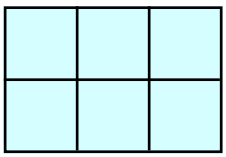
Exercise 5

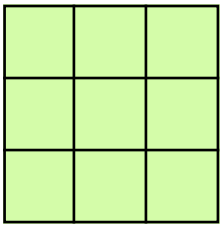
1. Write down the area (....**cm²**) of this shape :-

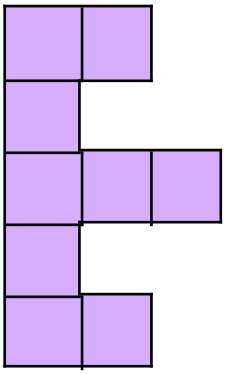


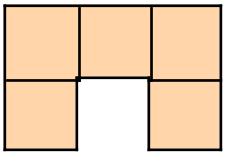
2. Write down the area (....**cm²**) of each shape below :-

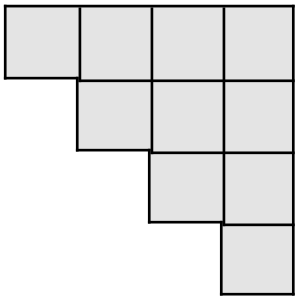
a 

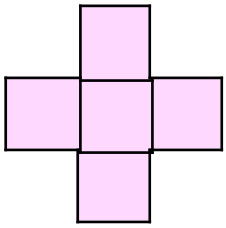
b 

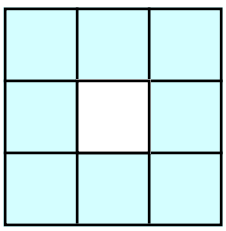
c 

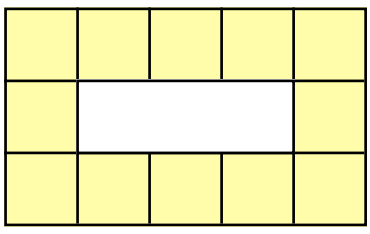
d 

e 

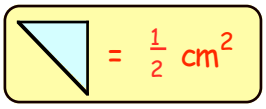
f 

g 

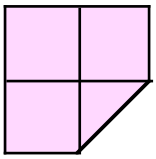
h 

i 

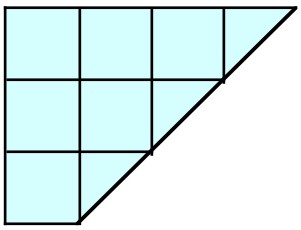
3. Write down the **area** (...cm^2) of each shape below :-



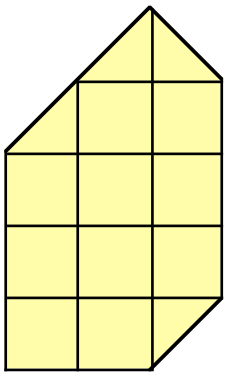
a



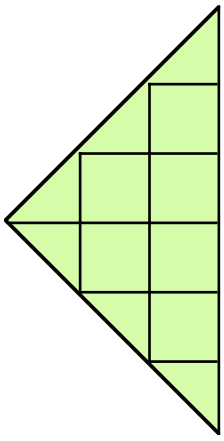
b



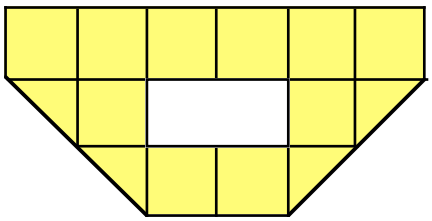
c



d



e



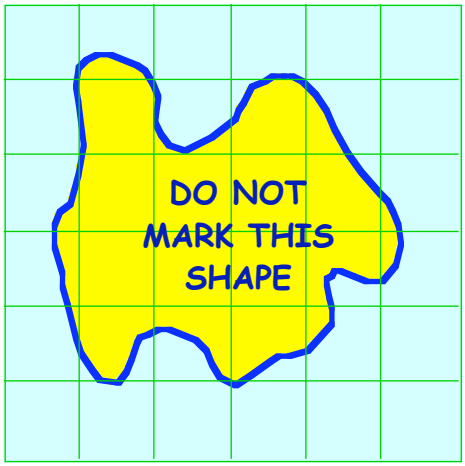
4. **Estimate** the areas of these shapes. Use this simple rule :-

If **more** than $\frac{1}{2}$ a box is covered —> **count it** as 1 cm^2

If **less** than $\frac{1}{2}$ a box is covered —> **do not count it** at all.

a

b



Area of a Rectangle - A Rule

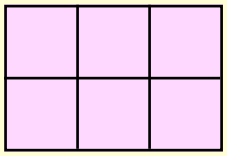
We can find the **area** of a **RECTANGLE** without counting squares on a grid.

We can find the area of a rectangle using a **formula** - another name for **a rule.**

The rectangle shown measures 3 cm by 2 cm.

Counting squares gives an area of **6** cm^2.

Also, **multiplying 3 by 2** also gives us **6** cm^2.



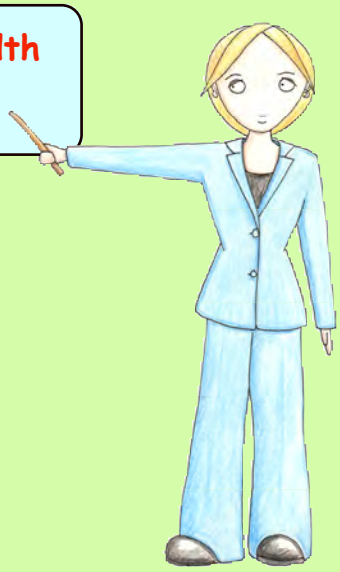
The area of any rectangle can be found by :-

MULTIPLYING THE LENGTH BY THE BREADTH.

It is easier to write it as :

Area = Length x Breadth

or A = L x B



You **must** write down the formula **and** your calculation when finding the area of a rectangle.

Example

A = L x B

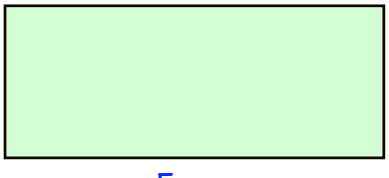
A = 4 x 2

A = 8 cm^2

Exercise 6

1. **Copy** each rectangle and complete each example to find the area :-

a

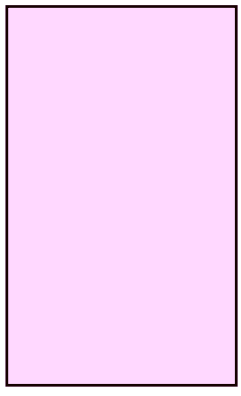


A = L x B

A = 5 x ...

A = ... cm^2

b



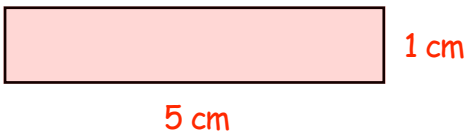
A = L x B

A = 5 x ...

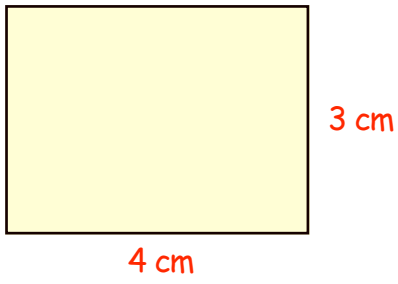
A = ... cm^2

2. Calculate the area (**in cm²**) of each of the following rectangles :-
(Remember to show your formula and calculation).

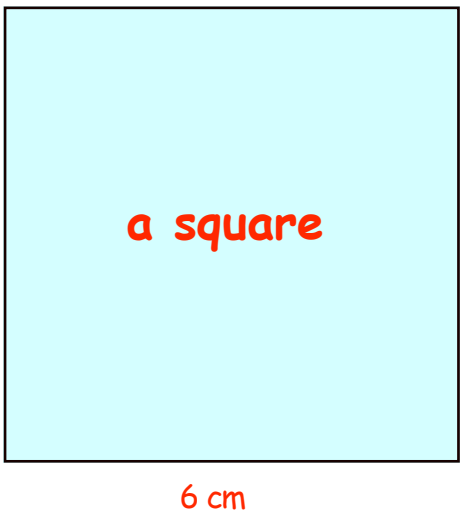
a



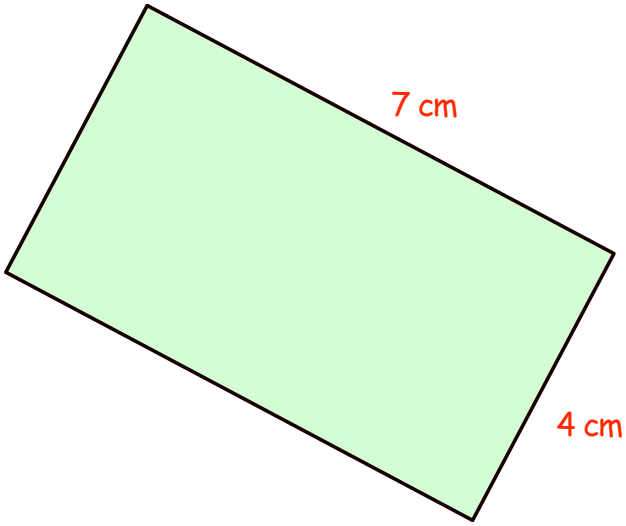
b



c



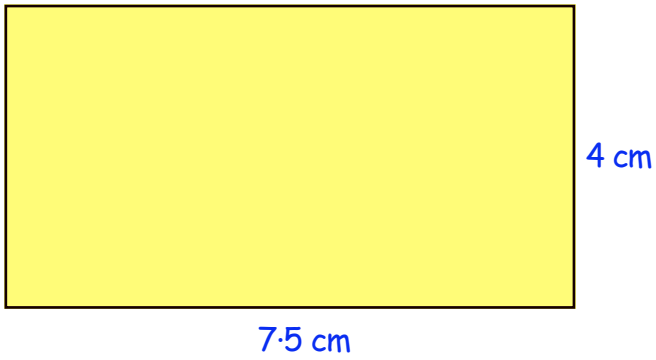
d



3. Calculate the area of each of the following rectangles :-

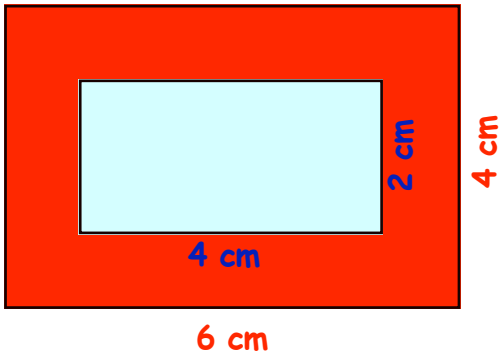
a

b



4. A piece of **red** rectangular card measures 6 centimetres by 4 centimetres.

A **blue** rectangle measuring 4 cm by 2 cm is cut from the card.



a Find the **total area** of the **red** card.

b Find the **area** of the **blue rectangle**.

c Find the **red shaded area**.

Topic in a Nutshell

1. Would you use a **ruler**, **tape measure** or a car **odometer** to measure :-

a your pinky length **b** the height of your house

c the width of this page **d** the distance from Glasgow to London ?

2. **Estimate** the length of each part in **question 1 a**, **b** and **c**.

3. **Estimate** (without using a ruler) the length of each of these lines :-

a

b

c

d

4. Use **a ruler** to draw a line :-

a 3 cm long **b** 12 cm long **c** $4\frac{1}{2}$ cm long **d** $10\frac{1}{2}$ cm long.

5. Change :- **a** 300 cm **to** m **b** 700 cm **to** m **c** 5 m **to** cm

d 10 m **to** cm **e** $3\frac{1}{2}$ m **to** cm **f** 650 cm **to** m.

6. Put these lengths in order, **smallest** first :-

145 cm, 1 m 25 cm, $1\frac{1}{2}$ metres, 1 metre 30 centimetres.

7. Write down the area (**in cm²**) of this shape :- 

8. Use a formula to calculate the area of the rectangle shown :-

Chapter 13

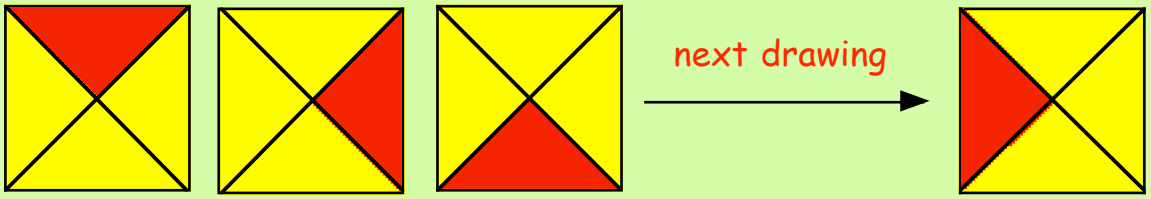
Patterns

Calculators should NOT be used anywhere in this chapter .

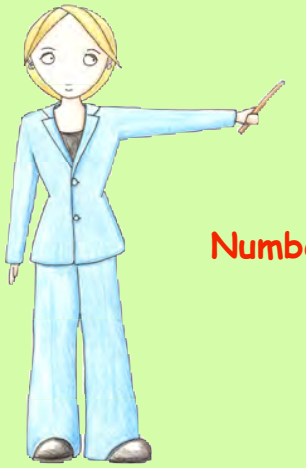
Basic Patterns

Here are some examples of patterns :-.

A drawing pattern :-



Letter patterns :-



A, C, E, G, I, → next letter → K

Z, Y, X, W, V, → next letter → U

Number patterns :-

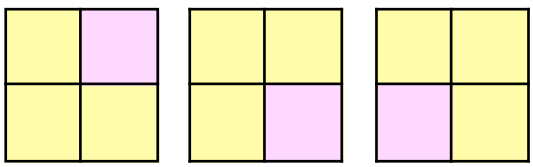
2, 4, 6, 8, 10, → next number → 12

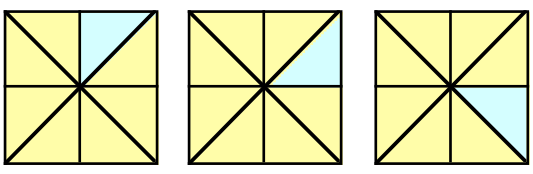
23, 19, 15, 11, 7, → next number → 3

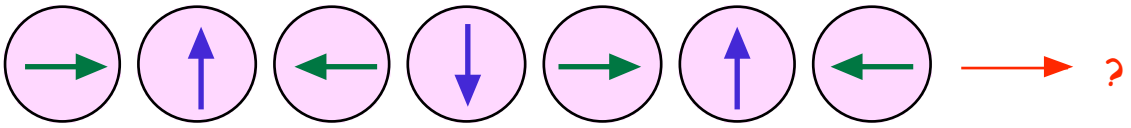
Can you see how to make the next pattern in each example above ?

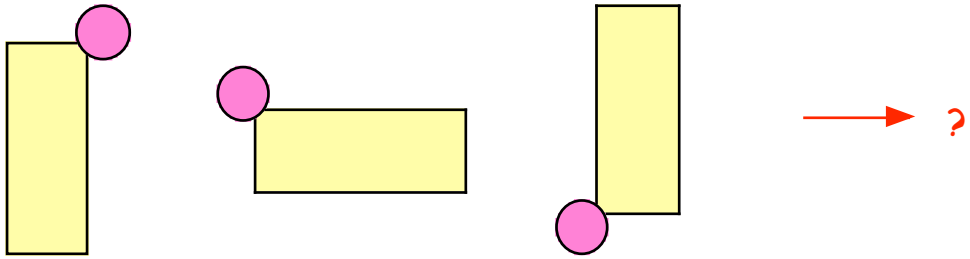
Exercise 1

1. In each pattern below draw and colour in the **next drawing** :-

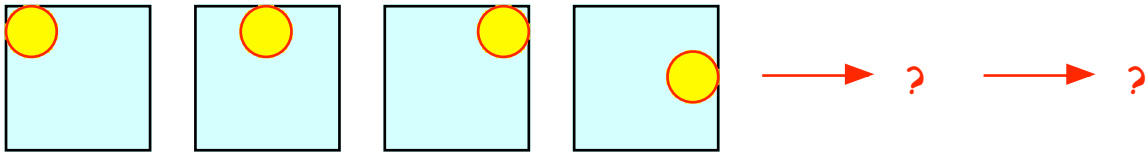
a 

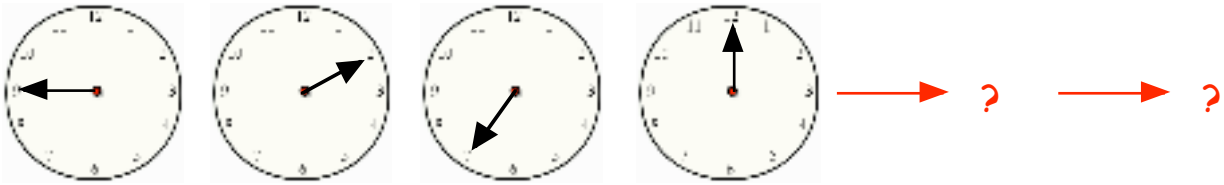
b 

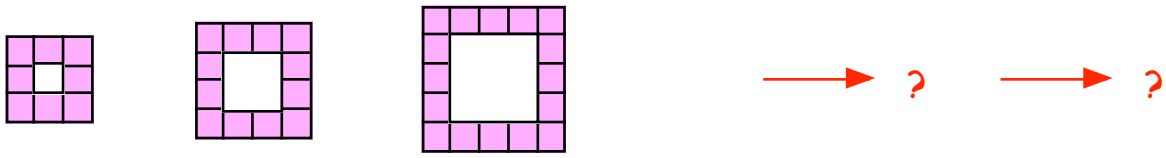
c 

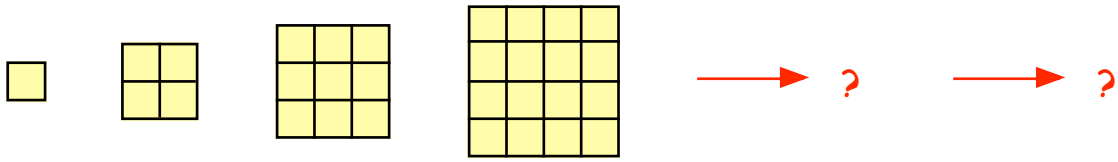
d 

2. Show the next **two drawings** in each pattern below :-

a 

b 

c 

d 

3. Write down the **next letter (or letters)** in each pattern :-

(*Hint :- Write out the full **alphabet** first*)

a G, H, I, J, ?

b T, S, R, Q, ?

c E, G, I, K, ?

d A, E, I, M, ?

e A, E, I, O, ?

f A, Z, B, Y, C, ?

g C, D, F, I, M, ?

h M, O, Q, S, U, W, ?

i AB, CD, EF, GH, ??

j ABC, CED, EFG, GHI, ???

When describing a number pattern :-

- write the **starting number** and
- by how much it goes **up** or **down**.

Example :-

To describe the pattern 3, 7, 11, 15 ... ,

you would write - **"It starts at 3 and goes up by 4 each time".**

4. Describe each of the following patterns by writing :-

"It starts at ..... and goes up (or down) by ..... each time".

a 1, 3, 5, 7, ...

b 5, 10, 15, 20, 25, ...

c 60, 50, 40, 30, ...

d 18, 15, 12, 9, 6, ...

e 10, 21, 32, 43, ...

f 20, 35, 50, 65, ...

g 13, 11, 9, 7, ...

h 100, 400, 700, 1000, ...

i 4, 4·5, 5, 5·5, 6, ...

j 750, 600, 450, 300, ...

5. Write down the **next number** in each of the patterns in **question 4**.

6. Write down the **next number** in each pattern :-

a 5, 7, 9, 11, ?

b 20, 30, 40, 50, ?

c 8, 10, 12, 14, ?

d 5, 10, 15, 20, 25, ?

e 3, 6, 9, 12, 15, ?

f 4, 8, 12, 16, 20, ?

g 7, 14, 21, 28, ?

h 6, 10, 14, 18, 22, ?

i 40, 38, 36, 34, ?

j 30, 27, 24, 21, 18, ?

k 26, 22, 18, 14, ?

l 121, 110, 99, 88, 77, ?

m 8, 11, 14, 17, ?

n 1, 10, 19, 28, 37, ?

7. Write down the next number in each of these **harder** patterns :-

a 64, 32, 16, 8, 4, ?

b 3, 6, 12, 24, ?

c 7, 8, 10, 13, 17, ?

d 80, 40, 20, 10, ?

e 121, 232, 343, 454, ?

f (1 x 2), (2 x 3), (3 x 4), (4 x 5), ?

8. **Copy** each number pattern below filling in **all** missing numbers :-

a 12, 14, ?, 18, 20, ?

b 2, ?, 8, 11, 14, ?

c 54, 44, 34, 24, ?, ?

d 15, ?, 23, ?, 31, 35

e 55, 44, ?, 22, 11, ?

f 2, 7, ?, ?, 22, 27, ?

g ?, ?, 19, 17, 15, ?

h ?, 10, ?, 20, 25, 30, ?

9. Look at this **multiplication table** chart :-

X	1	2	3	4	5	6	7	8	9
1	1	2	3	4	5	6	7	8	9
2	2	4	6	8	10	12	14	16	18
3	3	6	9	12	15	18	21	24	27
4	4	8	12	16	20	24	28	32	36
5	5	10	15	20	25	30	35	40	45
6	6	12	18	24	30	36	42	48	54
7	7	14	21	28	35	42	49	56	63
8	8	16	24	32	40	48	56	64	72
9	9	18	27	36	45	54	63	72	81

Can you see the **yellow line** is part of the **2 times** table answers ?

a **Copy** and complete :-

"the **green line** is part of the ... times table answers".

b Describe the number pattern on :-

i the **blue** line

ii the **red** line

iii the **pink** line

iv the **grey** line

c Make a **neat copy** of the number chart or use the worksheet.

Mark on it with coloured pencils any other number patterns that you can pick out.

W'Sheet 13·1

d Describe each of these number patterns you have found, in a sentence.

Links between tables

Connections can be found between some of the **multiplication** tables.

Look at the **3 times** table.

3	x	1	= 3
3	x	2	= 6
3	x	3	= 9
3	x	4	= 12
3	x	5	= 15
3	x	6	= 18
3	x	7	= 21
3	x	8	= 24
3	x	9	= 27
3	x	10	= 30

Now look at part of the **9 times** table.

9	x	1	= 9	or 3 x 3 x 1 = 9
9	x	2	= 18	or 3 x 3 x 2 = 18
9	x	3	= 27	or 3 x 3 x 3 = 27

Can you see a **connection** between the **3 and the 9 times tables** ?

Exercise 2

1. a Write out the **2 times** table.
   b Write out the **4 times** table.
   c Can you see a link between the **2 and 4 times** tables ? Explain this link.

2. a Write out the **4 and the 8 times** tables.
   b Explain the link between these two tables.

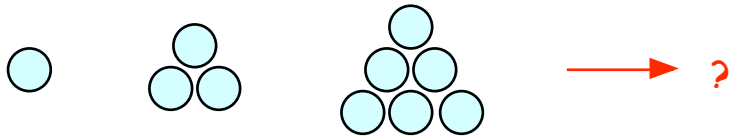
3. a Show a link between the **5 and the 10 times** tables.
   b Show a link between the **2 and the 8 times** tables.
   c Show a link between the **2 and the 10 times** tables.

4. Can you show other times table links ? - **INVESTIGATE**

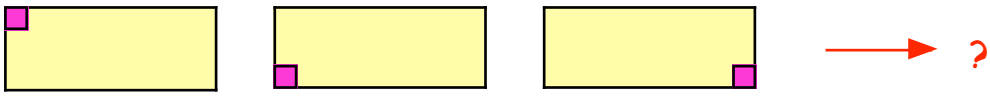
Topic in a Nutshell

1. For each of the following patterns, draw and colour in the **next drawing** :-

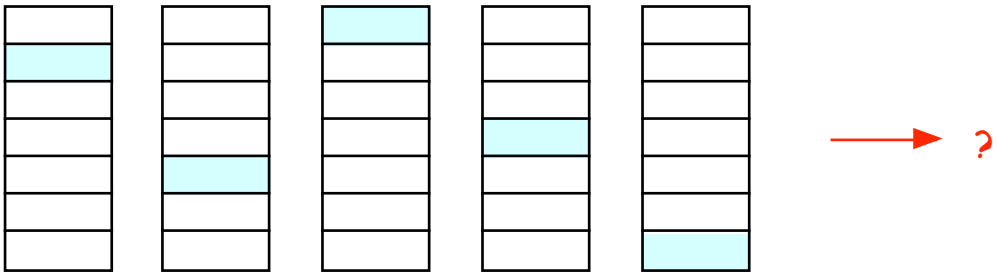
a



b



c



2. Write down the **next letter** in each pattern :-

a B, D, F, H, ? **b** Q, P, O, N, ?

c A, D, G, J, ? **d** AC, BD, CE, DF, ?

3. The number pattern - 1, 3, 5, 7, 9, ...,

"Starts at 1 and goes up by 2 each time"

Describe the following number patterns **in the same way** :-

a 4, 8, 12, 16, ..., **b** 26, 21, 16, 11, ...,

c 8, 8·5, 9, 9·5, ..., **d** 640, 320, 160, 80, ...,

4. Write down the **next** number in each pattern :-

a 6, 9, 12, 15, ? **b** 1, 2, 4, 8, ?

c 100, 95, 90, 85, ? **d** 200, 100, 50, ?

e 131, 242, 353, ? **f** (1 x 4), (2 x 5), (3 x 6), ?

5. **Copy** each number pattern below and enter in **all the missing numbers** :-

a 10, 12, ?, 16, 18, ? **b** 88, ?, 66, 55, ?, 33.

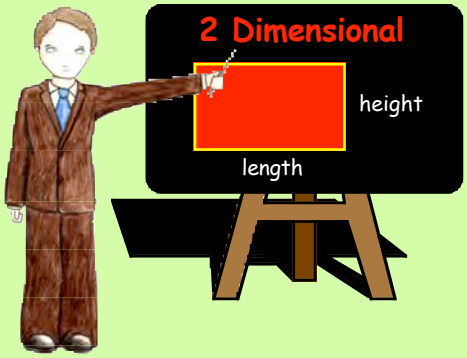
c ?, ?, 24, 21, 18, ? **d** ?, 3, 9, 27, ? (* hard).

Chapter 14

Three Dimensions

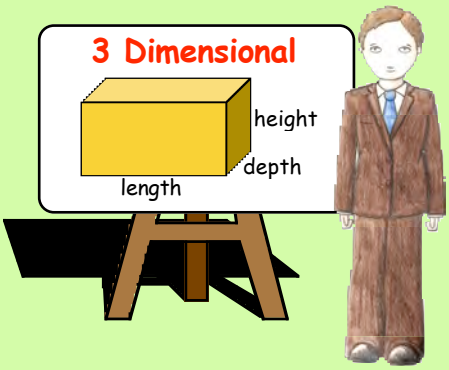
Calculators should NOT be used anywhere in this chapter except in the final exercise.

3-D Shapes



Flat shapes, drawn on paper, like squares, circles or triangles are called **2-dimensional**.

They have 2 "dimensions" or 2 sizes :-
(- **length and height**)

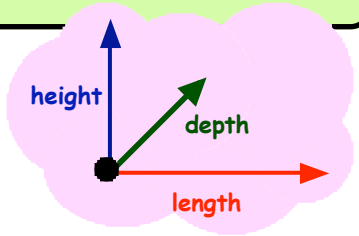


Solid shapes, like cubes, cones and cylinders, are called "**3-dimensional**".

They have 3 "dimensions" or 3 sizes :-
(- **length, height and depth** (or **breadth**))

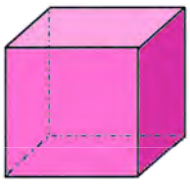
You should know the words :-

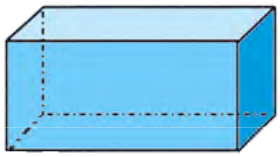
cube, cuboid, cone, cylinder, sphere, triangular prism, square pyramid.

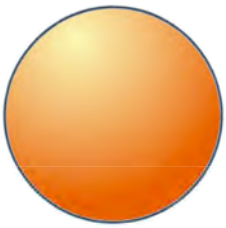


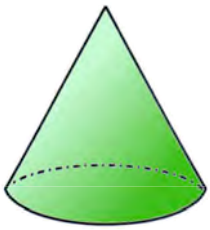
Exercise 1

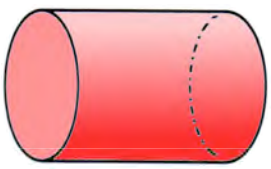
1. Name each of the following 3-dimensional shapes :-

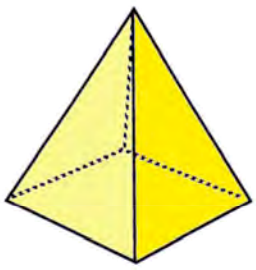
a 

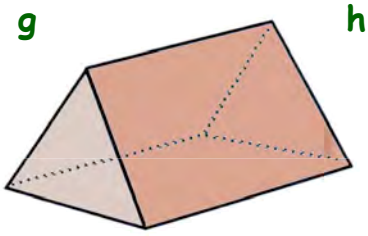
b 

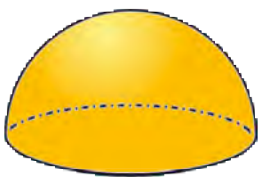
c 

d 

e 

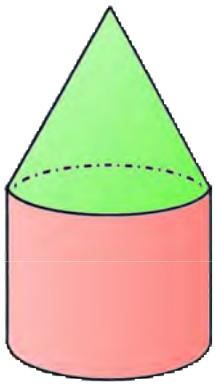
f 

g 

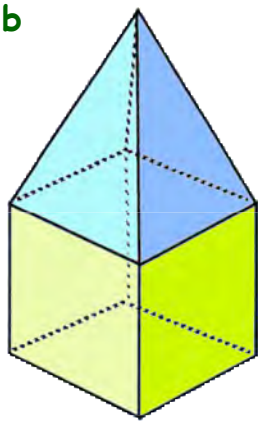
h 

2. The objects below are made up of more than one 3-dimensional shape.
List the different shapes each time :-

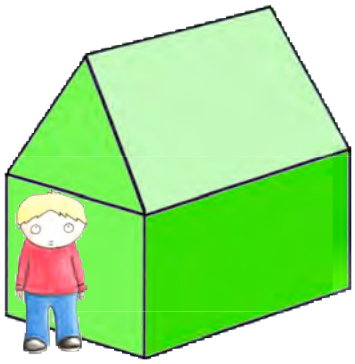
a



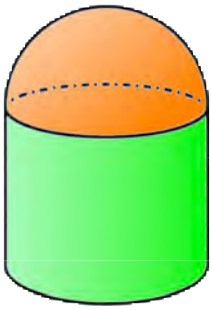
b



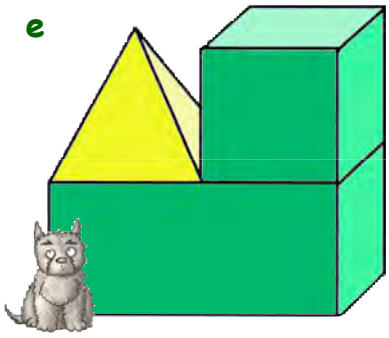
c



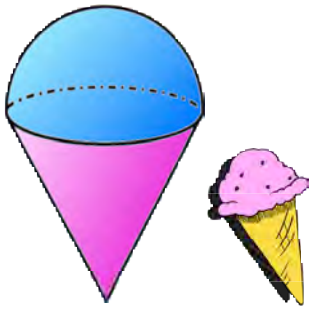
d



e

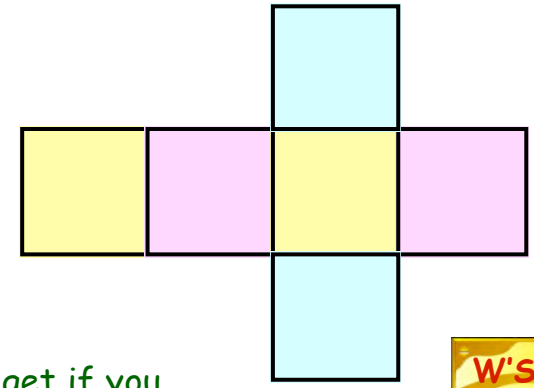


f



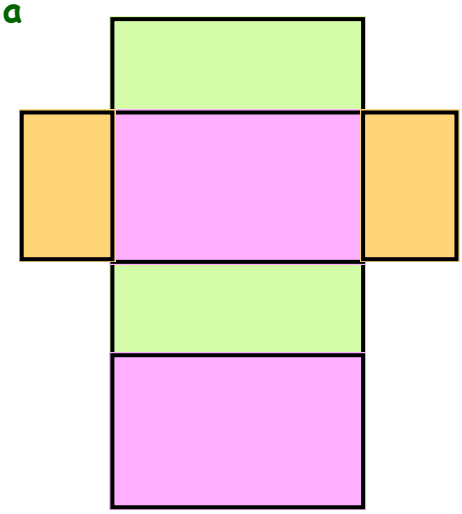
3. If this flat (**2-dimensional**) shape was cut out and folded along the lines, it would make a **3-dimensional** shape.

Which shape ?

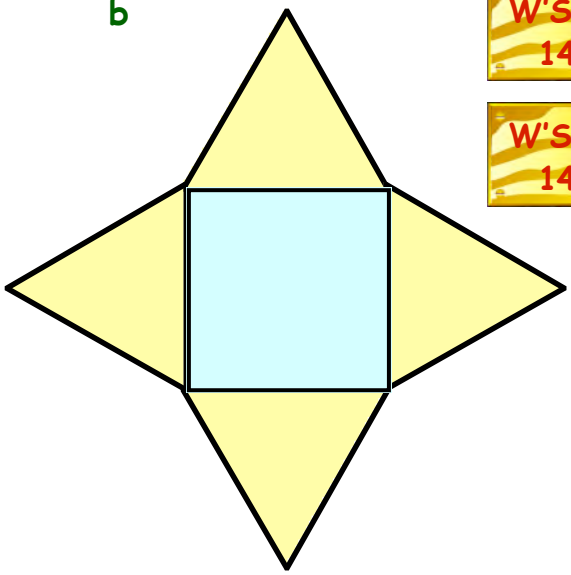


4. Which 3-dimensional figures would you get if you cut the following shapes out and folded them up ?

a



b

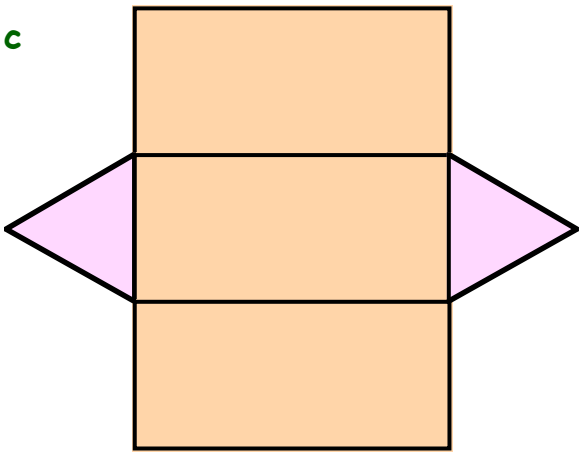


W'Sheet 14·1

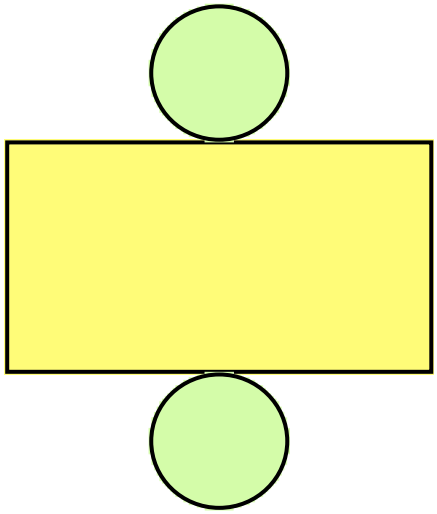
W'Sheet 14·2

W'Sheet 14·3

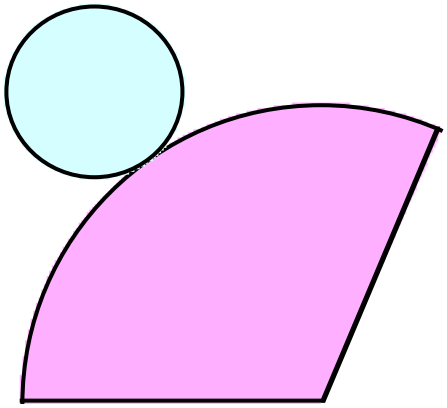
c



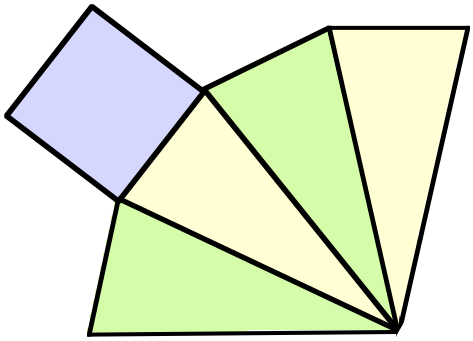
d



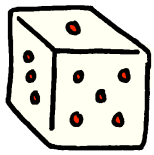
e



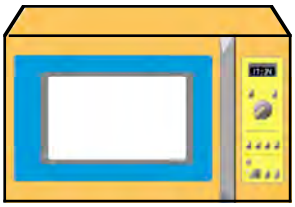
f



5. a Make a list of as many objects as you can (**at least 4**) in the classroom, outside or at home which are in the shape of a **cube**.



b



Make a list of as many objects as you can (**at least 4**) in the classroom, outside or at home which are in the shape of a **cuboid**.

c Make a list of as many objects as you can (**at least 4**) in the classroom, outside or at home which are in the shape of a **cylinder**.

d

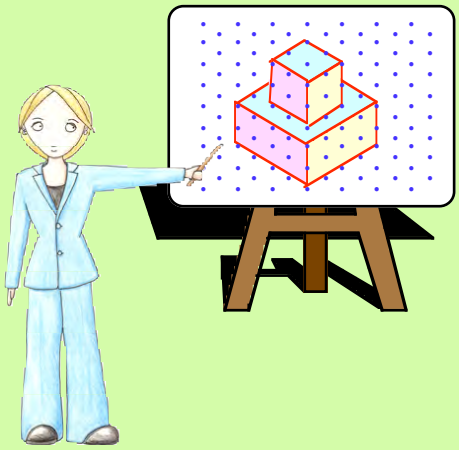
Make a list of as many objects as you can (**at least 4**) in the classroom, outside or at home which are in the shape of a **sphere**.

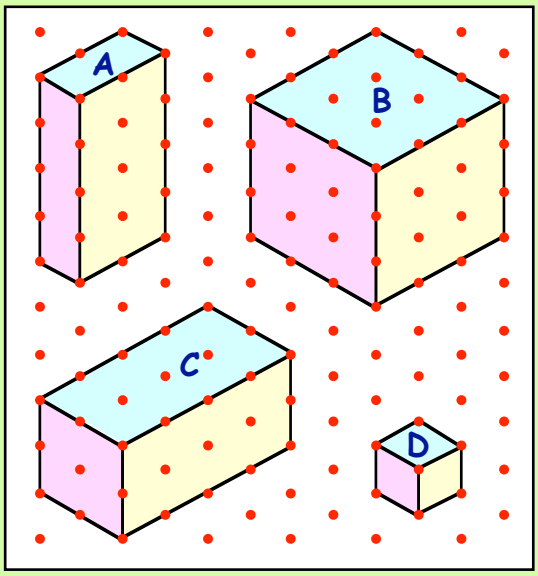
e Make a list of as many objects as you can (**at lease 4**) in the classroom, outside or at home which are in the shape of a **cone**.

Triangular Dotty Paper

A good way of drawing solid **3-dimensional** shapes like cubes and cuboids is to use triangular dotty paper (or **isometric** paper).

Look at how easy it is to draw these cuboids and cubes on isometric paper.

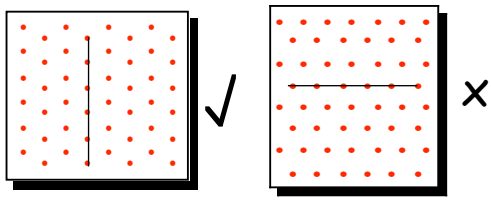




Exercise 2

(You will need triangular dotty paper for this exercise)

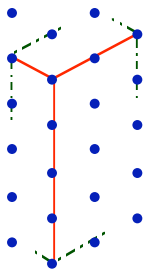
Make sure you line up the dotty paper the correct way. (see opposite)



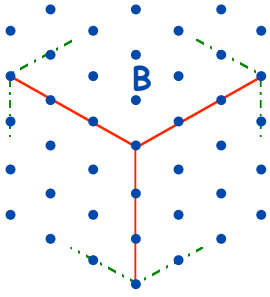
1. Look at shape A (the cuboid) at the top of the page.

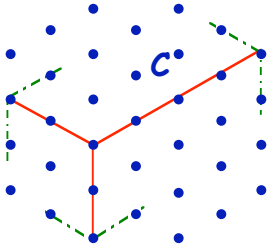
   To draw it, start with the 3 **red** lines shown opposite.

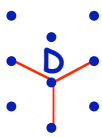
   Then complete the figure (use the **green** dotted lines to help).



2. Draw cuboids **B**, **C** and **D** using the help given below :-

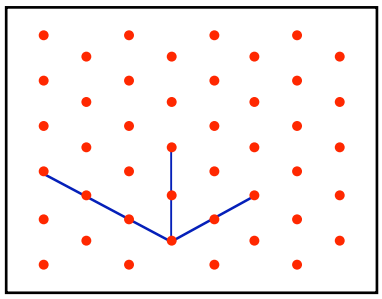




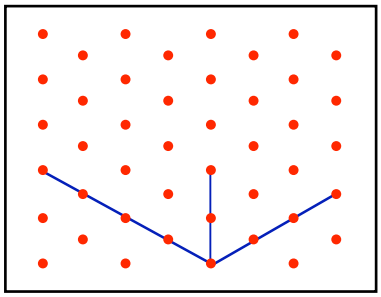


3. **a** Copy the 3 lines shown onto triangular dotty paper.

b Complete the figure by adding 6 more lines to show a **cuboid**.



4.

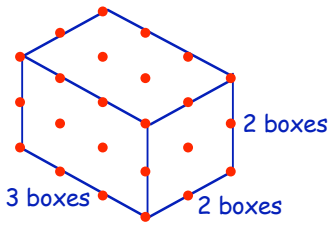


a Copy the 3 lines shown on the left onto triangular dotty paper.

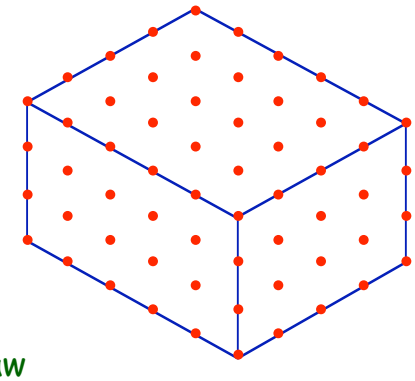
b Complete the figure by adding **six** more lines to show a **cuboid**.

5. In question 3, your cuboid should have measured **3 boxes** long by **2 boxes** wide by **2 boxes** high.

What is the **length**, **width** and **height** of the cuboid you drew in question 4 ?



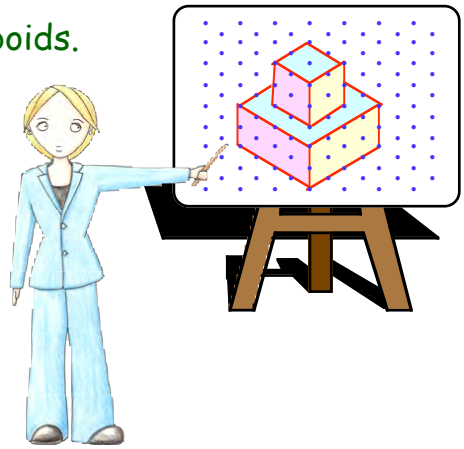
6. Use your dotty paper to draw this cuboid which measures **5 boxes** by **4 boxes** by **3 boxes**.



7. Now use your dotty paper to draw a **cuboid** which is 4 boxes long, 3 boxes wide and 4 boxes high.

8. Use dotty paper to draw a **cube** measuring 4 boxes by 4 boxes by 4 boxes.

9. Miss Young drew a nice shape made up of 2 cuboids. Draw it on dotty paper and colour it in like she has.



10. Try to draw some nice **3-dimensional** figures made up of cubes and cuboids.

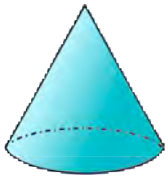
Cut out the best ones and make a display of them on the wall.

Topic in a Nutshell

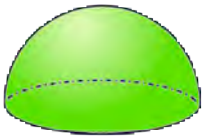
1. Name the 3-dimensional **MATHEMATICAL** shapes shown below:-

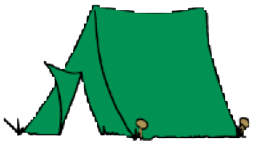
a 

b 

c 

d 

e 

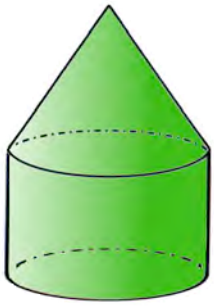
f 

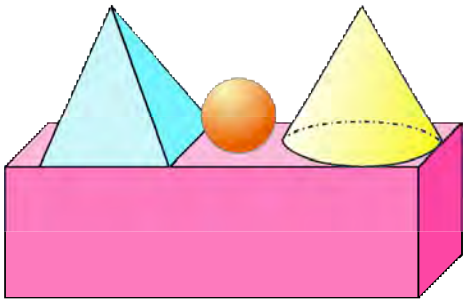
g 

h 

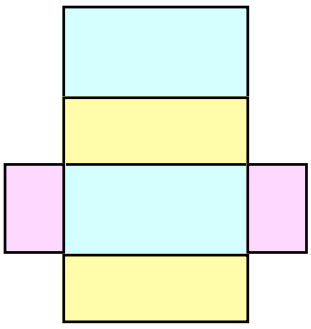
2. The two objects shown below are made up of more than one 3-D shape.

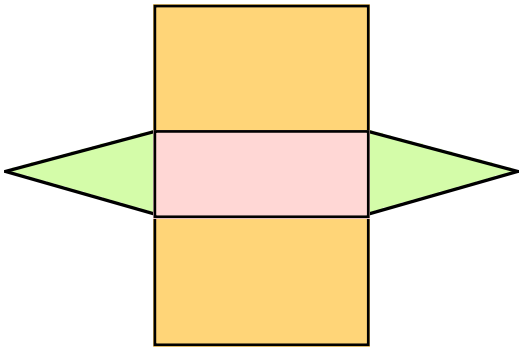
List the shapes they are made up of :-

a 

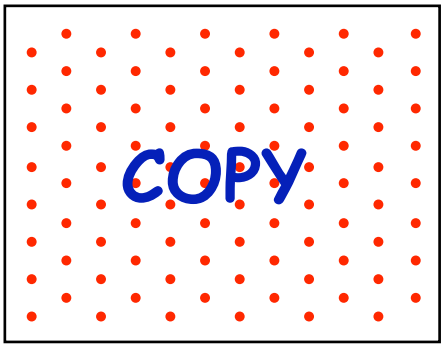
b 

3. Which 3-dimensional figure would you get if you cut out each shape and folded it up.

a 

b 

4. Use a piece of isometric (dotty) paper to draw a **cuboid** which is 6 boxes by 2 boxes by 2 boxes.

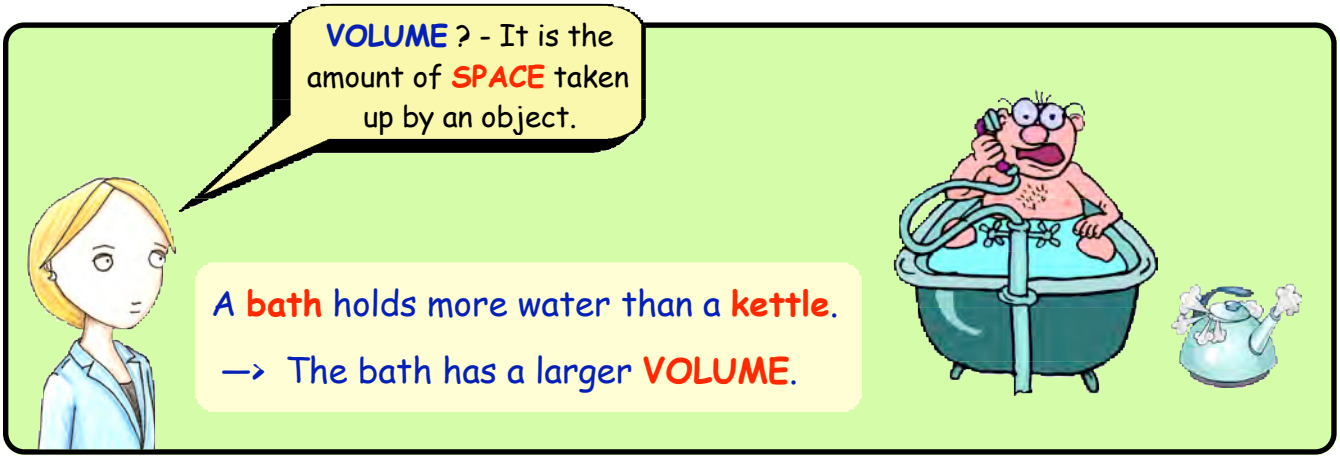


Chapter 15

Calculators should NOT be used anywhere in this chapter.

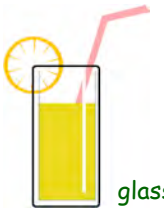
Volume & Weight

Volume - What's that ?



Exercise 1

1. Which of these holds **more** liquid when full ?

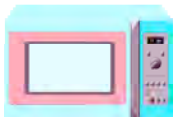

glass for juice


wine glass

2. Put these shapes in order, starting with the one which holds the **least**.


dishwasher


cooking-pot


microwave

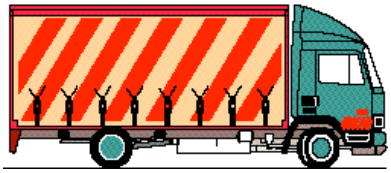
3. Which takes up **less** space - a football or a tennis ball ?


football


tennis ball

4. Put these in order, starting with the one which takes up the **most** space.


Van


lorry


motor cycle


Mini

5. 

Ten glasses of orange juice can be poured from this carton.

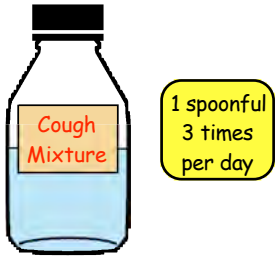
Six children have one glass **each**.

How many glasses can **still** be poured from the carton ?

6. Lucy has a bad cough.
The doctor gave her some medicine.
It had to be taken as follows :-

- one spoonful 3 times a day for 5 days.

How many spoonfuls will Lucy have taken by the end of the 5 days ?



7. 

Nick has to take **2 capsules, 4 times per day** for his fever.

a How many capsules does Nick take **each day** ?

b The tub hold 24 capsules.

How many **days** will the tub last Nick ?

8. Shown is part of a recipe for making Gingerbread.

Use the list of ingredients to answer the following questions :-

Gingerbread Men

4 ounce margarine
6 ounce black treacle
2 ounce golden syrup
2 ounce brown sugar
Quarter pint of milk
2 eggs
1 rounded teaspoon mixed spice

a How much **syrup** is used ?

b Which piece of cutlery is used to measure out the **mixed spice** ?

c What does the recipe use **less** of - margarine or treacle ?

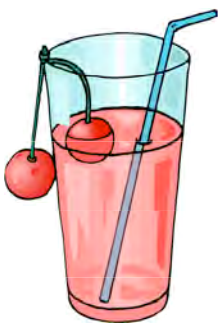
d The amount shown above will make **10 gingerbread men**.
I only want to make five. How many eggs will I need to use ?

9. Julie's dad makes "cherry cocktail" in a bowl for her 10th birthday party.

The bowl holds **20 glasses** of the mixture.

At the party Julie and her pals drink a total of **10 glasses** of the juice.

What **fraction** of the cherry cocktail is left after the party ?

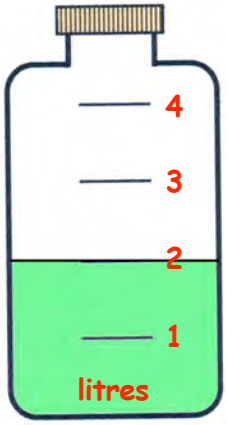


The Litre / Reading Scales

Exercise 2

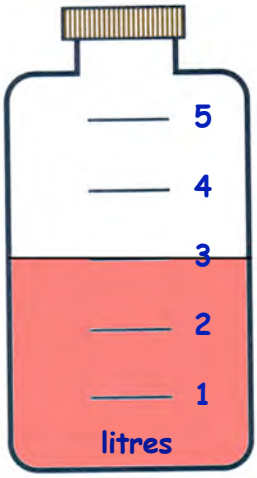
1. How many litres of flavoured liquid are there in each bottle ?

a



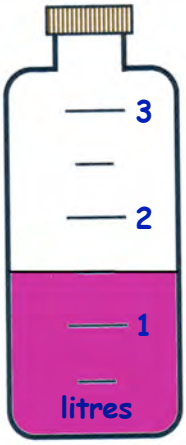
limeade

b



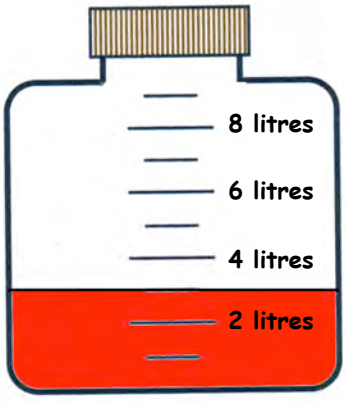
strawberry

c



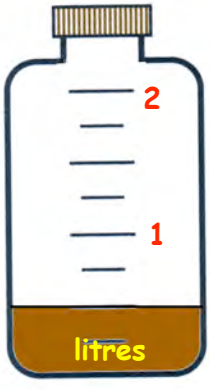
grape

d



cherry

e



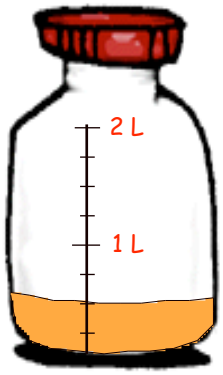
chocolate

f

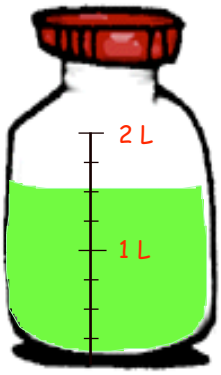
blueberry

2. Write down the **volume** of juice in these two cycle flasks :-

a



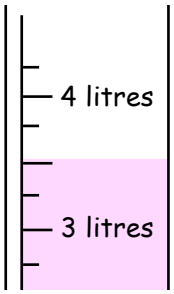
b



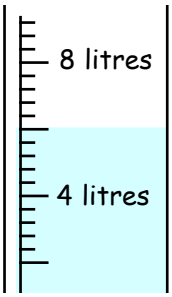
3. Two beakers are filled with coloured water.

Take a reading of how many litres of water is in each one.

a



b



4. Jane has a **1 litre** carton of apple juice.

Which of the following usually holds **less** than 1 litre :-

a coffee mug **b** wash-hand basin **c** teaspoon

d egg cup **e** can of lemonade **f** garden pond ?

5.

Mr Todd has a **1 litre** bottle of fizzy wine.

Which of the following usually holds **more** than 1 litre :-

a wine glass **b** jacuzzi

c baby's bottle **d** oil drum

e pot for soup **f** a garden pond ?

6. A jug of milk holds **2 litres**.
Ben pours himself half a litre.

How much is left in the jug ?

7. A glass for juice can hold a **quarter of a litre.**

How many glasses can you fill from a :-

a **1 litre** bottle of cola **b** **2 litre** carton of pineapple juice

c **5 litre** keg of orange **d** **10 litre** barrel of cider ?

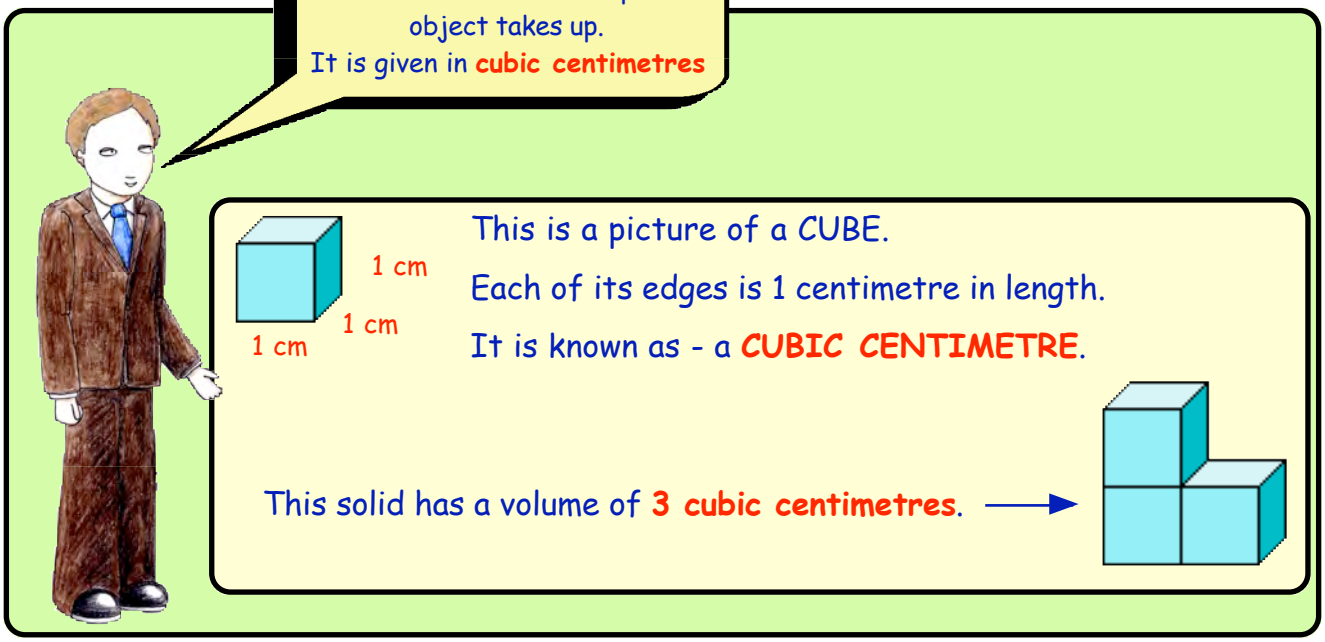
8. 

A painter opens a **two and a half litre** tin of paint.

He pours the paint evenly into **half litre** pots.

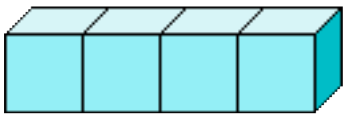
How many pots will he need ?

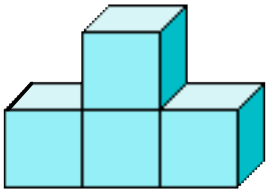
The Cubic Centimetre

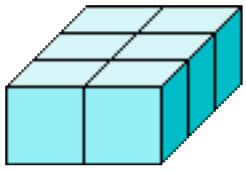


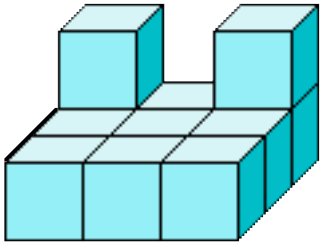
Exercise 3

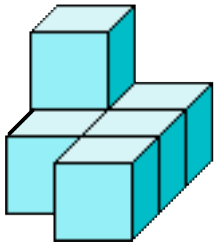
1. Count the number of cubic centimetres in each of these shapes :-

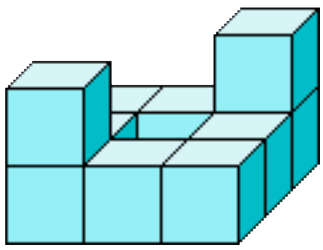
a 

b 

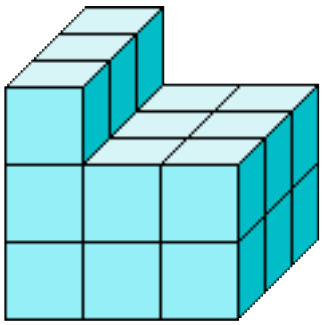
c 

d 

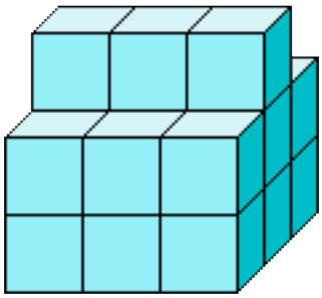
e 

f 

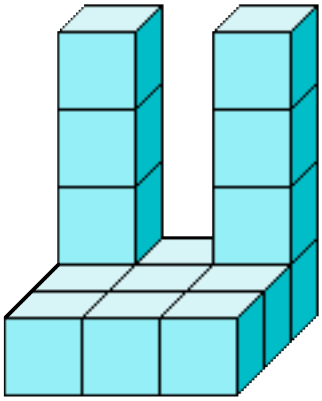
g



h



i

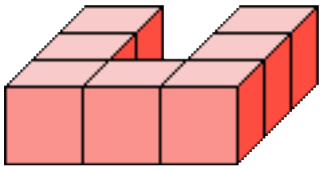


2. Lucy has a box of **10 bricks**.

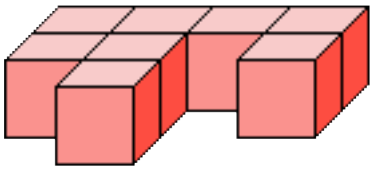
She builds each of the following shapes.

How many bricks **out of the 10** is she left with each time ?

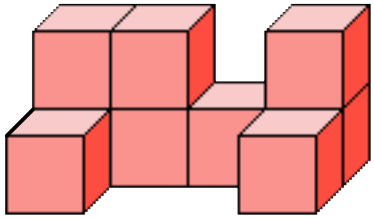
a



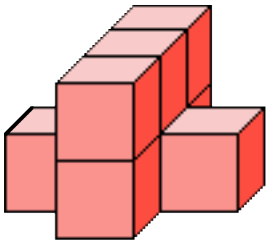
b



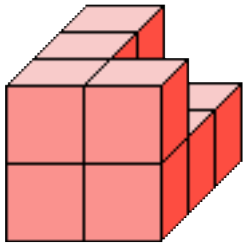
c



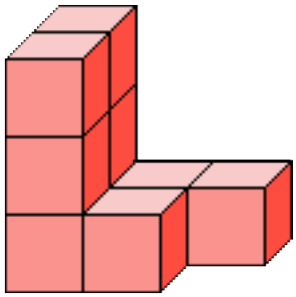
d



e



f



3. Look again at **question 2** and answer these questions :-

a Which shape has the **largest** volume ?

b Which shape has the **smallest** volume ?

c Which shapes have the **same volume** and what is that volume ?

d How many bricks would Lucy need to build **ALL** the solids without knocking any of them down ?

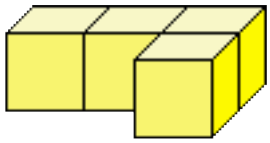
e Lucy's friend, Nick, only has **16 cubic centimetre** bricks.

Make a list of the **PAIRS** of the above shapes Nick can make.

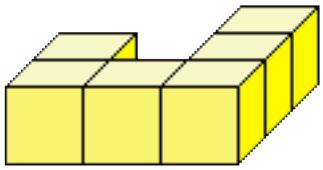
example - Nick can make shapes **a** and **b** from his 17 bricks.

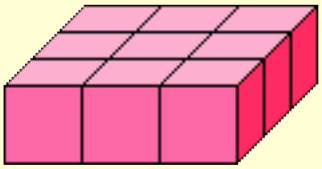
4. Choose **two** yellow solids from the four shown below which can be put together to make the red solid.

a

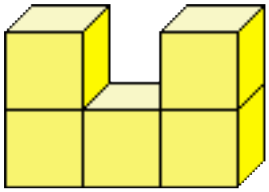


b

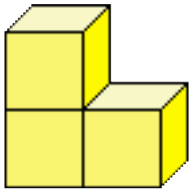




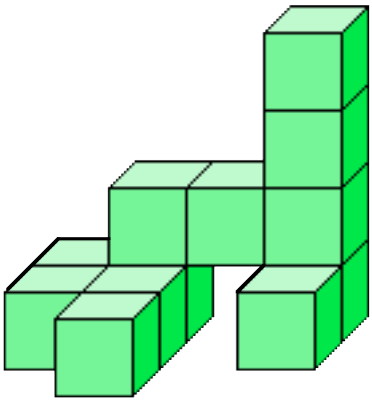
c



d



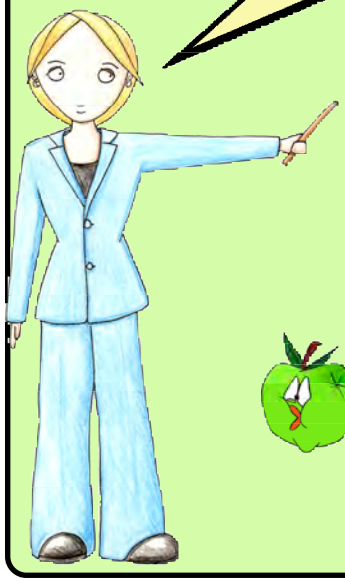
5.



Write down the volume of this shape, in cubic centimetres.

Weight

One of the best ways of trying to guess the weight of an object is to **compare it with something else**.



This litre bottle of Cola and the block of butter weigh **1 kilogram each**.

If you were to hold this **APPLE** in your hand, - ask yourself the question .....

"does it weigh **more** or **less** than a bottle of Cola" ?

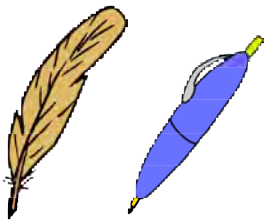
If you think the apple is **lighter**, then it must weigh **less** than **1 kilogram** !

Exercise 4

1. Write down which is the **lighter** in each pair :-

   a a mouse or a cat.
   b a lorry or a car.
   c a golf ball or a football.
   d a CD or a video.

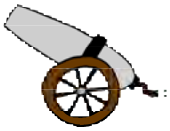
2. Write down which is the **heavier** in each pair :-



   a a feather or a pen.
   b a microwave oven or a washing machine.
   c a magazine or a sheet of paper.
   d a brick or a pebble.

3. Put these military objects in order of weight, starting with the **heaviest** :-


medal


cannon


soldier


ship


tank

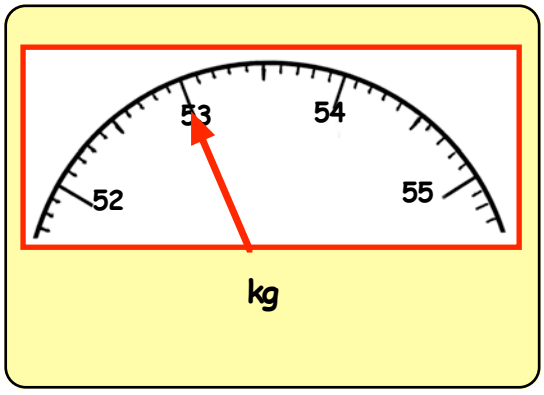
4. The litre bottle of Cola and the tub of butter shown in the introduction each weigh **1 kilogram** (1 kg).

   What do you think these items weigh - answer **more** or **less** than 1 kg :-

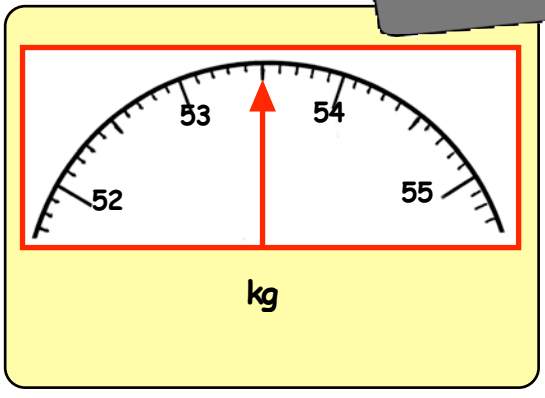
   a a packet of bubble gum
   b a colour printer
   c a concrete slab
   d a mobile phone
   e a pedal bin
   f a car battery ?

5. Write down the reading on each of these bathroom scales :-

a

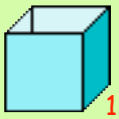


b



The Kilogram and the Gram

A gram is smaller than a kilogram.
A kilogram is made up of 1000 gram weights.



If you fill a hollow cubic centimetre with water, it will weigh 1 gram

Something to Remember

1 kg = 1000 g

Examples :-

1. 5 kg = 5000 g
2. 3000 g = 3 kg
3. 2350 g = 2 kg 350 g
4. 1 kg 40 g = 1040 g

Exercise 5

1. Write these weights in **grams** :-

a 2 kg	**b** 7 kg	**c** 15 kg
d 20 kg	**e** 55 kg	**f** 3 kg 500 g
g 1 kg 700 g	**h** 4 kg 250 g	**i** 6 kg 610 g
j 3 kg 425 g	**k** 7 kg 58 g	**l** 10 kg 22 g
m 6 kg 80 g	**n** 9 kg 8 g	**o** 1 kg 1 g

2. The weights shown below are in grams.

   Change each of them to **kilograms - or - to kilograms AND grams** :-

a 2000 g	**b** 7000 g	**c** 9000 g
d 16 000 g	**e** 40 000 g	**f** 72 000 g
g 5600 g	**h** 6800 g	**i** 18 200 g
j 9456 g	**k** 7240 g	**l** 2760 g
m 5002 g	**n** 8080 g	**o** 1015 g

3. Lucy is preparing a salad bowl for her mum's dinner party.
The list of vegetables Lucy uses is shown below.

Lettuce	200 g
Carrots	240 g
Tomatoes	370 g
Spring Onion	140 g
Red/Green Peppers	215 g
Raddish	50 g
Red Cabbage	355 g
Cucumber	3

a What is the **total** weight of the Lettuce, the Carrots and the Tomatoes ?

b What is the **total** weight of the Onions, the Peppers the Raddish and the Cabbage ?

c What is the total weight of **all** the vegetables (**except the cucumbers**) ?

d Write the total weight of **all** these vegetables in **kilograms and grams**.

e Lucy's mum says she puts in **too much cucumber**.
She tells Lucy to only put in **half** the amount.

How many cucumbers will Lucy now use in the salad ?

4. Lucy also "helps" with the dessert.
She buys **one and a half kilograms** of strawberries to have with ice-cream.

She eats **600 grams** of them herself while she is putting them into the dessert bowls !

a How many grams of strawberries did Lucy buy ?

b How many grams of strawberries were left for her mum's guests after Lucy had eaten her share ?

5.

Santa left two parcels - one each for Jason and his sister Danna.
Jason's parcel weighed **3 kg 300 g** and Danna's weighed **2 kg 700 g**.

How much **lighter** was Danna's parcel ?

6. Mrs Bryson bought two identical bottles of ketchup from her local store. Each bottle weighed 880 grams.

a What is the total weight of the bottles, in grams ?

b What is their **total** weight in kilograms ?

7. **Chef Ramsay** has made two cakes.

Their **total weight** is **1 kg 750 g**.

The strawberry cake weighs **900 grams**.

What is the weight of the sponge cake ?

8.

Three identical bags of potatoes weigh a **total of 3 kg 600 g**.

a What is the weight of **1 bag**, in kg and g ?

b What is the weight of 1 bag, **in grams** ?

9. To decorate a chocolate cake, Gemma needs 340 grams of Chocolate Buttons.

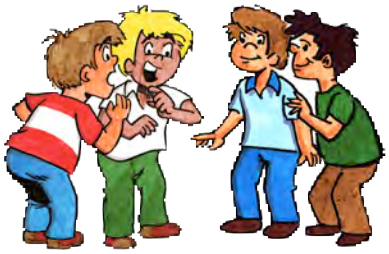
The Buttons can only be bought in 50 gram packets.

a How many packets will Gemma have to buy ?

b What weight of Chocolate Buttons will she have left over ?

10. Four boys went salmon fishing on a loch.

The largest fish each of them caught is given in the table below :-



Alan - 1 kg 150 g	**Colin - 1 kg 400 g**
Omar - 980 g	**Robert - 1 kg 5 g**

a Write down the names of the boys in order, starting with the one who caught the **biggest fish**.

b How many **grams** did Robert's salmon weigh ?

c What was the **difference** in weight between the largest and the smallest fish ?

d The local hotel keeper offers to buy any fish caught fresh in the loch that day, as long as that the fish weigh at least 1100 grams.

Which boys were **not** able to sell their salmon to the hotel ?

Topic in a Nutshell

1. Put these shapes in order, starting with the one which holds the **most**.

Wheelie Bin

Bin Lorry

Skip

2.

Twelve cups of coffee can be poured from this pot.

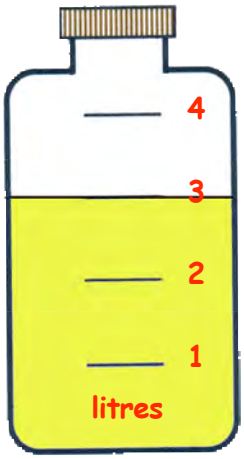
Nine children have one cup **each**.

a How many cups can **still** be poured from the pot ?

b What **fraction** of the coffee still **remains** in the pot ?

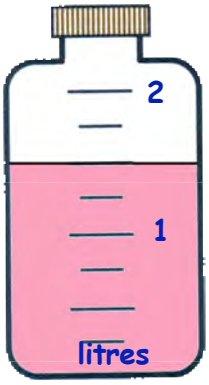
3. How many litres of juice are there in each bottle ?

a



lemon squash

b



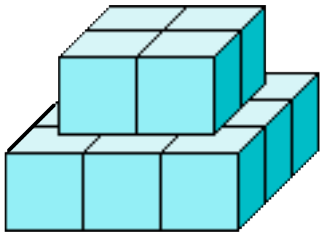
pink limonade

4. Ben buys a **5 litre** bottle of water.
He pours **half a litre** of the water into a kettle.

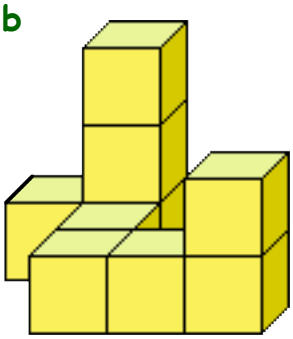
How much water is left in the bottle ?

5. How many cubic centimetres are there in each of these three shapes :-

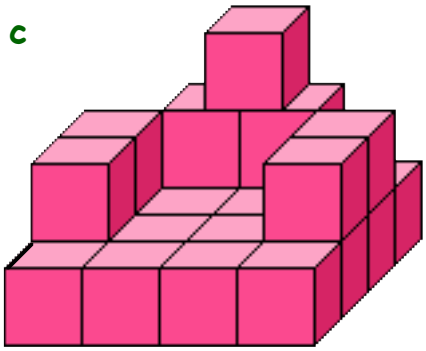
a



b



c



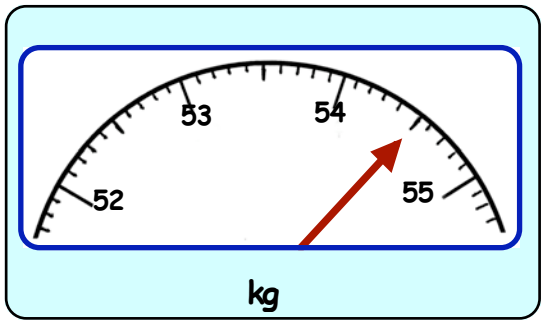
6. Write down which is the **heavier** in each pair :-

a boots or slippers.

b a cake of soap or a rubber duck.

c a bicycle or a motor bike.

7. Write down the reading on the bathroom scales.



8. Write these weights in **grams** :-

a 9 kg **b** 72 kg **c** 1 kg 500 g **d** 6 kg 30 g

9. Write these weights in **kilograms or kilograms and grams** :-

a 3000 g **b** 1750 g **c** 2020 g **d** 9005 g

10. Sisters Bobbie and Bunnie were handed a parcel each by aunt Mary for their birthday.
Bobbie's parcel weighed **2 kg 900 g**, but
Bunnie's parcel was **400 grams heavier**.

How heavy was Bunnie's parcel ?

Chapter 16

Calculators should NOT be used anywhere in this chapter unless asked to do so.

Revision Level C

1. Write the following numbers **in words** :-

a 5470 **b** 8026 **c** 9003 **d** 7989.

2. Write the following **using figures** :-

a four thousand three hundred and seventy two

b six thousand five hundred and four

c eight thousand and forty.

3. Put the following numbers in order starting with the **largest** :-

3010, 2998, 2899, 3002, 2987, 3101, 2098.

4. What does the **5** stand for in each of the following :-

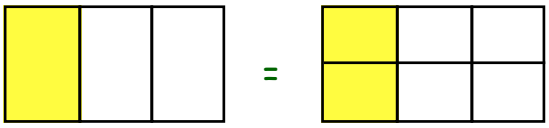
a 40**5**2 **b** 6**5**71 **c** **5**203 **d** 881**5** ?

5. **a** What is the number that is 100 **up from** 4260 ?

b What number is 300 **down from** 4450 ?

6. Copy and complete this fraction statement, using the diagram to help.

$\frac{1}{3} = \frac{?}{6}$

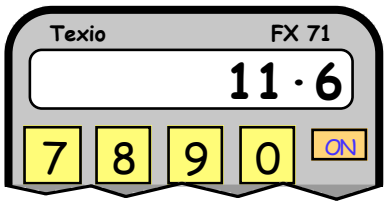


7. Find the missing values here :-

a $\frac{3}{5} = \frac{?}{10}$ **b** $\frac{12}{16} = \frac{3}{?}$ **c** $\frac{8}{12} = \frac{2}{?}$.

8. Lucy used a calculator to work out how much **MONEY** she owed. It showed **11·6** on the display.

How much money did Lucy owe ?



9. Write the following in pounds using the **£ symbol** :-

a 3 pounds and 27 pence. **b** 9 pounds and 4 pence.

10. **a** I bought a C.D. for **£7·75** and a magazine for **83p**.

How much change did I receive from a **£10** note ?

b If my change was all in coins, what is the **fewest** number of coins I could receive ? (*List the coins*).

11. Do the following mentally (**just write down your answers**) :-

a 6 + 6	**b** 47 + 6	**c** 89 + 7	**d** 128 + 8
e 360 + 30	**f** 90 + 520	**g** 35 - 7	**h** 72 - 8
i 150 - 3	**j** 540 - 30	**k** 610 - 60	**l** 800 - 40.

12. Copy down the following and find :-

a 407 + 54	**b** 621 - 60	**c** 800 - 58	**d** 821 - 65.

13. Find the following :- (**you must know your tables by now**).

a 5 x 6	**b** 3 x 7	**c** 8 x 6	**d** 4 x 9
e 7 x 7	**f** 8 x 7	**g** 7 x 9	**h** 7 x 6
i 5 x 7	**j** 9 x 8	**k** 6 x 9	**l** 10 x 8.

14. Do the following mentally (**just write down your answers**) :-

a 10 x 9	**b** 7 x 10	**c** 19 x 10	**d** 10 x 61
e 140 ÷ 10	**f** 10 x 521	**g** 700 ÷ 10	**h** 10 x 819.

15. Copy down the following and find :-

a 19 x 6	**b** 29 x 5	**c** 82 x 8	**d** 49 x 7

16. Copy down the following and find :-

a $4\overline{)156}$	**b** $8\overline{)464}$	**c** 504 ÷ 7	**d** $\frac{336}{6}$

17. Round the following numbers to the nearest **10** :-

a 73	**b** 277	**c** 133	**d** 35

18. Find an **approximate** answer the following by **ROUNDING** the 518 and 78 :-

"518 + 78"

is about 520 + ...

= .....

19. Find :-

a $\frac{1}{2}$ of 62 **b** $\frac{1}{3}$ of 27 **c** $\frac{1}{5}$ of 85 **d** $\frac{1}{10}$ of 410.

20. Write down the next **3 numbers** in each of the following patterns :-

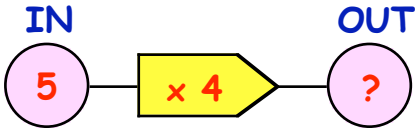
a 4, 8, 12, 16, ... **b** 10, 20, 30, 40, ...

c 56, 48, 40, 32 ... **d** 5, 8, 11, 14, ...

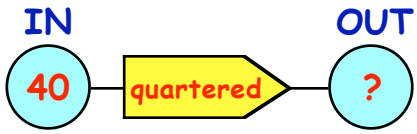
e 11, 17, 23, 29, ... **f** 50, 47, 44, 41, ...

21. Calculate the values of the "?"s in these **number machines** :-

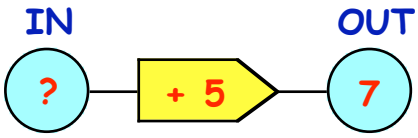
a



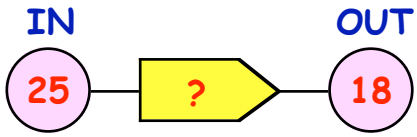
b



c



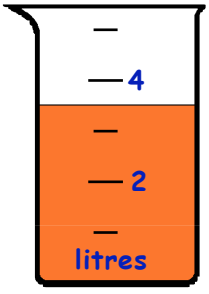
d



22. How many **grams** are in :-

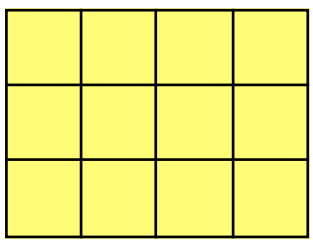
a 2 kg **b** 5 kg **c** $\frac{1}{2}$ kg **d** $2\frac{1}{4}$ kg ?

23. **Estimate** the volume of liquid in this jug (**in litres**).

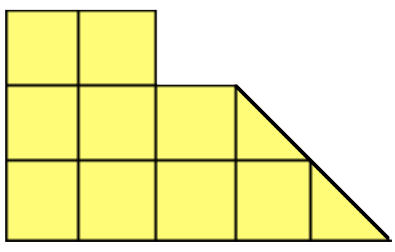


24. Write down the areas of these 2 shapes (**in cm²**).

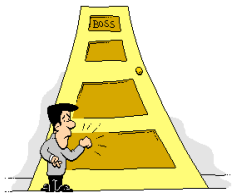
a



b

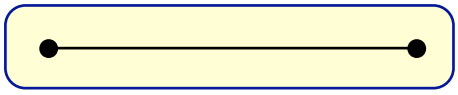


25. The **width** of the classroom door is about :-



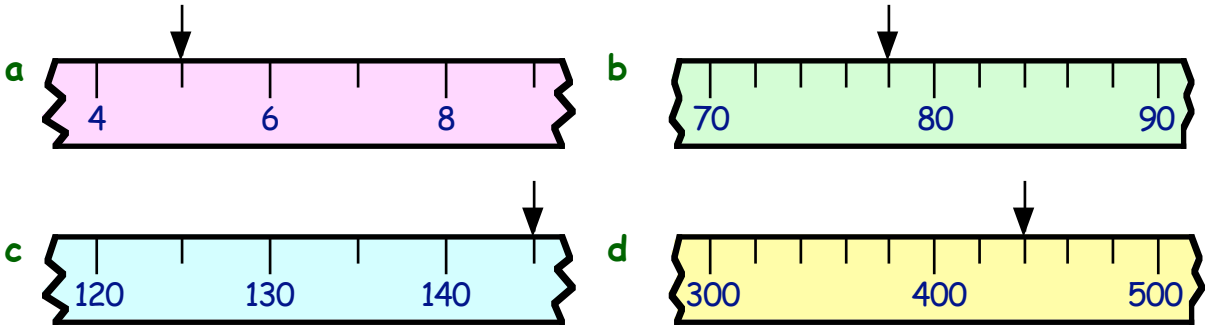
1 m, 2 m, 4 m, 10 m, 20 m — **Which one ?**

26. What is a good **estimate** for the length of this line ?



1 cm, 3 cm, 5 cm, 10 cm — **Which one ?**

27. To what numbers are these **arrows** below pointing ?



28. 3·40 pm means **20 to 4 in the afternoon**.
Write the following times in a similar way :-

a 7·55 am **b** 3·50 pm **c** 12·35 am.

29. How long is it from :-

a 8 am till 11 am **b** 7·15 pm till 7·55 pm

c 10 to 6 till 25 past 6 **d** 11·35 am till 12·30 pm ?

30. **25th December 1988** can be written as **25.12.88**.

Write down the following in the same way :-

a 14th May 1969 **b** 23rd July 1999 **c** 9th April 2001.

31. **a** Jane's birthday is on the **24th July**.
Ravi's birthday is **12 days later**.

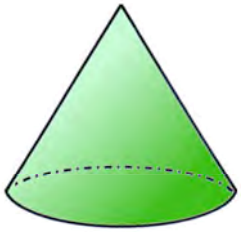
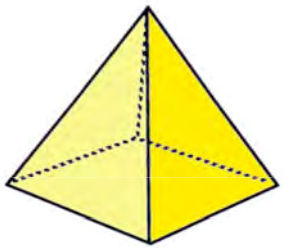
On what date is Ravi's birthday ?

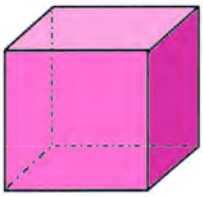
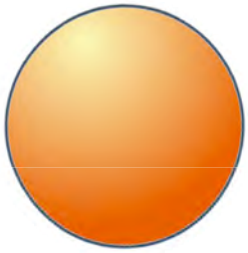
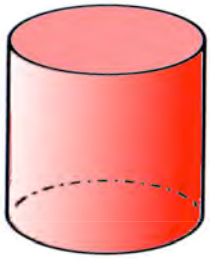
b

Ben's birthday is on the **5th December**.
He went to a Safari Park 1 week
before his birthday.

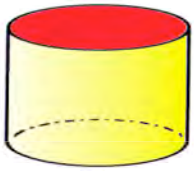
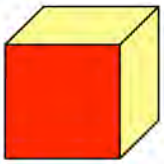
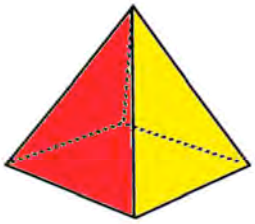
On what date did he visit the park ?

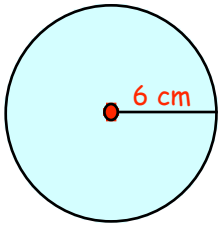
32. Name the following mathematical shapes :-

a  **b**  **c** 

d  **e**  **f** 

33. Name the **red** shape in each of the following :-

a  **b**  **c**  **d** 

34. 

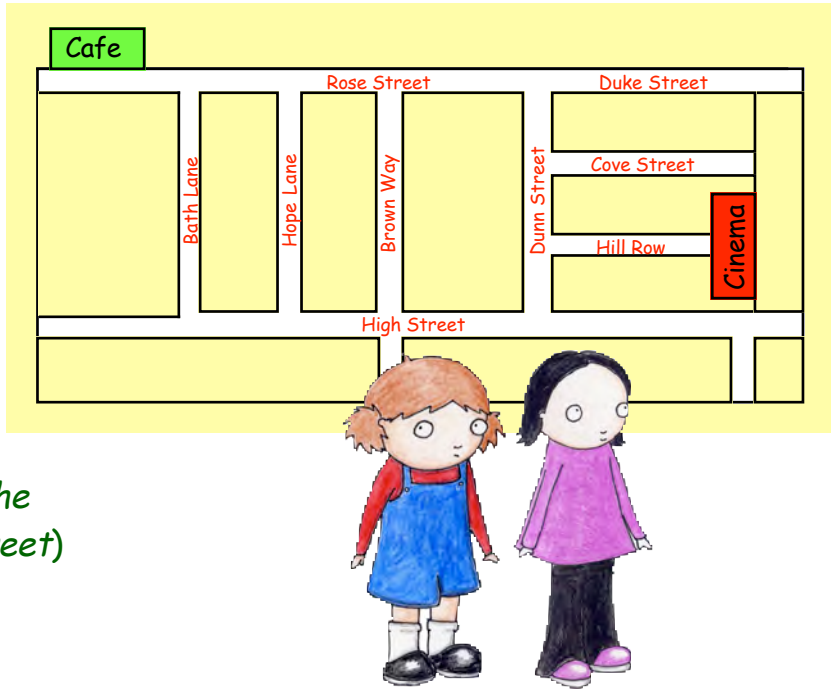
Use a pair of compasses to draw a full size circle which has a radius of **6 cm**.

35. Lucy arranges to meet Jane in the **cafe**.

Afterwards, they plan to go to the **cinema**.

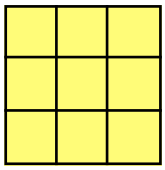
Describe clearly what **directions** they would take to get to from the cafe to the cinema.

(use comments like take the 2nd on the left into ....Street)

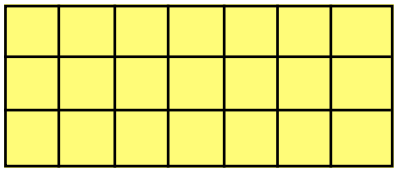


36. Make a neat copy of these shapes.
Mark, **in colour or as a dotted line**, the lines of symmetry.

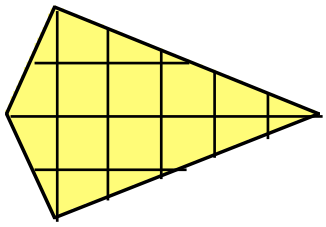
a



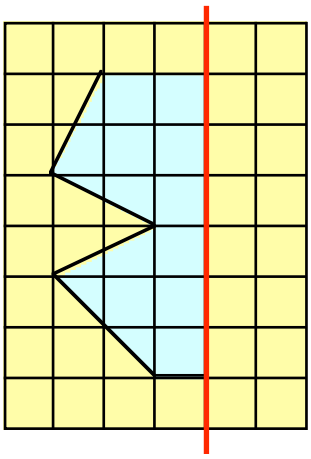
b

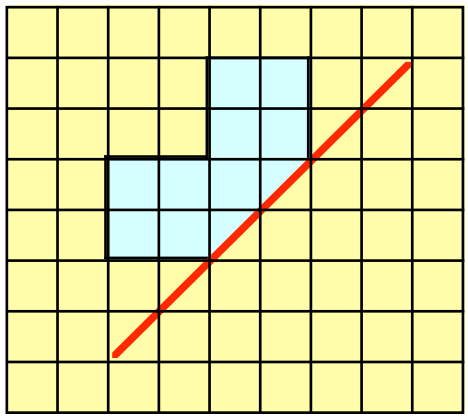


c



37. a Make an **accurate** drawing of the following 2 shapes on squared paper.

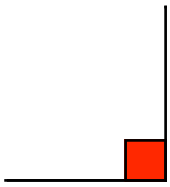




b **Complete** each figure by drawing the missing half of each shape so that the **red** line is a line of symmetry.

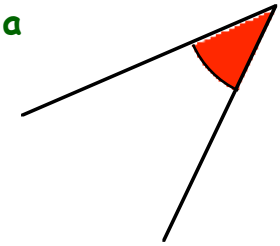
38. This diagram shows a **RIGHT ANGLE**.

How many degrees are there in a right angle ?

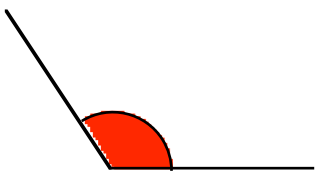


39. State the special name used to describe the following angles :-

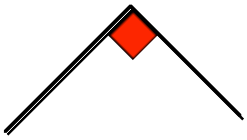
a



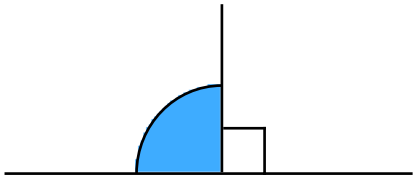
b



c



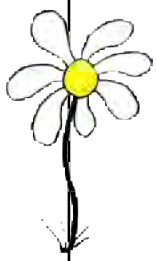
40. Calculate the size of the **blue** shaded angle in this figure.



41. A group of children were asked to name their favourite **flower**.

pansy	daisy	daisy	daffodil	daffodil
daffodil	pansy	daisy	rose	daisy
buttercup	rose	daisy	daffodil	pansy
pansy	daisy	pansy	daisy	rose
buttercup	daisy	daisy	pansy	daffodil

Flower	Tally Marks	Number
pansy		
daisy		
daffodil		
rose		
buttercup		



a **Copy** the tally table and use tally marks to fill in the **2nd column**.

b **Complete** your table by filling in the **3rd column** .

42. The database shows the results of a survey of the **name**, **age**, **brothers/sisters** and **weight** of seven children.

Name	Age	Brothers Sisters	Weight
Tom	12	1	46 kg
Lynn	14	2	36 kg
Joan	11	2	34 kg
Steve	12	1	48 kg
Bill	14	2	51 kg
Alan	13	3	46 kg
Brian	10	0	36 kg

a One boy has 3 sisters. Which boy ?

b How many children weighed **over 45 kilograms**

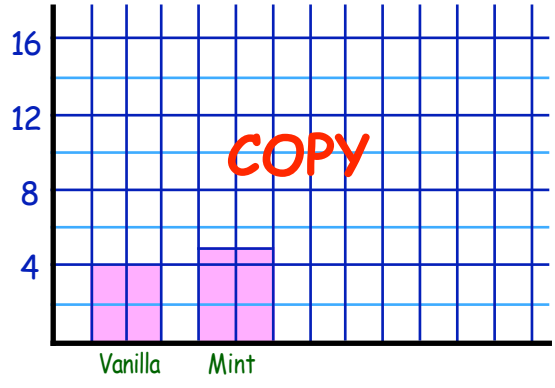
c How **old** was the girl who weighed 36 kilograms ?

d Describe **Joan** in words using the table to help you ?

43. Children were asked to name their favourite **ice cream** flavours.

Flavour	Vanilla	Mint	Chocolate	Strawberry	Banana
Number	14	18	16	12	2

Use a ruler to draw a (**VERY NEAT**) bar graph using the given scale and **label** your diagram.



Answers to Book C

Answers to Chapter 0

1. a ninety six
   b one hundred and twenty three
   c four hundred and fifty nine
   d nine hundred and five
2. a 62 b 715 c 590 d 804
3. a 147 b 279 c 677
   d 620 e 190 f 995
4. a 390, 302, 211, 208, 199, 96, 89
   b 817, 807, 803, 800, 799, 798, 789, 779
5. see drawings
6. see drawings
7. a 2 b 4
8. a 67p b 50p, 10p, 5p, 2p
9. a 5 b 12 c 20
10. a 10 b 38 c 70 d 170
    e 51 f 13 g 100 h 210
11. a 95 b 82 c 54 d 7
12. a 14 b 40 c 20 d 27
    e 60 f 8 g 7 h 7
    i 6 j 45 k 6 l 9
13. a 153 b 170 c 610 d 14
    e 46 f 17 g 252 h 18
14. a 21p b 45g
15. a £99 b 45g
16. a 60 b 80 c 40 d 20
17. a 40 b 70
18 a £13 b 34g c £4 d 10 kg
19. 66, 62, 130, 6, 402
20. a 15, 18, 21 b 25, 30, 35 c 40, 30, 20
    d 53, 63, 73 e 14, 17, 20 f 33, 22, 11
21. a b

c d

22. a 7 b 8 c 7
    d 5 e 17 f 24
23. a x b + c – d ÷
24. a = 18, b = 21, c = 66, d = 79
25. 85 cm, 90 cm, 105 cm, 1 m 6 cm, 1 m 83 cm
26. a 325 cm b 256 cm c 108 cm
    d 4 m 30 cm e 2 m 7 cm
27. a half past 8 (8·30) b quarter to 2 (1·45)
28. a quarter past six b quarter to twelve
29. June 17th, June 30th, July 23rd, August 1st
30. January, March, June, August, December
31. a square b rectangle
    c circled d triangle
32. a cube b cuboid
    c cone d cylinder
    e sphere f triangular prism
    g pyramid
33. a 6 b 12 c 8
34. a faces = 5, edges = 9, corners = 6
    b faces = 5, edges = 8, corners = 5
35. a yes b yes c no
    d yes e no f yes
36. a cup/saucer b salt and pepper
37. see drawing
38. a Frank b Drac
39. only "c"
40. a yes b yes c no
    d yes e yes f no
41. a Tommy and John b Green c 2
42. a brown b 8 c 3

Answers to Chapter 1

Exercise 1

1. a tens b thousand c units d hundred
2. a thousand b tens c units d hundreds
3. a five hundred and sixty two
   b seven hundred and eight
   c nine thousand three hundred and seventeen
   d eight thousand eight hundred and twenty seven
   e ninety eight
   f five thousand and thirty
   g eight thousand and six
   h nine thousand one hundred and three
4. a 850 b 705 c 7800 d 6204
   e 5063 f 9014 g 1234
5. a 215 b three hundred and eight
6. a 237, 270, 289, 298, 299, 300, 304, 310, 317
   b 5045, 5897, 5989, 6001, 6054, 6099, 6104, 6200
   c 791, 989, 991, 999, 1002, 1009, 1090, 1099, 1900, 1910
7. a 360 b 690 c 4300 d 1430
   e 1670 f 6100 g 2000 h 2700
   i 3200 j 670 k 9200 l 5400
8. a 1988 b 1929
9. a = 14, b = 96, c = 101, d = 26, e = 38, f = 430
   g = 520, h = 120, i = 210, j = 350, k = 425
10. a 6 b 18 c 28
    d 24 e 250 f 80
11. a 16°C b 7°C c 44°C
    d 170°C e 3°C f 125°C
12. a 700m b 1700m c 1250m

Chapter 1

Exercise 2

1. a 61 b 68 c 31 d 23
   e 45 f 74 g 550 h 540
   i 250 j 410 k 713 l 430
   m 50 n 65 o 530 p 660
2. a 47 b 56 c 34 d 61
   e 81 f 72 g 200 h 340
   i 440 j 610 k 310 l 810
   m 240 n 460 o 300 p 680
3. a 64 b 51 c 39 d 66
   e 78 f 39 g 58 h 87
   i 9 j 243 k 311 l 390
   m 190 n 560 o 740 p 890

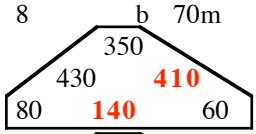
4. a 33 b 51 c 36 d 24
e 62 f 85 g 53 h 67
i 220 j 440 k 260 l 420
m 640 n 550 o 880 p 670

5. a 34 b 38m
c (i) £260 (ii) £80
d 150m
e (i) 29 (ii) 43 (iii) 14 years
f (i) 740m (ii) 60m
g (i) 440g (ii) 520g (iii) 760g

6. a 4 b 7 c 9 d 6
e 1 f 4 g 4 h 7
i 7 j 1 k 4 l 8
m 5 n 1 o 2 p 9

7. a 8 b 70m

8. a



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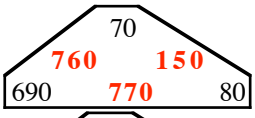

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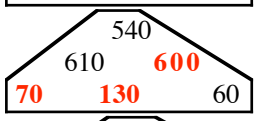

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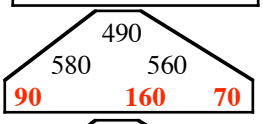

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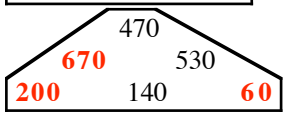

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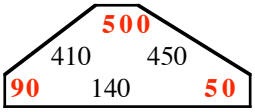
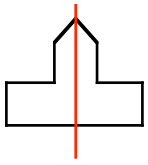


Answers to Chapter 2

Exercise 1

1. a yes b yes c yes
d no e yes f yes

2. a



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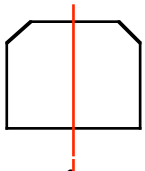
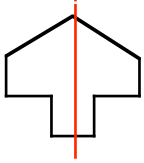


c none

d



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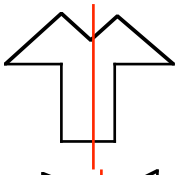

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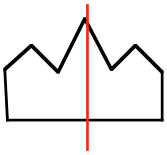
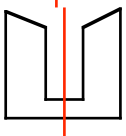


g



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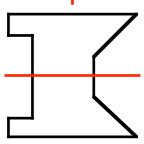

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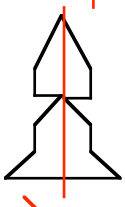

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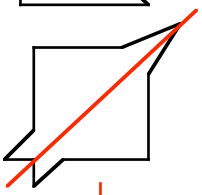

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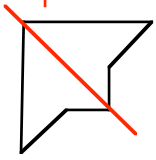

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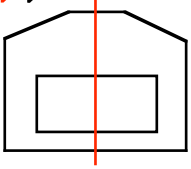
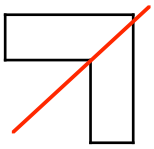


3. a 2 b 4 c 4
d 4 e 2 f 2

4. a



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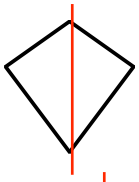

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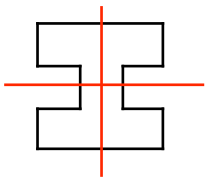

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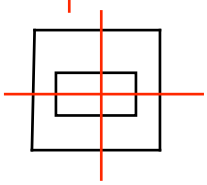

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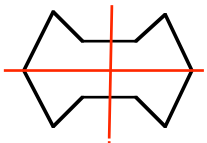
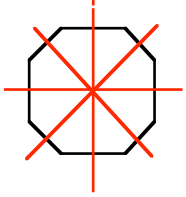


f none

g



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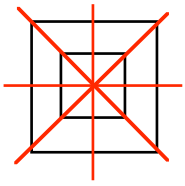
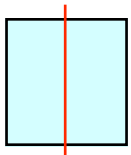


5. a 4 b 2 c 2 d 1
e 1 f 5 g 2 h 8
i 4 j 1 k 0 l 1

Chapter 2

Exercise 2

1. a



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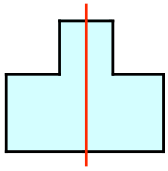

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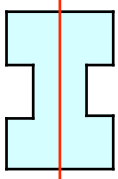

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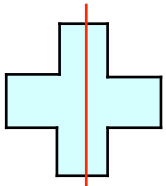

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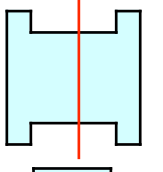

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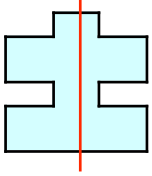

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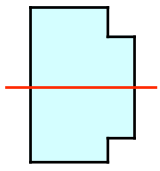

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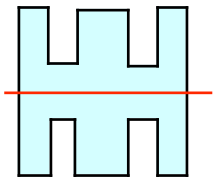
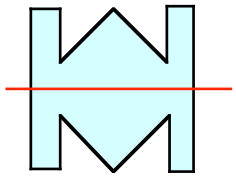
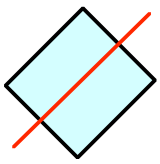
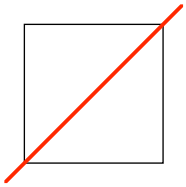
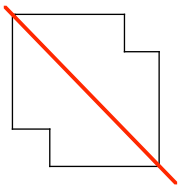


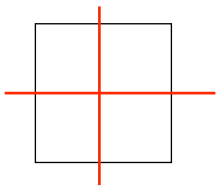
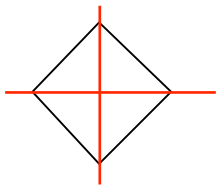
2. a



b



2. c  d 

e  f 

Answers to Chapter 3

Exercise 1

1. a 2 b 10 c 17
   d 26 e 62 f 80
   g 105 h 92 i 150
2. a 2 b 5 c 6
   d 11 e 14 f 31
3. a 2 b 3 c 7
   d 8 e 16 f 22
4. a 36p b 59p c £1
5. a 5p and 1p b 20p and 2p
   c 20p and 10p d 50p and 20p
   e 50p, 20p and 10p f £1, 10p and 1p
6. a 3 b 5 c 8 d 9
7. a 100 b 500 c 800 d 700
8. a £1 and 40p b £2 and 47p
   c £3 and 64p d £1 and 7p
   e £9 and 99p f £2 and 5p
   g £0 and 36p h £0 and 2p

Chapter 3

Exercise 2

1. a £6·13 b £4·62 c £5·78
   d £3·02 e £0·29 f £0·03
2. a £0·68 b £0·99 c £0·90 d £1·28
   e £1·74 f £1·63 g £2·80 h £10·00
   i £10·30 j £8·68 k £5·00 l £10·20
   m £11·11 n £13·40 o £13·38 p £13·30
   q £17·00 r £12·01 s £15·30 t £8·77
   u £11·97
3. a £0·20 b £0·60 c £0·50 d £0·35
   e £0·55 f £1·15 g £4·30 h £4·30
   i £7·00 j £1·02 k £1·45 l £4·15
   m £5·47 n £3·76 o £0·90
4. 87p
5. 13p
6. 13p
7. a £1·10 b 40p
8. a £1·90 b 10p
9. a £6·70 b 30p
10. a 70p b £4·30
11. a £2·70 b No - 20p short
12. a £2·12 b £2, 10p, 2p

Chapter 3

Exercise 3

1. a £20·00 b £14·70
2. a £5·10 b £8·95
3. £12·49
4. £15·00
5. a £3·95 b 5p
6. a £16·19 b £3·81
7. a £10·82 b £9·18
8. £1·75
9. £1·46

Answers to Chapter 4

Exercise 1

1. a 4 o'clock b 7 o'clock
   c half past 2 d half past 11
   e quarter past 1 f quarter to 8
   g quarter past 6 h quarter to 4
2. a 20 past 6 b 10 past 1 c 25 past 8
   d 20 to 9 e 10 to 3 f 25 to 2
   g 5 past 10 h 5 to 6
3. a 7·25 or 25 past 7 b 9·45 or quarter to 10
   c 2·35 or 25 to 3 d 6·50 or 10 to 7
   e 10·20 or 20 past 10 f 8·10 or 10 past 8
   g 10·15 or quarter past 10 h 11·35 or 25 to 12

Chapter 4

Exercise 2

1. a 2·30 or $^1/_2$ past 2 b 3·45 or $^1/_4$ to 4
   c 6·15 or $^1/_4$ past 6 d 8·50 or 10 to 9
   e 7·20 or 20 past 7 f 9·40 or 20 to 10
   g 12·55 or 5 to 1 h 1·35 or 25 to 2
2. a 5·15 b 9·30 c 3·45 d 7·10
   e 9·25 f 9·40 g 2·55 h 3·35
   i 5·45 j 7·40 k 5·55 l 7·30
3. a 10 past 5 or 5:10 b 25 to 4 or 3:35
   c 10 to 2 or 1:50 d 20 past 9 or 9:20

Chapter 4

Exercise 3

1. a 8 o'clock in the morning or 8:00 am
   b $^1/_2$ past eleven in the morning or 11:30 am
   c $^1/_4$ past 9 at night or 9:15 pm
   d $^1/_4$ to eight in the morning or 7:45 am
   e Ten to 7 at night or 6:50 pm
   f 5 to eleven in the morning or 10:55 am
   g 25 to eleven at night or 10:35 pm
   h $^1/_2$ past 3 in the afternoon or 3:30 pm
   i 10 to 11 in the morning or 10:50 am
   j 20 past 6 in the morning or 6:20 am
   k 5 past 7 at night or 7:05 pm
   l midnight or 12:00 am
2. a 8:15 pm b 10:45 am and 11:30 am
   c 7:25 pm and 8:40 pm d 12:50 pm
   e 6:50 am and 7:55 am f 3:40 pm and 5:25 pm

3. a 1/2 past 2 in the afternoon
   b 1/4 to 10 in the morning
   c 10 to 11 at night
   d 10 past 6 in the morning
   e 1/2 past 11 in the morning
   f 10 to 6 at night
   g 25 to 11 in the morning
   h 25 to 6 in the morning
   i 8 minutes to 8 at night
   j 25 past 10 at night
   k 5 to 12 in the morning
   l 12 o'clock at noon
4. Penmure – 25 past 11 in the morning
   Overton – 1 minute to 12 in the morning
   Dunure – 20 past 12 in the afternoon
   Helsby – 5 past 1 in the afternoon
5. check copy
   a 5 to 10 in the morning
   b 5 past 11 in the morning
   c 1:35 pm
   d 10 past 2 in the afternoon
   e 2:55 pm
6. 5 minutes late
7. Palma – 20 to 12 in the morning
   Barcelona – 25 to 1 in the afternoon
   Ibiza – 5 past 1 in the afternoon
   Tenerife – 10 to 3 in the afternoon
   Nice – 20 past 3 in the afternoon
8. 8:55 am —> 9:55 am —> 10:20 am —> 11:45 am —> 12:00 noon —> 12:35 pm —> 12:50 pm —> 12:55 pm
9. a afternoon
   b (i) 10 to 4 in the afternoon
   (ii) 25 past 5 at night
   (iii) 25 to 8 at night
   (iv) 10 to 9 at night
   c Count–up
   d (i) Neighbours At Home
   (ii) Sports Roundup
   (iii) Big Sister

Chapter 4

Exercise 4

1. a 15 b 20 c 30 d 25
   e 40 f 35 g 35 h 25
2. 45 minutes
3. a 20 b 35 c 40
   d 12 e 13 f 46
4. 40 minutes
5. 45 minutes
6. 45 minutes
7. a 25 mins b 15 mins c 40 mins
   d 45 mins e 35 mins
8. 5:35 pm
9. a 3:55 pm b 2:50 am c 9:30 am d 6:25 pm
   e 8:15 am f 6:20 pm g 7:55 am h 11:30 am
10. a Barrhead
    b (i) 12 mins (ii) 20 mins (iii) 18 mins
    c (i) 24 mins (ii) 38 mins (iii) 56 mins
11. yes - by 5 minutes
12. a 33 mins b 36 mins c 3 mins
13. a 6:45 pm b 3:50 pm c 7:40 pm d 7:25 pm

Chapter 4

Exercise 5

1. a January b December c August
   d April e check list
2. a 31 b 28 (29) c 30 d 30
   e 31 f 31 g 30 h 31
3. a June b March c October d August
4. a 23:02:04 b 19:04:03 c 22:07:04 d 18:08:97
   e 07:06:85 f 03:03:88 g 10:12:02 h 01:01:01

Answers to Chapter 5

Exercise 1

1. a 192 b 153 c 441 d 208
   e 225 f 198 g 384 h 567
2. a 1840 b 960 c 2120 d 1780
   e 1110 f 4550 g 2160 h 3600
3. a 441 b 370 c 344 d 135
   e 1740 f 1040 g 1860 h 1560
4. a £228 b 360g c 360 cm
   d 960 ml e 288 hrs
5. a 18 b 32 c 50 d 94
6. a 21 b 30 c 60 d 117
7. a 35 b 100 c 15 d 150
8. a 170 b 145 c 170
9. a 4, 6, 30 b 40
10. Tom – 62, Dick – 126, Harry – 52
    Jean – 123, Alex – 67, Karen – 83

Chapter 5

Exercise 2

1. a 18 b 23 c 15 d 14
   e 13 f 12 g 11 h 47
2. a 33 b 45 c 142 d 35
   e 42 f 63 g 207 h 266
   i 134 j 62 k 99 l 97
3. a 16 b 25 c 19 d 312
   e 14 f 69 g 52 h 56
   i 181 j 125 k 126 l 43
4. a 23p b 31 kg c 17 secs d 64 ml
   e 45g f 54 secs g 43 h £76
5. a 48 b 48
6. a 4 b 3 c 5
7. a 82 b 84 c 47

Chapter 5

Exercise 3

1. a 310 b 560 c 730 d 900
   e 170 f 1170 g 3210 h 2060
   i 5300 j 4000 k 6050 l 200
2. a 420 b 770 c 180 d 950
   e 2130 f 1850 g 3200 h 8030
3. a 470p (£4·70) b 3750g
   c 520 trees d 5200 ml
4. a 60 mm b 180 mm c 750 mm
   d 1200 mm e 7430 mm

Chapter 5

Exercise 4

1. a 27 b 94 c 162 d 80
   e 30 f 508 g 720 h 606
   i 500 j 800 k 100 l 101
2. a 64 b 72 c 190 d 420
   e 608 f 560 g 176 h 100
3. a 58 b 71 c 95 d 76
   e 90 f 408 g 600 h 905
4. a 4 cm b 9 cm c 16 cm
   d 40 cm e 72 cm
5. a 18 b 64 c 30
   d 700 ml e 32
6. £1000
7. 4 gallons
8. a 200 b 20 c 100

Chapter 5

Exercise 5

1. 43 lies between 40 and **50**
   43 is closer to **40** than **50**
   43 rounds to **40** (to the nearest 10)
2. 167 lies between 160 and **170**
   167 is closer to **170** than **160**
   167 rounds to **170** (to the nearest 10)
3. 62 lies between 60 and **70**
   43 is closer to **60** than **70**
   62 rounds to **60** (to the nearest 10)
4. a between **80** and **90** — **90**
   b between **120** and **130** — **120**
   c between **250** and **260** — **260**
   d between **600** and **610** — **610**
5. a 50 b 80 c 20 d 80
   e 150 f 180 g 220 h 420
   i 70 j 200 k 200 l 890
6. a 140 b 430 miles c 200 cm
   d 150 pounds e 480 dollars

Chapter 5

Exercise 6

1. a 58 + 77
   60 + 80
   = **140**
   b 94 + 86
   90 + **90**
   = **180**
   c 36 + 68
   40 + 70
   = **110**
   d 137 + 264
   140 + **260**
   = **400**

   e 131 – 88
   130 – **90**
   = **40**
   f 197 – 133
   200 – **130**
   = **70**
   g 262 – 188
   260 – **190**
   = **70**
   h 493 – 416
   490 – **420**
   = **70**

   i 674 + 188
   670 + **190**
   = **860**
   j 503 – 438
   500 – **440**
   = **60**
   k 819 + 263
   820 + **260**
   = **1080**
   l 996 – 599
   1000 – **600**
   = **400**

2. a 80 b 160 c 90 d 220
   e 20 f 120 g 160 h 200
3. 550 stamps

Chapter 5

Exercise 7

1. £33
2. £4995
3. 314 people
4. £3904
5. 2150 kg
6. 338 cm
7. 32 ml
8. 1855 m
9. 60 trays
10. 240 m
11. £10925
12. £2645
13. 4380 days
14. a 3120g b 260g
15. a 84 mins b 360 mins c 4380 mins
16. 10 800 ml
17. a 44 640 mins b 43 200 mins
    c 132 480 mins

Answers to Chapter 6

Exercise 1

1. a 7 b 6 c 5 d 24
2. a 𝍸 || b 𝍸
   c |||| d 𝍸 |||
   e 𝍸 |||| f 𝍸 𝍸
   g 𝍸 𝍸 || h 𝍸 𝍸 𝍸 ||
3. a Cola — 4
   Orange — 5
   Water — 3
   Irn Bru — 10
   Lemon — 6
   b 5 c Irn Bru d 6 e 28
4. a P_1 — 1
   P_2 — 3
   P_3 — 0
   P_4 — 5
   P_5 — 10
   P_6 — 2
   P_7 — 3
   b (i) 3 (ii) 0 (iii) 5
   c P_5 d 24
5. a Winter — 5
   Spring — 7
   Summer — 16
   Autumn — 2
   b 5 c Summer
6. a 18 — 5
   19 — 2
   20 — 5
   21 — 1
   22 — 2
   23 — 8
   24 — 0
   25 — 1
   b 24 c 502

7. a 7 — 2
8 — 5
9 — 6
10 — 11
11 — 9
12 — 3
8. various – check

Chapter 6

Exercise 2

1. a (i) 5 (ii) 0 (iii) 3 b 23
2. a 8 b 4 c 9
d 5 e 1
3. a Aug — 8
Sep — 16
Oct — 7
Nov — 10
Dec — 1
b December c 42
4. a 4
b HJ — 10
LJ — 7
100m — 20
200m — 18
800m — 11
c 17 d 66
5. check pictograph (with key)

Chapter 6

Exercise 3

1. a 15 b 9 c 22 d 62
2. a mice — 17
snake — 2
cat — 14
fish — 21
dog — 16
b 70
3. a 8
b Lemon — 8
Irn Bru — 42
Cola — 28
Water — 14
Orange — 18
c 24 d 110
4. a (i) 8 (ii) 2 (iii) 9 (iv) 11
b 6 c 36
5. a 100m — 12
200m — 10
800m — 6
LJ — 9
HJ — 3
b 40
6. a Blue — 16
Red — 20
Green — 12
Black — 28
Purple — 6
b 82
7. see bar graph
8. see bar graph
9. see bar graph
10. various

Chapter 6

Exercise 4

1. a 7
b (i) 6 (ii) 4 (iii) 10
c 30
2. a soup b steak
c Mr T — ice cream
Mrs T — cake
3. a (i) 15 (ii) 17 (iii) 22
b 18, 24, 24
c 33
d (i) 41 (ii) 46 (iii) 120
4. a 1·30 pm b Games hall
c 200m race d 1 pm on the Track
5. a (i) Catlady (ii) Catlady (iii) Catlady
b Studio 1 at 9 pm or Studio 2 at 7 pm
6. a (i) £250 (ii) £390 (iii) £400
b Zante for 2 weeks
c £400

Answers to Chapter 7

Exercise 1

1. a 8 b 24
2. a 9 b 24
3. a 11 b 8 c 24 d 4
e 21 f 7 g 35 h 5
i 37 j 57
4. a 6 b 17 c 55
d 120 e 1000
5. a 4 b 5 c 10 d 48
6. a 21
b (i) 13 (ii) 27 (iii) 0 (iv) 62
c (i) 12 (ii) 4 (iii) 15 (iv) 99
7. 4
8. a 7 b 9 c 3 d 5
e 1 f –2 g +12 h –17
9. a 1 — 9p
2 — 18p
3 — 27p
4 — 36p
5 — 45p
6 — 54p
b times 9 c 108p
10. a

1	2	3	4	5	6
4	8	**12**	**16**	**20**	**24**

b x 4 c 120
11. a

Cakes	Cost
1	£2·50
2	£5·00
3	£7·50
4	£10·00

x 2·50
b (i) £10 (ii) £25

Chapter 7

Exercise 2

1. a 15 b 23 c 5
   d 27 e 3
2. a 11 b 26 c 36
   d 101 e 1
3. a 24 b 9 c 4
   d 0 e 24 f 1
4. a 22
   b (i) 16 (ii) 17 (iii) 5 (iv) 31
   c (i) 10 (ii) 5
   d 4 (*Difficult)

Chapter 7

Exercise 3

1. a $3y$ b $3p$ c $3h$ d $3t$
2. a $5x$ b $5y$ c $5k$
3. a $6a$ b $2x$ c $8y$ d $15k$
   e $x + 3$ f $y - 5$

Answers to Chapter 8

Exercise 1

1. a A, B, D, G, I, J
   b Sketches for semicircle, square, hexagon, kite, triangle, rectangle
   c cube, cone, sphere, pyramid, triangular prism
   d L
2. a pentagon b 5 c 5
3. a 4, 4 b 3, 3 c 8, 8 d 6, 6
4. a 6 b rectangle c square
5. a square b triangle
6. a triangular prism b triangle c rectangle
7. a circle b square c semi-circle
   d triangle, rectangle e rectangle
8. See drawings

Chapter 8

Exercise 2

1. See drawings
2. See drawings
3. See drawings
4. See drawings
5. See drawings
6. See drawings
7. See drawings
8. See drawings
9. See drawings (various)
10. a yes b yes c yes d yes
    e no f yes g yes h no
    i yes j no k yes l no

Chapter 8

Exercise 3

1. List e.g. coins pizza tyre polo mint pot tin can mirror .....
2. a Drawing b Drawing with diameter
   c 2p = 25 mm 10p = 24 mm
3. a See drawings b colour
   c 2p = 150 mm and 25 mm 10p = 144mm and 24 mm
4. See drawing
5. See drawing
6. See drawing
7. See drawing
8. See drawing
9. See drawing
10. See drawing

11/12. See drawing

Chapter 8

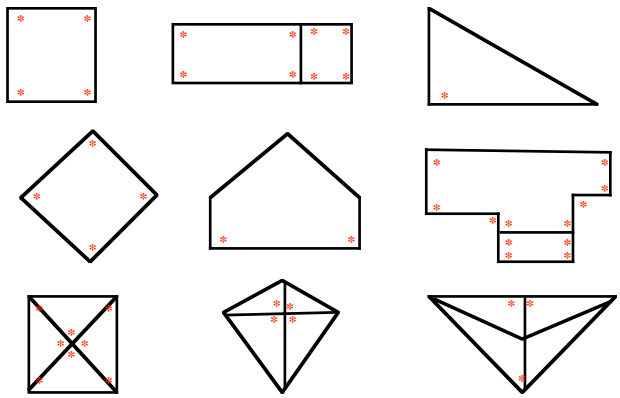
Exercise 4

1 a Drawing b draw radius c colour
2. drawing

3/4/5/6/7/8. See drawings

Answers to Chapter 9

Exercise 1

1. a yes b yes c no
   d no e yes f yes
2. a 9 b 8
3. 1 - smaller 2 - smaller 3 - bigger 4 - bigger
   5 - smaller 6 - bigger 7 - bigger 8 - bigger
   9 - smaller 10 - smaller 11 - bigger 12 - Right
   13 - Right
4. a none b 2, 3 & 4 c 1 & 5
5. loads !!! (83)
6. 

Chapter 9

Exercise 2

1. a 90° b 180° c 360°
2. a 90° b 180° c 90°
   d 180° e 270° f 360°
3. a 90° b 180° c 90°
   d 270° e 90° f 270°
   g 360° h 270° i 30°

Chapter 9

Exercise 3

1. a R b A c O
   d A e S f O
   g R h A i O
2. a O b R c O
   d A e O f R

3. a O b A c O d O
e A f O g S h A
4. A = smaller than 90 O = between 90 and 180
R = exactly 90 S = exactly 180
5. 40° 25° 62° 88°
6. 105° 178° 150° 189° 92°
7. a A b O c A d R
e O f A g O h A
i S j O k A l O
8. a O (110°) b A (70°) c O (110°)
d S (180°) e O (150°) f R (90°)
g S (180°) h A (89°) i R (90°)

Answers to Chapter 10

Exercise 1

1. $^1/_4$
2. $^1/_3$
3. a $^1/_5$ b $^1/_6$ c $^1/_{10}$ d $^1/_8$
4. 3 parts red $^3/_4$
5. a Pentagon b 5 c 3 d $^3/_5$
6. a $^2/_3$ b $^2/_5$ c $^4/_6$ ($^2/_3$) d $^3/_8$
e $^5/_6$ f $^4/_9$ g $^4/_5$ h $^4/_7$
7. a $^3/_5$ b $^1/_3$ $^2/_6$ $^5/_8$ $^1/_6$ $^5/_9$ $^1/_5$ $^3/_7$
8. a Drawing b 3 bits
9. a Drawing b 8 bits
10. a Drawing b 3 bits
11. a Drawing b 5 bits
12. $^3/_5$
13. a $^1/_7$ b $^2/_7$ c $^4/_7$
14. a 9 b 3 c $^3/_9$ ($^1/_3$)
d $^2/_9$ e $^4/_9$
15. $^7/_{10}$
16. $^3/_5$
17. a $^5/_6$ b $^1/_6$
18. a $^4/_{12}$ ($^1/_3$) b $^4/_{12}$ c $^3/_{12}$ ($^1/_4$) d $^8/_{12}$ ($^2/_3$)
19. a Mon, Tues, Wed, Thurs, Fri, Sat, Sun
b Sat, Sun c $^2/_7$

Chapter 10

Exercise 2

1. a $^2/_3$ b $^4/_6$ c $^2/_3 = ^4/_6$
2. $^3/_4 = ^6/_8$
3. a $^4/_6 = ^2/_3$ b $^6/_{10} = ^3/_5$
c $^{15}/_{18} = ^5/_6$ d $^2/_6 = ^1/_3$
e $^{10}/_{16} = ^5/_8$ f $^6/_9 = ^2/_3$
4. $^2/_5$
5. $^1/_3$
6. a $^4/_5$ b $^2/_7$ c $^6/_{11}$ d $^5/_9$
7. a $^3/_4$ b $^1/_7$ c $^2/_5$ d $^7/_8$
8. a $^1/_3$ b $^2/_5$ c $^6/_7$ d $^3/_8$
9. $^3/_5$
10. a $^1/_5$ b $^1/_5$ c $^1/_3$ d $^1/_5$
e $^2/_9$ f $^2/_3$ g $^1/_3$ h $^3/_4$
i $^3/_4$ j $^4/_5$ k $^5/_6$ l $^4/_5$
m $^2/_3$ n $^1/_5$ o $^3/_7$ p $^2/_9$
11. a $^5/_{10}$ b $^1/_2$
12. a $^{20}/_{30}$ b $^2/_3$
13. a $^{10}/_{12}$ b $^5/_6$
14. $^1/_4$
15. a 20 b $^2/_5$ c $^3/_5$
16. a 20p b $^3/_{10}$ c $^1/_5$ d $^1/_2$
17. a 24 b $^1/_3$
c $^1/_4$, $^1/_6$, $^1/_8$, $^1/_{24}$, $^1/_{12}$

Chapter 10

Exercise 3

1. 10p
2. ÷ 4 ..... = 9 cm
3. a 40p b 7 m c 9 g
d £4 e 6 litres f £11
g 4 cm h 4p i 13p
4. a 8 b 16
5. a 9 miles b 27 miles
6. 6 roses
7. 8 hours
8. a 4 b colour drawing (any 4)
c any 3 blue, any 6 yellow d 11
9. a 30 b 5 c 10 days
10. a 54p b 45p

Answers to Chapter 11

Exercise 1

1. a Ann b Joe c Joe
d Ted e Sam f Sid
2. a sausage b salami c turkey d sausage
e chicken f kebabs g turkey h chops
i 2 below j 2nd left
3. a h'copter b tram c m'bike d plane
e backie f rickshaw g taxi h pram
i ship j old car
4. a 2 to the right b 3 to the left
c. 3 to the right d. 4 to the left and 2 up
5. a ship b rickshaw c jeep d jeep
6. a (i) Mave (ii) Twins (iii) Alice
b (i) Alice (ii) Henry (iii) Back to Brenda
c Jake & Brian d Jake e Twins
7. a Ian b Christina c Karen
d Jim e Ian
f 1/4 turn clockwise OR 3/4 turn anticlockwise

Chapter 11

Exercise 2

1. a 2 forward, turn left, 2 forward, turn right,
2 forward, turn right, 2 forward, turn left, 3 forward.
b 3 forward, turn left, 1 forward, turn right,
1 forward, turn left, 2 forward, turn right, 3 forward.
c 2 forward, turn right, 2 forward, turn left,
2 forward, turn left, 3 forward, turn right, 3 forward.

2. a Come out of house, turn left into **BOND Street**., turn **1st LEFT** into **TEMPLE Road**.
The temple is the **3RD** building on the right.
b Come out of house, turn right into **BOND St**., turn 1st **RIGHT** into **JOHN** St.
Walk along John St. and take the **4TH** road on the left. This is **BANK** St.
The bank is the **1ST** building on the **LEFT** .
c Out house, turn right into Bond St, along Bond St, WM is 3rd building on right.
d Out library, turn right into Read St, along Read St, take 4th right into Air Way, along Air Way, Airport is 3rd building on right.
e Out school, turn right into George St, along George St, take 2nd road on right onto Dale Rd, factory 1st building on left.
f Out Police Station, turn right into Pit Rd, along Pit Rd, take 4th on left into Farm Rd, along Farm Rd, farm is 2nd building on left. About Turn back down Farm Rd take 3rd road on right into Read St, then first left into Temple Rd, Golf Club is 1st building on left. Other Answers !

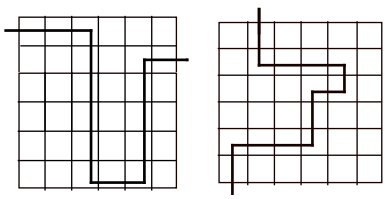
3. a Out of shops, forward 2 spaces. turn left, forward 7 spaces, turn right, forward 3 spaces.
b Out of school, turn left, forward 6 spaces. turn right, forward 2 spaces, turn left, forward 12 spaces.
c Out of station, turn right, forward 4 spaces. turn right, forward 2 spaces, turn left, forward 3 spaces. Left.
d Out of petrol station, turn left, forward 3 spaces. turn left, forward 9 spaces. turn right, forward 4 spaces. Right.

4. a Petrol Station b Fire Station c Harbour

Chapter 11

Exercise 3

1. a S b N c E
d N e N
2. a 90° b 180° c 90°
d 270° e 360°
3. a East 3 squares, South 3 squares, East 2 squares, North 1 square, East 2 squares
b North 2 squares, East 1 square, South 1 square, East 3 squares, North 3 squares, East 2 squares.
c West 3 squares, South 1 square, East 1 square, South 1 square, West 2 squares, South 1 square, East 4 squares.
d East 2 squares, North 2 squares, West 1 square, North 1 square, East 3 squares, South 2 squares, East 1 square, North 1 square, East 2 squares.
4. 5



6. a Marsh Island Harbour
b Lighthouse Island Dock
c Iceberg !
7. various answers

Chapter 11

Exercise 4

1. a Ac b Ce c Ed d Da
2. a C3 b F1 c D4
d A2 e E2 f Bv0
3. Q is I7, R is C3, S is J10, T is A5,
U is Jv1, V is E6, W is F2.
4. a Len b Fred c Jim d Kit
e Don f Sid g Tom h Col.
5. a (i) £1 (ii) 50p (iii) 0 (iv) 50p (v) 0 (vi) 0
b B4 C4 E2 F1.
c £5 D2
6. a (i) Tiger Lion Puma (ii) Eagle Hawk Parrot
b Shark E4
c Fox B5 d Snake A2 e C5

Chapter 11

Exercise 5

1. Divide
2. Add
3. Rocket ship
4. Football strip
5. Tin Man
6. Church
7. Bottle of Sauce

Answers to Chapter 12

Exercise 1

1. a ruler b tape c tape
d tape e ruler f odometer
2. Various
3. Various
4. Various
5. a Various b Various c Various
6. a 3 cm b 7 cm c 6 cm
d 3·5 cm e 15 cm
7. a 5 cm b 6 cm c 8·5 cm d 8 cm

Chapter 12

Exercise 2

ALL Drawings

Chapter 12

Exercise 3

1. a 100 cm b 200 cm c 300 cm d 400 cm
e 800 cm f 500 cm g 900 cm h 1000 cm
2. a 50 cm b 150 cm c 250 cm d 550 cm
e 750 cm f 950 cm g 1050 cm h 1250 cm
i 25 cm j 125 cm k 225 cm l 425 cm
3. a 5 m b 7 m c 9 m d 10 m
e 6 m f 12 m g 15 m h 23 m
4. a 0·5 m b 2·5 m c 6·5 m d 8·5 m
e 1·5 m f 9·5 m g 11·5 m h 14·5 m
i 0·25 m j 3·25 m k 5·25 m l 10·25 m
5. a 1 m 75 cm = 175 cm b 1 m 53 cm = 153 cm
c 2 m 25 cm = 225 cm d 5 m 20 cm = 520 cm
e 1 m 5 cm = 105 cm f 7 m 8 cm = 708 cm
g 10 m 1 cm = 1001 cm

6. a 2 m 15 cm b 4 m 75 cm
   c 7 m 9 cm d 2 m 8 cm
   e 10 m 50 cm f 20 m 3 cm
7. a 545 cm b 3 m 65 cm c 2008 cm

Chapter 12

Exercise 4

1. a 99 cm, 1 m 29 cm, 1 m 34 cm, 170 cm
   b 130 cm, 127 cm, 1 m 19 cm, 1 metre 9 cm.
2. 41 cm
3. 155 cm
4. 117 cm
5. 7 m
6. a 860 cm b 140 cm

Chapter 12

Exercise 5

1. 12 cm²
2. a 3 cm² b 6 cm² c 9 cm²
   d 9 cm² e 5 cm² f 10 cm²
   g 4 cm² h 8 cm² i 12 cm²
3. a 3·5 cm² b 7·5 cm² c 12 cm²
   d 9 cm² e 12 cm²
4. a 10 cm² b 13 cm²

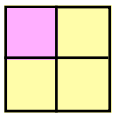
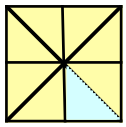
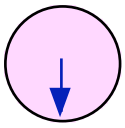
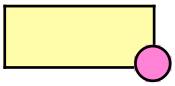
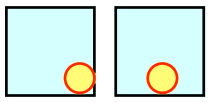
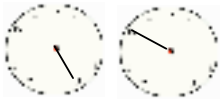
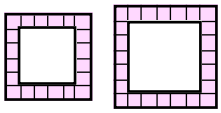
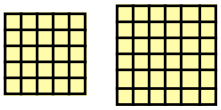
Chapter 12

Exercise 6

1. a 10 cm² b 15 cm²
2. a 5 cm² b 12 cm² c 36 cm² d 28 cm²
3. a 11 cm² b 30 cm²
4. a 24 cm² b 8 cm² c 16 cm²

Answers to Chapter 13

Exercise 1

1. a  b 
   c  d 
2. a  b 
   c  d 
3. a K b P c M d Q
   e U f X g R h Y
   i IJ j IJK

4. a Starts at 1 goes up 2.
   b Starts at 5 goes up 5.
   c Starts at 60 down by 10.
   d Starts at 18 down by 3.
   e Starts at 10 goes up 11.
   f Starts at 20 goes up 15.
   g Starts at 13 down by 2.
   h Starts at 100 goes up 300.
   i Starts at 4 goes up 0·5.
   j Starts at 750 down by 150.
5. a 9 b 30 c 20 d 3
   e 54 f 80 g 5 h 1300
   i 6·5 j 150
6. a 13 b 60 c 16 d 30
   e 18 f 24 g 35 h 26
   i 32 j 15 k 10 l 66
   m 20 n 46
7. a 2 b 48 c 22
   d 5 e 565 f (5 x 6)
8. a 16 22 b 5 17
   c 14 4 d 19 27
   e 33 0 f 12 17 32
   g 23 21 13 h 5 15 35
9. a 7 times table
   b blue 5 times table red 9 times table
   pink start at 3, go up in 5's
   grey start at 6, go up in 8's
   c Drawings
   d Various

Chapter 13

Exercise 2

1. a 2 times table b 4 times table
   c 4 times are double 2 times
2. a 4 times table b 8 times table
   c 8 times are double 4 times
3. a Double ? b 4 times ? c 5 times ?
4. Various

Answers to Chapter 14

Exercise 1

1. a cube b cuboid
   c sphere d cone
   e cylinder f pyramid (sq base)
   g triangular prism h hemi-sphere
2. a cylinder + cone
   b cube + pyramid
   c cuboid + triangular prism
   d cylinder + hemi-sphere
   e cuboid + cube + pyramid
   f cone + hemi-sphere
3. Cube
4. a cuboid b pyramid (sq base ?)
   c triangular prism d cylinder
   e cone f pyramid (sq base ?)

5. a Sugar lump, oxo cube, dice .....
   b Shoe box, Lunch box, Microwave .....
   c tin soup, cola can, drum cheese .....
   d football, gob-stopper, marble .....
   e clowns hat, motorway, cone, witches hat .....

Chapter 14

Exercise 2

See drawings

Answers to Chapter 15

Exercise 1

1. Juice Glass
2. cooking pot microwave dish-washer
3. tennis ball
4. Lorry Van Mini Motor Cycle
5. 4
6. 15
7. a 8 b 3 days
8. a 2 oz b teaspoon c margarine d 1 egg
9. $^1/_2$

Chapter 15

Exercise 2

1. a 2 L b 3 L c 1·5 L
   d 3 L e $^1/_2$ L f $^1/_3$ L
2. a $^1/_2$ L b 1·5 L
3. a 3·5 L b 6 L
4. coffee mug teaspoon egg cup can of lemonade
5. jacuzzi oil drum pot for soup garden pond
6. 1·5 L
7. a 4 b 8 c 20 d 40
8. 5 pots

Chapter 15

Exercise 3

1. a 4 b 4 c 6
   d 11 e 6 f 10
   g 21 h 21 i 15
2. a 3 b 2 c 1
   d 2 e 0 f 1
3. a Shape e b Shape a
   c Shape b = d = 8 and Shape c = f = 9
   d 51 cubic cm
   e a & b, a & c, a & d, a & f, b & d

Chapter 15

Exercise 4

1. a mouse b car c golf ball d CD
2. a pen b washing machine
   c magazine d brick
3. ship, tank, cannon, soldier, medal
4. a less b more c more
   d less e less f more
5. a 53 kg b 53·5 kg

Chapter 15

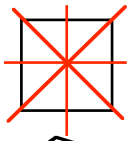
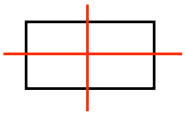
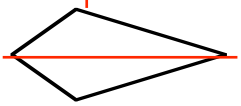
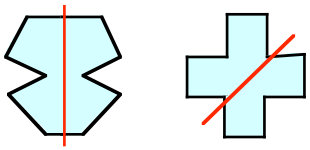
Exercise 5

1. a 2000 g b 7000 g c 15 000 g
   d 20 000 g e 55 000 g f 3500 g
   g 1700 g h 4250 g i 6610 g
   j 3425 g k 7058 g l 10 022 g
   m 6080 g n 9008 g o 1001 g
2. a 2 kg b 7 kg c 9 kg
   d 16 kg e 40 kg f 72 kg
   g 5 kg 600 g h 6 kg 800 g i 18 kg 200 g
   j 9 kg 456 g k 7 kg 240 g l 2 kg 760 g
   m 5 kg 2 g n 8 kg 80 g o 1 kg 15 g
3. a 810 g b 760 g c 1570 g d 1 kg 570 g
   e 1·5 cucumbers
4. a 1500 g b 900 g
5. 600 g
6. a 1760 g b 1·76 kg
7. 850 g
8. a 1 kg 200 g b 1200 g
9. a 7 b 10 g
10. a Colin, Alan, Robert, Omar
    b 1005 g c 420 g d Robert & Omar

Answers to Chapter 16

Revision Exercise

1. a five thousand four hundred and seventy
   b eight thousand and twenty six
   c nine thousand and three
   d seven thousand nine hundred and eighty nine
2. a 4372 b 6504 c 8040
3. 3101, 3010, 3002, 2998, 2987, 2899, 2098.
4. a 50 b 500 c 5000 d units
5. a 4360 b 4150
6. $^1/_3 = {}^2/_6$
7. a 6 b 4 c 3
8. £11·60
9. a £3·27 b £9·04
10. a £1·42 b 4 (£1, 2 x 20p, 2p)
11. a 12 b 53 c 96 d 136
    e 390 f 610 g 28 h 64
    i 147 j 510 k 550 l 760
12. a 461 b 561 c 742 d 756
13. a 30 b 21 c 48 d 36
    e 49 f 56 g 63 h 42
    i 35 j 72 k 54 l 80
14. a 90 b 70 c 190 d 610
    e 14 f 5210 g 70 h 8190
15. a 144 b 145 c 656 d 343
16. a 44 b 58 c 72 d 56
17. a 70 b 280 c 130 d 40
18. 600
19. a 31 b 9 c 17 d 41
20. a 20 24 28 b 50 60 70
    c 24 16 8 d 17 20 23
    e 35 41 47 f 38 35 32
21. a 20 b 10 c 2 d – 7
22. a 2000 g b 5000 g c 500 g d 2250 g

23. 3·5 Litres
24. a 12 cm^2 b 10 cm^2
25. 1 metre
26. 5 cm
27. a 5 b 78 c 145 d 440
28. a 5 to 8 in morning
    b 10 to 4 in the afternoon
    c 25 to 1 in morning
29. a 3 hrs b 40 min c 35 min d 55 min
30. a 14.05.69 b 23.07.99 c 09.04.01
31. a 5th Aug b 28th Nov
32. a cuboid b cone c pyramid
    d cube e sphere f cylinder
33. a circle b square c triangle d rectangle
34. Drawing
35. "Out of Cafe, turn left, go along Rose St, take 4th road on right into Dunn St, down Dunn St take 2nd left into Hill Row - cinema is at end of that street."
36. a  b 
    c 
37. a/b 
38. 90°
39. a Acute b Obtuse c Right Angle
40. 90°
41. a table
    b pansy 6 daisy 9 daffodil 5 rose 3 buttercup 2
42. a Alan b 4 c 14
    d Joan is 11 years old, has 2 brothers or sisters and weighs 34 kg.
43. See graph