St Ninian's High School

Mathematics Department

Level 3

TJ Book 3a

Pupil Learning Log

- I understand this part of the course = 
- I am unsure of this part of the course = 
- I do not understand this part of the course = 

Name_____ Class____ Teacher_____

Pupil Comment

Mathematics Department

Name:.....

Non-Calculator Work - Level 3

	Estimating & Rounding	Whole Numbers & Integers	Algebra	Decimals	Multiples, Factors & Primes	Speed, Distance & Time	Statistics	Proportion & Scale	Ratio, Fractions & percentages	Length, Area & Perimeter
Ex 1										
Ex 2										
Ex 3										
Ex 4										
Ex 5										
Ex 6										
Ex 7										
Ex 8										
Ex 9										
Ex 10										
Ex 11										
Ex 12										
Ex 13										
Ex 14										
Ex 15										
Ex 16										
Ex 17										
Ex 18										
Ex 19										
Ex 20										
Total										

Level 3 Course Pupil Learning Log (Teejay 3a Book)

Level 3

TJ Book 3a
Programme 1

Pupil Comment _____

Chapter 1 – Rounding

1		
2		
3		

1. **Rounding – to any number of decimal places.**

$$7.835 \rightarrow 7.84 \text{ (to 2 d.p.)}$$

2. **Rounding – to significant figures.**

$$6793 \rightarrow 6800 \text{ to 2 sig. fig.}$$

3. **Estimating / Checking Answers**

$$372 \times 197$$
$$\Rightarrow 400 \times 200$$
$$= 80000 \text{ to 1 Sig. Fig.}$$

Pupil Comment _____

Chapter 2 - Whole Numbers

1. **Addition** – Layout important
2. **Subtraction** – Layout important
3. **Divide** by a single digit
4. **Multiplication** by a single digit.
5. **Multiplication** by 10, 100 and 1000
   78 x 1000 = 78000 (Add on 3 zeros)
6. **Division** by 10, 100 and 1000
   8600 ÷ 100 = 86 (Remove 2 zeros)
7. **Multiplying** by 20, 30 and 500 etc...
   83 x 500 = 83 x 100 x 5 = 8300 x 5 etc..
8. **Division** by 20, 30 and 500 etc....
   4500 ÷ 500 = 4500 ÷ 100 ÷ 5 = 45 ÷ 5 = 9
9. **BODMAS**

   3 + 5x4 = 23 NOT 60 !

2		
3		
4		
5		
6		
7		
8.		
9		
10.		

Pupil Comment _____

Chapter 3 – Angles

1		
2		
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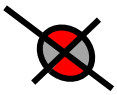
4		
5		

1. Complementary Angles

2. Supplementary Angles

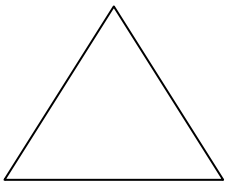
3. Angles Round a Point

4. Vertically Opposite Angles



5. Angles in a Triangle

Add up to 180^{o}



Pupil Comment _____

Chapter 4 - Integers

1		
2		
3		
4		
5		

1. Understand – concept of +ve and –ve numbers

2. **Use thermometer**
   – to add / sub integers mentally

3. **The double negative**

   (-3) – (-7) = 4

4. **Multiplication of integers.**

   (-2) × 5 = -10
   (-5) ×(-6) = 30

5. **Division of integers**

   (-80) ÷ 5 = -16
   (-16) ÷ (-2) = 8

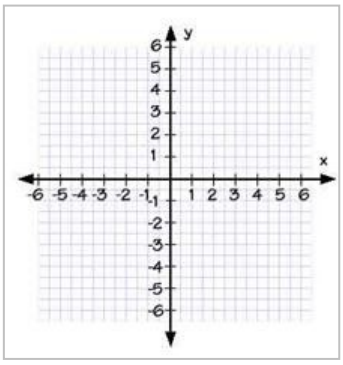
Pupil Comment _____

Chapter 5 - Coordinates

1		
2		

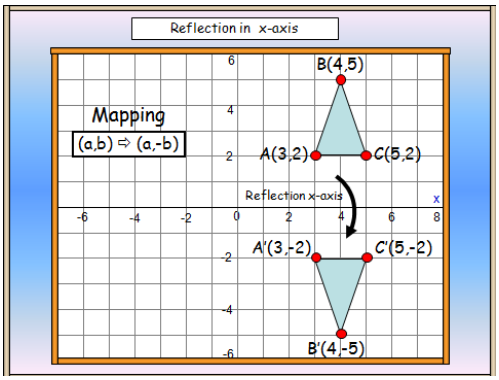
1. Plotting a Coordinate Grid /(4 Quadrants)

e.g. (1,1) ,
(-2,3),
(-4,-5),
(6,-2)

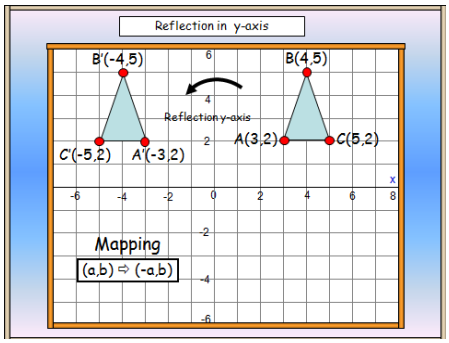


2. Reflection over the x and y axis

Over x-axis



Over y-axis



Pupil Comment _____

Level 3 : Programme 1 Assessment (Topics 1-5)

For my Level 3 Assessment I will
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Pupil Comment _____

Results of Level 3a Prog 1

Outcome	Score	
Number	/33	
Measure		
Shape	/17	
Information handling		
Problem Solvimg	/4	
Total	/54	%

Question	Topic	mark	I know this	Needs revision
1	Round to decimal place and significant figures	/4		
2	Multiply and divide decimal numbers with 20,30 ect	/7		
3	Use Bodmas	/7		
4	Add and subtract integers	/5		
5	Multiply and divide integers	/7		
6	Using integers with average	/3		
7	Know Supplementary and Complementary angles	/2		
8	Using Coordinates- read off axes	/3		
9	Draw axes and plot points	/4		
10	Find missing angles	/8		
11	Problem solving - whole numbers	/4		
	Total	/54		

Next Steps

Guardian's Signature : _____

Pupil Comment _____

Level 3

TJ Book 3a
Programme 2

Pupil Comment _____

Chapter 6 – Fraction Decimals & Percentages

1		
2		
3		

1. **Finding a Percentage without a calculator**

   30% of 80
   10% ⇨ 8
   30% ⇨ 8x3 = 24

2. **Finding a Percentage using a calculator**

   29% of £250

   $\frac{29}{100} \times 250 = £72.50$

3. **Linking Fraction → Decimals → Percentages**

$$\frac{35}{100} \xrightarrow{\div 100} 0.35 \xrightarrow{\times 100} 35\%$$

Pupil Comment _____

Chapter 7 – Algebra

1		
2		
3		
4		
5		

1. **Tidying up like terms**

   $x + x + y + y + x = 3x + 2y$

2. **Multiplying out brackets and tidying up**

   $3(4 – 2x) + 7x = 12 - 6x + 7x = 12 + x$

3. **Simple equations –** balancing method

   $a + 7 = 11$ $2b = 32$ $3c – 2 = 16$

   $2(c – 4) = 20$

4. **Substitution**

   If a = 5 and b = 3 evaluate

   $2a + 4b$
   $= 2 \times a + 4 \times b$
   $= 2 \times 5 + 4 \times 3$
   $= 10 + 12$
   $= 22$

5. **Creating a formula (Equation)**

$$F = \frac{9}{5}c + 32$$

Pupil Comment _____

Chapter 8 – Areas & Perimeters

1		
2		
3		
4		
5		
6		

1. Revision of Level E

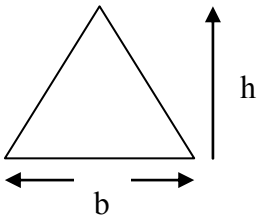
Square $A = l \times l$

Rectangle $A = l \times b$

Right-Angle Triangle $A = \frac{1}{2}bh$

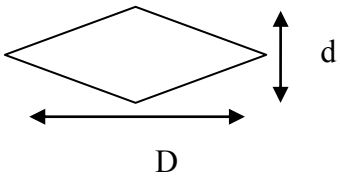
2. Any of Triangle

$A = \frac{1}{2}bh$



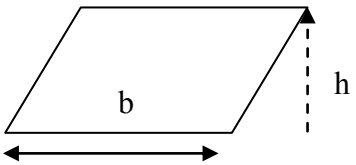
3. Rhombus and Kite

$A = \frac{1}{2}Dd$



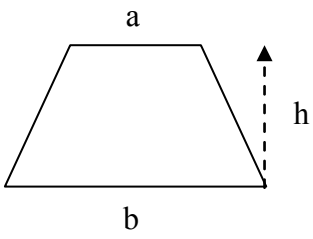
4. Parallelogram

$A = bh$

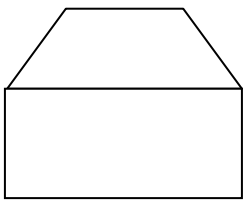


5. Trapezium

$A = \frac{1}{2}(a+b)h$



6. Composite Shapes



Pupil Comment _____

Chapter 9 – Fractions

1		
2		
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4		
5		
6		
7		

1. Understanding Fractions

$\frac{3}{8}, \frac{1}{2}, \frac{4}{5}$ etc.....

2. Equivalent a fraction

$\frac{1}{2} = \frac{2}{4} = \frac{3}{6} = \frac{32}{64}$ etc.....

3. Covert to Top Heavy Fractions and Vice Versa

$3\frac{1}{2} = \frac{7}{2}$ $\qquad$ $\frac{27}{4} = 6\frac{3}{4}$

4. Addition & Subtractions of simple fractions

$\frac{2}{7} + \frac{1}{7} = \frac{3}{7}$ $\qquad$ $\frac{5}{8} - \frac{4}{8} = \frac{1}{8}$

5. Addition & Subtractions of harder fractions

$\frac{2}{3} + \frac{1}{2} = 1\frac{1}{6}$ $\qquad$ $\frac{2}{3} - \frac{1}{2} = \frac{1}{6}$

6. Add / Sub Mixed Fractions

$3\frac{1}{2} + 1\frac{1}{3} = \frac{7}{2} + \frac{4}{3} = \frac{21}{6} + \frac{8}{6} = \frac{29}{6} = 4\frac{5}{6}$

7. A Problem with Subtraction

$$3\frac{1}{5} - 1\frac{1}{3} = 2 + \left(\frac{1}{5} - \frac{1}{3}\right)$$
$$= 2 + \left(\frac{3}{15} - \frac{5}{15}\right)$$
$$= 1 + \left(\frac{15}{15} + \frac{3}{15} - \frac{5}{15}\right)$$
$$= 1 + \left(\frac{18}{15} - \frac{5}{15}\right) \qquad = 1\frac{13}{15}$$

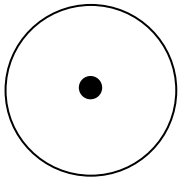
Pupil Comment _____

Chapter 10 – Circle Work

1		
2		
3		

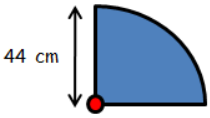
1. Circumference of a Circle

$C = \pi D$ or $C = 2\pi r$



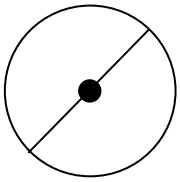
2. Finding perimeter of Semi and Quarter Circles

$$P = \frac{1}{4}\pi D + r + r$$
$$= \frac{1}{4}\pi(88) + 44 + 44$$
$$= 157.1\,cm$$



3. Finding the Diameter of a Circle

$$D = \frac{C}{\pi}$$



Pupil Comment _____

Level 3 : Programme 2 Assessment (Topics 6-10)

For my Level 3 Assessment I will
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Pupil Comment _____

Results of Level 3a prog 2

Outcome	Score	
Number	/49	
Measure		
Shape	/18	
Information handling		
Problem Solvimg	/16	
Total	/83	%

Question	Topic	mark	I know this	Needs revision
	Part A (non-calculator)			
1	Change Percentages to fraction and decimal	/4		
2	Change decimal and fractions to percentages	/2		
3	Find percentage of a value	/4		
4	Use percentage in context	/2		
5	Simplify expressions	/4		
6	Evaluate expressions	/6		
7	Multiply out brackets	/4		
8	Multiply out brackets and simplify	/6		
9	Find expression for area of shape	/6		
10	Add/ subratct fractions	/9		
11	Use fractions in context	/4		
	Part B (Calculator)			
12	Find percentage of a value	/2		
13	Use percentage and fraction- problem	/6		
14	Create formula and solve	/3		
15	Use a formula in words	/3		
16	Calculate area of a quadrilateral	/6		
17	Calculate circumference	/3		
18	Calculate perimeter of a shape	/5		
19	Work back from circumference	/4		
	Total	**/83**		

Next Steps

Guardian's Signature : _____

Pupil Comment _____

Level 3

TJ Book 3a
Programme 3

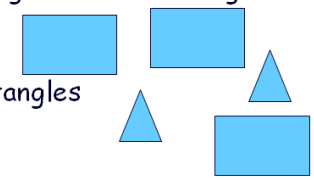
Pupil Comment _____

Chapter 11 – Ratio

1		
2		
3		

1. Understanding Simple Ratios

Example : There are 2 triangles and 3 rectangles.



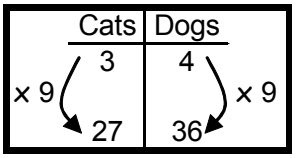
The ratio of triangles to rectangles is said to be 2 : 3

Note: The ratio of rectangles to triangles is said to be 3 : 2

2. Simplifying Ratios – Fractional Ratios

6 : 24 is simplified to 1 : 4

3. Ratio Calculations

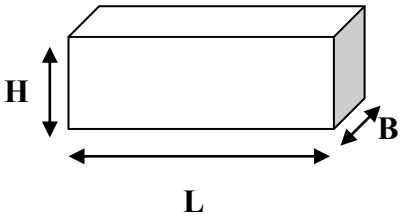


Pupil Comment _____

Chapter 12 – Volume

1		
2		
3		
4		

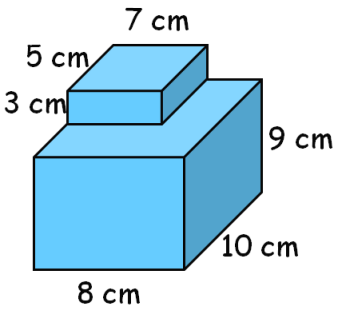
1. Volume of Cubes and Cuboids



$$Volume = length \times breadth \times height$$

$$V = l \times b \times h$$

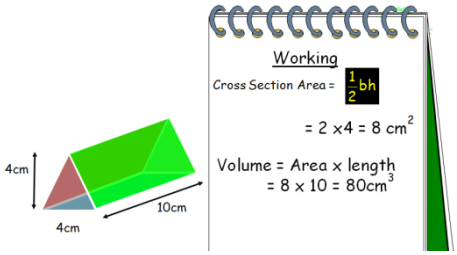
2. Volume of Composite Shapes



$V_1 = l \times b \times h$
$= 3 \times 5 \times 7$
$= 105\ cm^3$
$V_2 = l \times b \times h$
$= 8 \times 10 \times 9$
$= 720\ cm^3$

$V_T = V_1 + V_2$
$V_T = 105 + 720$
$V_T = 825\ cm^3$

3. Volume of Triangular Prisms



4. Liquid Volume

1 litre = 1000 ml = $1000cm^3$

1ml = $1\ cm^3$

Pupil Comment _____

Chapter 13 – Money

1		
2		
3		
4		

1. **Wages – annual, monthly, weekly and hourly**

2. **Piecework Commission and Bonus**
   Liam sells car. He is paid a commission of 15% on any Windows he sells. He sold £ 30 000 worth of windows. How much commission was he paid ?

   Commission : 15 ÷ 100 x £30 000 = £ 4500

3. **Overtime**
   Double time ⇨ $\times 2$ Time and a half ⇨ $\times 1\frac{1}{2}$

4. **Wage Slips –** Deductions – gross / net pay

Name : Joe Bloggs								
Income	Basic	£603.65	O/T	£85.50	Bonus	£50.00	Total	739.15
Deductions	Tax	£142.75	Nat Ins.	£30.72	Pension	£34.29	Total	207.76
							NET PAY	531.39

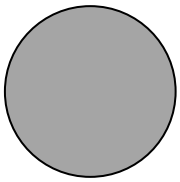
Pupil Comment _____

Chapter 14 – Circle Work 2

1		
2		

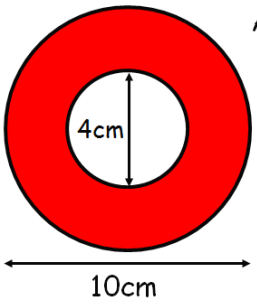
1. **Area of a Circle**

   $A = \pi r^2$



2. **Area Semi and Quarter Circles and Mixed Problems**

Example 1 : Find the area of the red part.



Area = Big Circle - Small Circle

$$A = \pi r_B^{\,2} - \pi r_S^{\,2}$$
$$= \pi(5)^2 - \pi(2)^2$$
$$= 66\ \text{cm}^2$$

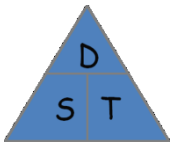
Pupil Comment _____

Chapter 15 – Time Distance Speed

1		
2		
3		
4		

1. **Revise Time - Distance - Speed Calculations (Hrs)**

$$T = \frac{D}{S} \qquad S = \frac{D}{T} \qquad D = ST$$



2. **Use TDS calculations with quarter and half hours.**

15 mins = 0.25 hr
30 mins = 0.5 hr
45 mins = 0.75 hr

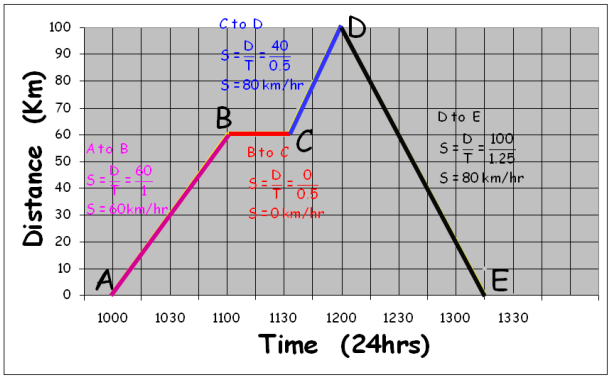
3. **Converting Hours and Minutes to Decimal Time and Vice Versa**

Example 1 : 2 hrs 18 mins 2 + (18 ÷ 60) = 2.3 hrs

Example 2 : 3.4 hrs to hours and minutes is

3 + (0.4 x 60) = 3 hrs 24 mins

4. **Time / Distance / Speed graphs**



Pupil Comment _____

Level 3 : Programme 3 Assessment (Topics 11-15)

For my Level 3 Assessment I will
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Pupil Comment _____

Results of Level 3a prog 3

Outcome	Score	
Number	/17	
Measure		
Shape	/18	
Information handling		
Problem Solving	/17	
Total	/52	%

Question	Topic	mark	I know this	Needs revision
1	Simplify ratio	/1		
2	Finding a value from a ratio	/2		
3	Calculate a ratio and simplify	/3		
4	Calculate volume of cuboid	/5		
5	Calculate volume of Prism	/3		
6	Calculate voulme of composite shape	/9		
7	Calculate the area of circle	/4		
8	Calculate area of composite shape	/6		
9	Calculate Speed	/5		
10	Time interval and calculate Distance	/4		
11	Calculate time	/5		
12	use distance time graphs	/5		
	Total	**/52**		

Next Steps

Guardian's Signature : _____

Pupil Comment _____

My Achievements		
Skill	Activity	Date & Teacher Signature

Pupil Comment _____

My Achievements		
Skill	Activity	Date & Teacher Signature

Pupil Comment _____