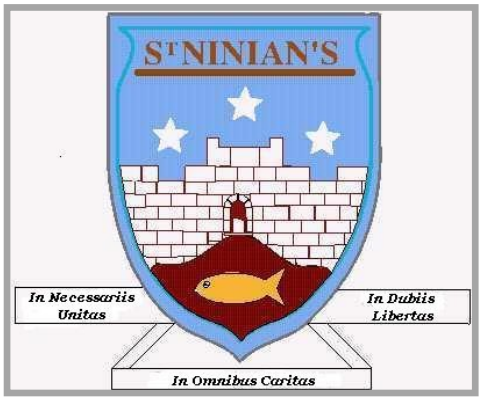
St Ninian's High School



MIA Textbook
INTERMEDIATE 1
CHECKLIST

- 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_____

Unit 1 Chapter 2	**Basic Calculations**			
1	Round to the nearest 10, 100, 1000			
2	Round to 1 and 2 decimal places			
3	Be able to identify when we should add, subtract, multiply or divide and recognise the language involved in these questions			
4	Write a percentage as a common fraction Eg. 6% = $\frac{6}{100} = \frac{3}{50}$			
5	Calculate a percentage of a quantity without a calculator Eg. 17.5% of 300 10% is 30 5% is 15 2.5% is 7.5 17.5% is 52.5			
6	Calculate a percentage with a calculator Eg. 19% of 450 $= 19 \div 100 \times 450$ $= 85.5$			
7	Understand how to calculate VAT			
8	Express one quantity as a percentage of another including percentage loss and profit eg. 3 out of 20 $= \frac{3}{20} \times 100\% = 15\%$ eg2. John buys a CD for £3 and sells it for £5. Calculate percentage profit. $= \frac{5-3}{3} \times 100\% = 66.7\%$			
9	Calculate simple interest			
10	Calculate interest for part of a year Eg. if for 7 months then multiply annual interest by $\frac{7}{12}$			
11	Calculations involving direct proportion			

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Unit 1 Chapter 3	**Basic Geometry**			
1	Measure area in mm^2, cm^2, m^2, km^2			
2	Area of rectangle = length × breadth = lb			
3	Area of triangle = $\frac{1}{2} \times base \times height$ $= \frac{1}{2}bh$			
4	Area of composite shapes by adding two or more areas			
5	Area of composite shapes by subtracting areas			
6	Measure volume in mm^3, cm^3, m^3, km^3			
7	Calculate volume Volume of cuboid = $length \times breadth \times height$ = lbh			
8	Label parts of a circle including radius, diameter and circumference			
9	Know that D = 2r			
10	Calculate the area of a circle using the formula $A = \pi r^2$			
11	Calculate the circumference of a circle using the formula $C = \pi D$			
12	Calculate areas of composite shapes including semi and quarter circles.			

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Unit 1 Chapter 4	**Formulae**			
1	Evaluate formulae written in words			
2	Evaluate two step formulae Eg. multiply/divide them add/subtract			
3	Substitution Eg. Calculate $3a - b^2 + 1$ when a = 4, b = 2 $= 3 \times 4 - 2 \times 2 + 1$ = 12 – 4 +1 = 9			
4	Priority of operations Brackets Off Multiply Divide Add Subtract			
5	Evaluate formula in symbols Eg. Calculate s where s = ut + v and u = 2, t = 3, v = 5			

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Intermediate 1 Course Checklist – Nelson

Unit 1 Chapter 5	**Calculations in Context**			
1	Earning money – Piecework Calculations People are paid a set amount each time they make or do something			
2	Earning money – Commission Calculations People are paid a percentage of the value of the goods they sell			
3	Calculations involving bonuses			
4	Be able to perform calculations involving double time and time and a half			
5	Calculations involving pay rises			
6	Foreign Exchange calculations Converting from £ to other currency and from other currency back to £			
7	Understand what is meant by insurance premium			
8	Calculations involving Buildings Insurance			
9	Calcuations involving Household contents insurance			
10	Calculations involving Holiday and Travel Insurance			
11	Calculations involving Motor Insurance			
12	Understand the meaning of Hire Purchase and be able to perform calculations Eg. TV for £30 deposit plus 12 equal monthly instalments of £25 $= 12\times 25 + 30 = £330$			

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Unit 2 Chapter 8	**Graphs, Charts and Tables**			
1	Create and interpret bar graphs and line graphs			
2	Create and interpret stem and leaf diagrams and understand the levels-Remember a key. 3 | 0 4 8 4 | 0 1 1 1 4 6 7 8 8 5 | 0 0 2 4 4 6 6 6 | 4 6 3 | 8 represents 3.8 cm			
3	Interpret back to back stem and leaf diagrams			
4	Reading piecharts Measure angle at centre and perform calculation			
5	Interpret composite bar graphs and line graphs			
6	Construct frequency tables			
7	Draw a bar graph from a frequency table			
8	Draw a scatter graph			
9	Draw a line of best fit			

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Unit 2 Chapter 9	**Time, Distance and Speed**			
1	Calculate time intervals accurately in hours and minutes and in minutes and seconds			
2	Analyse Distance-Time Graphs			
3	Steeper line means faster speed			
4	Meeting point is where the two lines intersect (cross)			
5	Slope down from left to right – changed direction			
6	Calculating speed using the formula $speed = \frac{dis\tan ce}{time}$			
7	Write minutes as a fraction of an hour. Write seconds as a fraction of a minute			
8	Calculate distance using the formula $dis\tan ce = speed \times time$			
9	Calculate the time using the formula $Time = \frac{Dis\tan ce}{Speed}$			

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Unit 2 Chapter 10	**The Theorem of Pythagoras**			
1	Be able to use the x^2 and √ buttons on calculator Know that Pythagoras can only be used in right angled triangles			
2	Label the Hypotenuse correctly			
3	Calculate the hypotenuse given the other two sides (square, add, square root)			
4	Calculate a shorter side of a right angled triangle given the other two sides (square, subtract, square root)			
5	Finding any side			
6	Problems involving Pythagoras			

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Unit 2 Chapter 11	**Integers**			
1	Understand the scale on a thermometer			
2	Draw a Cartesian Coordinate diagram accurately, labelling the x, y axes and the origin			
3	Plotting negative coordinates			
4	Number lines in context eg.profit and loss			
5	Adding integers using the number line -3 + 5 = 2 -4 + (-5) = -4 – 5 = -9			
6	Subtracting integers using the number line 4 – 6 = -2 -2 – (-3) = -2 + 3 = 1			
7	Multiplying and Dividing integers -ve×-ve = +ve +ve×+ve=+ve -ve×+ve = -ve +ve×-ve = -ve			

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<table>
<tr><th>Unit 2
Chapter
12</th><th>Statistics</th><th>  </th><th>  </th><th>  </th></tr>
<tr><td>1</td><td>Calculate the mean of a data sample.
Mean = total ÷ number of items
Eg. The mean of 4, 7, 9, 12
= (4+7+9+12)÷4
= 32 ÷ 4
= 8</td><td></td><td></td><td></td></tr>
<tr><td>2</td><td>Calculate the range of a data sample.
Range = greatest – least
Eg. Range of 6, 8, 9, 15
= 15-6
=9</td><td></td><td></td><td></td></tr>
<tr><td>3</td><td>State the mode of a data sample
The mode is the most frequent value
Eg. The mode of 5, 7, 8, 8, 9, 9, 9
Is 9</td><td></td><td></td><td></td></tr>
<tr><td>4</td><td>Find the median of a data sample.
The median is the middle of an ordered list.
Eg1. The median of 3, 4, 7, 12, 15 is 7
Eg2. The median of 3, 4, 7, 8, 12, 15 is
$\frac{7+8}{2} = 7.5$</td><td></td><td></td><td></td></tr>
<tr><td>5</td><td>Calculate the mean from a frequency table
Eg
<table><tr><th>Height (cm)</th><th>Frequency</th><th>Height × Frequency</th></tr><tr><td>7</td><td>3</td><td>7×3=21</td></tr><tr><td>8</td><td>5</td><td>8×5=40</td></tr><tr><td>9</td><td>4</td><td>9×4=36</td></tr><tr><td>TOTAL</td><td>12</td><td>97</td></tr></table>Mean = 97 ÷ 12 = 8.1cm</td><td></td><td></td><td></td></tr>
<tr><td>6</td><td>Describe probability in words using
‘Impossible, Unlikely, Even, Very Likely, Certain’</td><td></td><td></td><td></td></tr>
<tr><td>7</td><td>O stands for Improssible
0.5 stands for even chance
1 stands for certain</td><td></td><td></td><td></td></tr>
<tr><td>8</td><td>State probability using the formula
$\text{Probablility(event)} = \frac{\text{Number of favourable outcomes}}{\text{Number of possible outcomes}}$</td><td></td><td></td><td></td></tr>
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Unit 3	**Basic Algebra**			
1	Evaluate expressions Eg. Evaluate $3a^2 + 1$ when a = 2 $=3(2)^2+1$ $=3(4)+1$ $=12+1$ $=13$ Or $3\times 2\times 2+1$ $=12+1$ $=13$			
2	Evaluate formulae correctly Eg. Find volume of a cylinder with radius of 3cm and height 10cm, using the formula $V=\pi r^2 h$ $=\pi\times 3\times 3\times 10$ = $=282.6cm^3$			
3	Simplify expressions/collect/gather like terms Eg1. Simplify $2x\times 3x=6x^2$ Eg2. Simplify 3x + 2y – x + 3y = 2x + 5y			
4	Removing brackets Eg. 3(2x + 5) = 6x + 15			
5	Remove brackets and simplify Eg. $x(x+3) + 2x = x^2+3x+2x=x^2+5x$ Eg2. $2(x-1)+3(x-4)=2x-2+3x-12=5x-14$			
6	Factorising using common factor Eg. Factorise $10m+25=5(2m+5)$			
7	Solving Equations Eg. Solve 3n + 2 = 17 3n = 15 -2 n = 5 ÷ 3			
8	Solving equations by first removing brackets Eg. Solve 9(n + 5) = 63 9n + 45 =63 -45 9n = 18 ÷ 9 n = 2			
9	Know the meaning of the inequality signs > greater than < less than ≥ greater than or equal to ≤ less than or equal to			
10	Solve simple inequalities $x\geq 3x-8$ $0\geq 2x-8$ -x $8\geq 2x$ +8 $4\geq x$ ÷2 $x\leq 4$			

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<table>
<tr><td>Unit 3
Chapter
15</td><td>Graphical Relationships</td><td>  </td><td>  </td><td>  </td></tr>
<tr><td>1</td><td>Plotting points and naming lines in the form
y= a and x = b</td><td></td><td></td><td></td></tr>
<tr><td>2</td><td>Graphed Relations
Eg. Draw y = 2x
Plot coordinates (0, 0), (1, 2), (2, 4) and join
<table><tr><td>x</td><td>0</td><td>1</td><td>2</td></tr><tr><td>y</td><td>0</td><td>2</td><td>4</td></tr></table>and extend line</td><td></td><td></td><td></td></tr>
<tr><td>3</td><td>Lines not passing through the origin
Eg. Draw y = 2x + 3

Plot coordinates (-2, -1), (-1, 1), (0, 3), (1, 5)
<table><tr><td>x</td><td>-2</td><td>-1</td><td>0</td><td>1</td><td>2</td></tr><tr><td>y</td><td>-1</td><td>1</td><td>3</td><td>5</td><td>7</td></tr></table>and (2, 7) and join and extend lines</td><td></td><td></td><td></td></tr>
<tr><td>4</td><td>*********Find equation of a line********</td><td></td><td></td><td></td></tr>
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Unit 3 Chapter 16	**Basic Trigonometry**			
1	Label the sides of a right angled triangle correctly: Hypotenuse, Opposite and Adjacent			
2	Using tangent to find the size of an angle in a right angled triangle. $Tanx^o = \frac{Opposite}{Adjacent}$			
3	The sine of an angle $Sinx^o = \frac{Opposite}{Hypotenuse}$			
4	The cosine of an angle $Cosx^o = \frac{Adjacent}{Hypotenuse}$			
5	Picking the ratio Be able to select the correct ratio to find angle			
6	Finding the lenth of a side: using tan $opposite = \tan x^o \times adjacent$ $Adjacent = \frac{opposite}{\tan x^o}$			
7	Finding the length of a side: using sine $Opposite = \sin x^o \times Hypotenuse$ $Hypotenuse = \frac{Opposite}{Sinx^o}$			
8	Finding the length of a side: using cosine $Adjacent = \cos x^o \times hypotenuse$ $Hypotenuse = \frac{Adjacent}{Cosx^o}$			
9	Finding the length of a side: mixed examples Be able to select the correct ratio to find the side			

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Unit 3 Chapter 17	**Standard Form**			
1	Be able to convert between normal form to standard form Eg1. 3700000=3.7×10^{6} Eg2. 0.00005 = 5×10^{-5}			
2	Be able to convert between standard form and normal form Eg1. $6 \times 10^{4} = 60\,000$ Eg2. $3 \times 10^{-2} = 0.03$			
3	Be able to enter scientific notation on calculator			
4	Use scientific notation in context			

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