St Thomas of Aquin's RC High School


## Helping your child achieve <br> Level 4

| Estimation and Rounding |  |
| :--- | :--- |
| I can round answers to specified Significant <br> Figures. | 254.125874 |
|  | 1 Significant Figure: 300 |
| 2 Significant Figures: 250 |  |
| 3 Significant Figures: 254 |  |
|  | 4 Significant Figures: 254.1 |
| I take into consideration the context of a <br> question before rounding. | A coach can carry 62 passengers. <br> How many coaches are required to <br> transport 200 pupils and 10 staff <br> members? |
| $210 \div 62=3.387$ |  |
| I can use a given tolerance to decide if there is <br> an allowable amount of variation of a specified <br> quantity. | Dimensions of a machine part are <br> 235 mm $\pm 1$ mm |


| Number and number processes |  |  |  |
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| I can apply the correct order of <br> operations, including those with <br> brackets. | B | Brackets | $10 \times(4+2)=10 \times 6=60$ |
| I | Indices | $5+2^{2}=5+4=9$ |  |
|  | D | Division | $10+6+2=10+3=13$ |
|  | M | Multiplication | $10-4 \times 2=10-8=2$ |
| A | Addition | $10 \times 4+7=40+7=47$ |  |
|  | S | Subtraction | $10+2-3=5=3=2$ |


| Powers and roots |  |
| :--- | :--- |
| l can show that square roots of <br> whole numbers can have <br> positive and negative values. | Since $3^{2}=9$ and $(-3)^{2}=9$ |


| I can evaluate whole number <br> roots of any appropriate number | $\sqrt[3]{8}=2$ |
| :--- | :---: |
| $\sqrt[3]{27}=3$ |  |$|$|  | $3400=3.4 \times 10^{3}$ |
| :--- | :---: |
| I can express numbers in <br> Scientific Notation. | $0.000034=3.4 \times 10^{-5}$ |



|  |  |
| :---: | :---: |
| I can solve problems in which related quantities are increased or decreased proportionally. | $\begin{aligned} & \text { Value Added Tax }(V A T)=20 \% \text { (from } 4^{\text {th }} \text { January } \\ & \text { 2010) } \end{aligned}$ <br> Example Calculate the total price of a computer which costs $£ 650$ excluding VAT $\begin{aligned} & 20 \% \text { of } £ 650 \\ & =\frac{1}{5} \text { of } 650 \\ & =650 \div 5 \\ & =130 \end{aligned}$ $\begin{aligned} \text { Total price } & =650+130 \\ & =£ 780 \end{aligned}$ |


| Money |  |
| :--- | :--- |
| I can describe credit and debit in <br> relation to earning and <br> deductions. | Debit card: draws money directly from your <br> account when you make a purchase. <br> Credit card: borrows pre-approved funds when you <br> make a purchase. Money is paid back with interest. <br> APR: annual percentage rate |
|  | pa: per annum <br> Interest rate: the percentage charged by a lender <br> when borrowing money. |


| I can budget effectively. | Income: Money received/earned. <br> Expenditure: Money spent. <br> Surplus: Money left over. Occurs when income is <br> greater than expenditure. |
| :--- | :--- |
| I can calculate net income. | Net Income = Gross Income - Deductions. |
| Examples of deductions: |  |
| Tax |  |
| National Insurance contribution |  |
| Student Loan |  |
| Private Pension |  |, | When opening a savings account - seek a high |
| :--- |
| interest rate. |
| When borrowing money (loans, credit cards, |
| mortgages) - seek a low interest rate. | \left\lvert\, | I can compare a range of |
| :--- |
| personal finance products and |
| communicate the impact of |
| financial decisions. |$\quad$| £ multiply by the exchange rate. |
| :--- |
| $\$ \rightarrow$ £ divide by the exchange rate. |\right.



| I can calculate speed, |
| :--- | :--- | :--- |
| distance and time |
| involving decimal |
| fraction hours. |

To change hours to minutes $\rightarrow \times 60$
To change minutes to hours -> $\div 60$

| Measurement |  |
| :---: | :---: |
| I can calculate the area of kites, parallelograms, and trapeziums. | $\begin{gathered} A_{\text {kite }}=\frac{1}{2}\left(d_{1} \times d_{2}\right) \\ A_{\text {parallelogram }}=B \times H \\ A_{\text {trapezium }}=\frac{1}{2}(a+b) h \end{gathered}$ |
| I can calculate the surface area of cylinders, cuboids and triangular prisms, | $\begin{gathered} S A_{\text {cylinder }}=2 \pi r h+2 \pi r^{2} \\ S A_{\text {cuboid }}=2 l w+2 l h+2 w h \\ S A_{\text {triangularprism }}=3 l w+b h \end{gathered}$ |
| I can calculate the volume of triangular prisms and cylinders. | $\begin{gathered} V_{\text {prism }}=A \times h \\ V_{\text {cylinder }}=A \times h=\pi r^{2} h \end{gathered}$ |


| Patterns and relationships |  |
| :--- | :---: |
| l can determine a general <br> formula for the nth term to <br> describe a sequence | Number Sequence: $10,14,18,22 \ldots 4 n+6$ |
| I can calculate the gradient of a <br> line given two points on a <br> coordinate diagram. | $\left(x_{1}, y_{1}\right)$ and $\left(x_{2}, y_{2}\right)$ <br> $m=\frac{y_{2}-y_{1}}{x_{2}-x_{1}}$ |
| I can communicate the gradient <br> of a vertical and horizonal line. | Horizontal line $\rightarrow m=0$ |



| Expressions and equations |  |
| :--- | :--- |
| I can expand brackets | Example <br> I can solve a range of linear <br> equations. |


| I can factorise expressions <br> using a common factor | $a b+a c=a(b+c)$ |
| :--- | :--- |


| Properties of 2D and 3D objects |  |  |
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| I can apply Pythagoras' <br> Theorem |  |  |


| Angle, symmetry and transformation |  |  |  |  |  |  |  |
| :--- | :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| I can describe the <br> rotational properties of <br> shapes. | A shape has rotational symmetry when it can be rotated and <br> still looks the same. <br> The order or rotational symmetry of a shape is the number <br> of times it can be rotated around a full circle and still look <br> the same. |  |  |  |  |  |  |
| I can apply rotational <br> symmetry to complete <br> designs. |  |  |  |  |  |  |  |


|  |  |
| :---: | :---: |
| I can reflect or translate an object on a four quadrant Cartesian diagram. | $(x, y)$ reflected in the $x$-axis gives $(x,-y)$ <br> $(x, y)$ reflected in the $y$-axis gives $(-x, y)$ |
| I can use similarity to find the unknown length of 2 D shapes. | $\text { Scale Factor }=\frac{\text { new }}{\text { original }}$ <br> Unknown Length $=$ Scale Factor $\times$ corresponding length |
| I can describe a tangent. | A tangent meets a circle at one point. <br> The angle between a tangent and a radius is $90^{\circ}$. |
| I can apply my knowledge of triangles, angles and circles, including semicircles, to solve problems. | A tringle formed within a circle, using the diameter will be a right-angled triangle. |


| Data and analysis |  |
| :--- | :--- |
| I can interpret raw and <br> graphical data. | Reading from a variety or charts, tables and graphs. |


| I can use statistical language to describe identified relationships. | The below line graph shows a negative correlation. <br> The trend of the graph is that her weight is decreasing. |
| :---: | :---: |
| I can calculate the mean, median, mode and range of a data set. | Range $=$ greatest $\boldsymbol{-}$ lowes $t$ <br> Median - first put the values in ascending order and then select the middle value. <br> Mode - this is the value which appears most frequently. $\text { Mean }=\frac{\text { total of values }}{\text { number of values }}$ |
| I can display a data set in a range of statistical diagrams. | Back-to-back stem and leaf plots Comparative line graphs Pie Charts. |
| I can describe and give examples of discrete and continuous data. | Discrete data is counted. <br> Example, the results of rolling a dice. <br> Continuous data is measured. <br> Example, height. |


| Ideas of chance and uncertainty |  |
| :--- | :--- |
| I can calculate <br> probability and <br> predict how <br> many times I <br> can expect an <br> event to occur. | The probability of rolling a 3 on a regular dice is $\frac{1}{6}$ <br> Therefore, if I rolled a dice 60 times. I would expect a 3 on ten <br> occasions. <br> $\left(\frac{1}{6} \times 60=10\right)$ |

