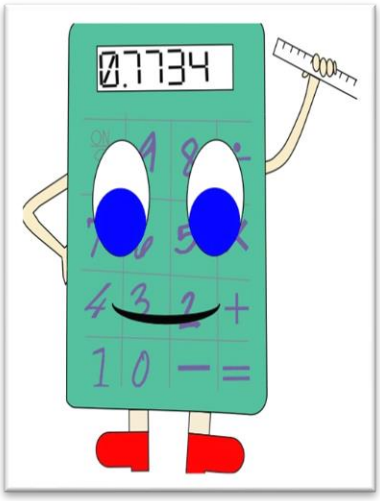
RESPECT • BELIEVE • ACHIEVE

# Forrester High School




## Helping your child achieve

## Level 3 Numeracy

| Rounding | |
|---|---|
| I can round decimals up to three decimal places. | **254.125874**<br><br>Nearest 100: **300**<br><br>Nearest 10: **250**<br><br>Nearest whole number: **254**<br><br>One decimal place: **254.1**<br><br>Two decimal places: **254.13**<br><br>Three decimal places: **254.126** |
| I can use rounding to help estimate the answers to calculations. | A bar of chocolate weighs 42g. There are 48 bars of chocolate in a box. What is the total weight of chocolate in the box?<br><br>Estimate = 50 x 40 = 2000g<br><br>Calculate: 42 x 48 = 2016g |

| Number and number processes | |
|---|---|
| I can recall my times tables up to the twelve times table and use them to support with division. | |

| x | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 2 | 2 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 |
| 3 | 3 | 6 | 9 | 12 | 15 | 18 | 21 | 24 | 27 | 30 |
| 4 | 4 | 8 | 12 | 16 | 20 | 24 | 28 | 32 | 36 | 40 |
| 5 | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
| 6 | 6 | 12 | 18 | 24 | 30 | 36 | 42 | 48 | 54 | 60 |
| 7 | 7 | 14 | 21 | 28 | 35 | 42 | 49 | 56 | 63 | 70 |
| 8 | 8 | 16 | 24 | 32 | 40 | 48 | 56 | 64 | 72 | 80 |
| 9 | 9 | 18 | 27 | 36 | 45 | 54 | 63 | 72 | 81 | 90 |
| 10 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |

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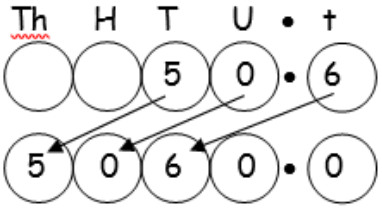
| I can add, subtract, multiply and divide decimals. | Subtract 6.9 from 145.97<br>3 1<br>1~~4~~5.97<br>- 6.90<br>13907<br><br>Multiply 50.6 by 100<br><br>  <br><br>50.6 x 100 = 5060 |
| I can add, subtract, multiply and divide negative numbers. | The temperature outside at 2pm was $3^oC$. During the next 12 hours, it falls by $6^oC$. What is the temperature at 2am?<br><br>3 – 6 = $-3^{oC}$ |
| I can identify multiples and factors. | Multiples of a number are all the numbers which **it fits into** exactly.<br><br>For example, the multiples of 6 are 6, 12, 18, 24, 30, 36, …<br><br>Factors or a number are all the numbers which **fit into it** exactly.<br><br>For example, the factors of 12 are 1, 2, 3, 4, 6 and 12. |

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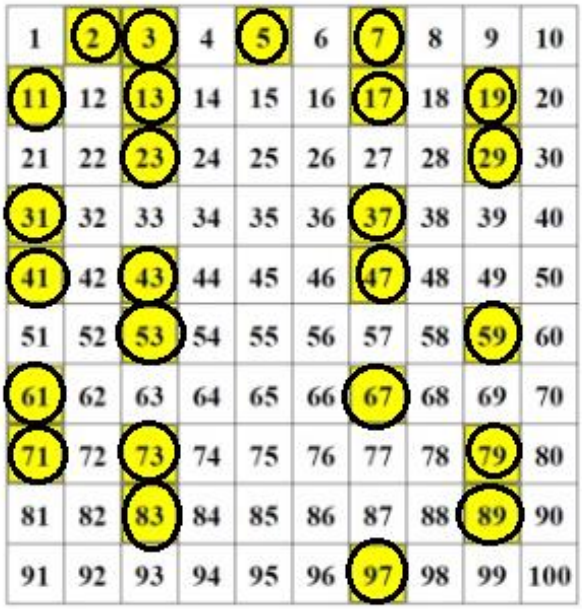
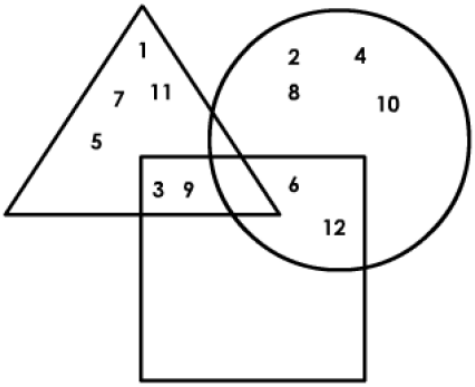
| I can identify prime numbers to 100 and can explain the method used. | Q: What is a prime number.<br><br>A: A prime number can be divided evenly only by 1 or itself.<br><br>  <br> |
| I can solve problems using multiples and factors. | Put the numbers 1 to 12 in the below diagram.<br>• Odd numbers must go into the triangle.<br>• Even numbers must go into the circle.<br>• Multiples of 3 must go into the square.<br><br>  <br> |

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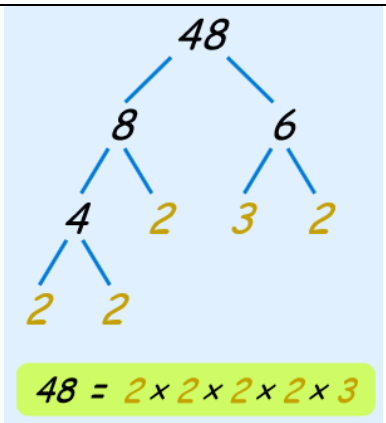
| I can write a given number as a product of its prime factors. |  |

| Powers and roots | |
|---|---|
| I can define index, exponent and power. | Index, exponent and power all refer to the number of times a number is multiplied by itself. |
| I can evaluate whole number powers and express whole numbers as powers. | $2^3 = 2 \times 2 \times 2 = 8$<br>$4^2 = 4 \times 4 = 16$ |

| Fractions, decimal fractions and percentages | |
|---|---|
| Convert fractions, decimal fractions and percentages to equivalent fractions, decimal fractions or percentages. | $\frac{1}{10}$ \| $\frac{1}{5}$ \| $\frac{3}{10}$ \| $\frac{2}{5}$ \| $\frac{1}{2}$<br>0.1 \| 0.2 \| 0.3 \| 0.4 \| 0.5<br>10% \| 20% \| 30% \| 40% \| 50%<br><br>$\frac{3}{5}$ \| $\frac{7}{10}$ \| $\frac{4}{5}$ \| $\frac{9}{10}$ \| 1<br>0.6 \| 0.7 \| 0.8 \| 0.9 \| 1.0<br>60% \| 70% \| 80% \| 90% \| 100% |

| | |
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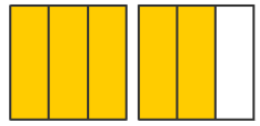
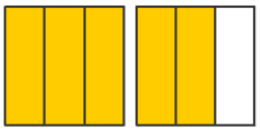
| I can add and subtract whole numbers and fractions, including when changing a denominator. | the original fractions: $\frac{1}{3}+\frac{1}{2}$<br>with a common denominator: $\frac{2}{6}+\frac{3}{6}$<br>result: $\frac{5}{6}$ |
| I can convert between whole or mixed numbers, improper fractions and decimal fractions. |  <br>$\frac{5}{3}$<br>  <br>$1\frac{2}{3}$ |
| Using my knowledge of fractions, decimal fractions and percentages, I can carry out calculations with and without a calculator. | **Example**<br>25% of £640<br>= $\frac{1}{4}$ of £640<br>= £640 ÷ 4<br>= £160 |
| I can solve problems in which related quantities are increased or decreased proportionally. | Value Added Tax (VAT) = 20% (from 4th January 2010)<br>**Example** Calculate the total price of a computer which costs £650 excluding VAT<br>20% of £650<br>= $\frac{1}{5}$ of 650<br>= 650 ÷ 5<br>= 130<br>Total price = 650 + 130 = £780 |

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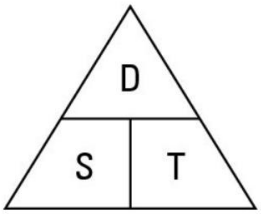
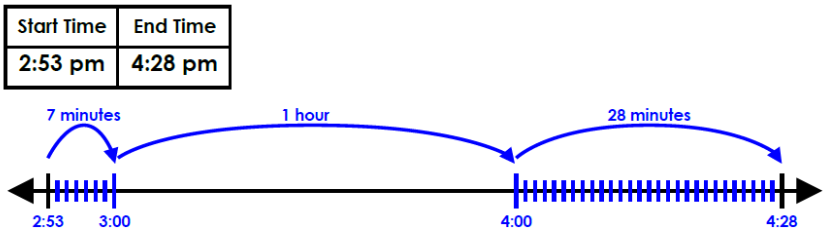
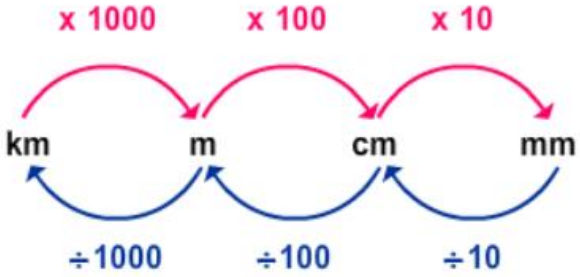
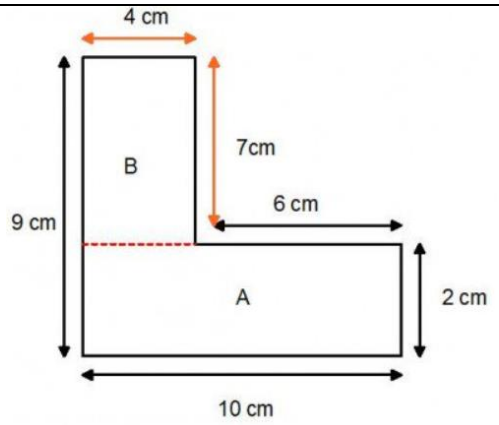
| I can express quantities as a ratio and where appropriate, simplify. | If there are 6 teachers and 60 children in a school, find the ratio of teachers to the total amount of teachers and children.<br><br>Teachers: Teachers and Children<br><br>6 : 66<br><br>1: 11 |

| **Money** | |
|---|---|
| I can identify the best value when comparing products and justify my choice. | |
| I can budget effectively. | **Income:** Money received/earned.<br><br>**Expenditure:** Money spent.<br><br>**Surplus:** Money left over. Occurs when income is greater than expenditure. |
| I can demonstrate knowledge of financial terms. | **Debit card:** draws money directly from your account when you make a purchase.<br><br>**Credit card:** borrows pre-approved funds when you make a purchase. Money is paid back with interest.<br><br>**APR:** annual percentage rate<br><br>**pa:** per annum<br><br>**Interest rate:** the percentage charged by a lender when borrowing money. |
| I can convert between different currencies. | £ → $ multiply by the exchange rate.<br><br>$ → £ divide by the exchange rate. |

| Time | |
|---|---|
| I can apply knowledge of the relationship between speed, distance and time to find each of the three variables. |  $D = S \times T$<br>$S = D \div T$<br>$T = D \div S$ |
| I can calculate time durations across hours and days. |  <br>elapsed time: 1 hour and 35 minutes |

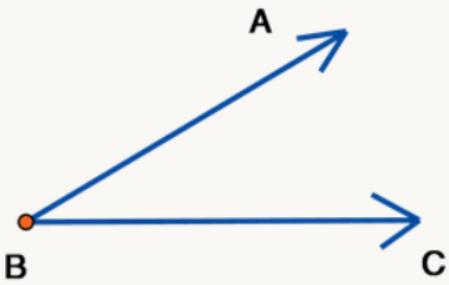
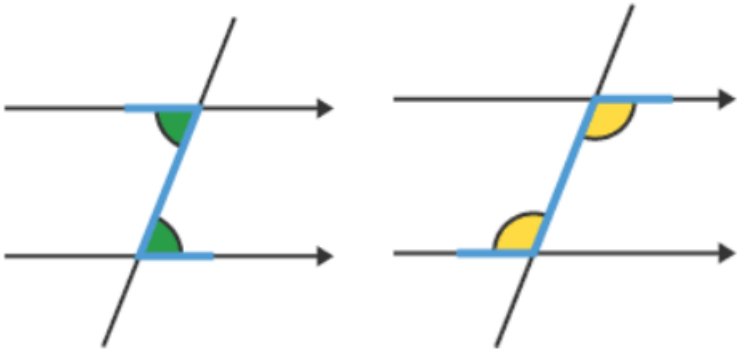
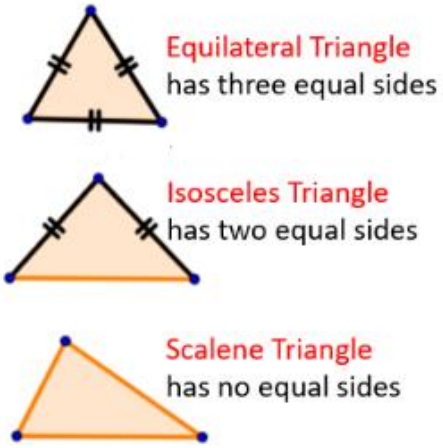
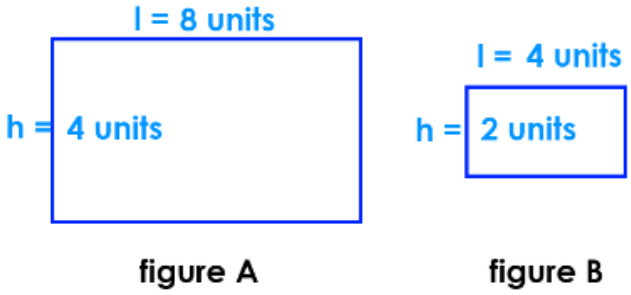
| Measurement | |
|---|---|
| I can identify appropriate units for length, area and volume. | **Length:** mm, cm, m and km.<br>**Area:** $mm^2, cm^2, m^2$<br>**Volume:** $cm^3, ml, L$ |
| I can convert between standard units. |  |
| I can calculate the area of 2D shapes. | $A_{rectangle} = L \times B$<br>$A_{triangle} = \frac{1}{2} \times B \times H$<br>$A_{circle} = \pi r^2$ |

| | |
|---|---|
| I can calculate the area and volume of compound 2D and 3D shapes. |  <br>$Area_A = L \times B = 10 \times 2 = 20cm^2$<br>$Area_B = L \times B = 4 \times 7 = 28cm^2$<br>$Total\ Area = 20 + 28 = 48cm^2$ |

| **Patterns and relationships** | |
|---|---|
| I can generate a number sequences from a given rule and vice versa. | **Rule:** T = 4n + 6<br>**Number Sequence:** 10, 14, 18, 22…<br><br>**Rule:** T = 2n – 1<br>**Number Sequence:** 1, 3, 5, 7, 9… |
| I can use algebra to express a sequence. | The cost of hiring a car is £75 plus a charge of £0.05 per mile.<br>$C = 75 + 0.05m$ |

| Expressions and equations | |
|---|---|
| I can collect like terms. | $2x + y - x + 3y = x + 4y$<br><br>$a^2 + 2a + 4a^2 = 5a^2 + 2a$ |
| I can solve linear equations. | $2x + 3 = 12$<br><br>$2x = 9$<br><br>$x = 4.5$ |
| I can evaluate a simple formula. | Use the formula $P = 2L + 2B$ to evaluate $P$ when $L = 12$ and $B = 7$.<br><br>$P = 2L + 2B$ Step 1: write formula<br><br>$P = 2 \times 12 + 2 \times 7$ Step 2: substitute<br><br>$P = 24 + 14$ Step 3: start to evaluate<br><br>$P = 38$ Step 4: write answer |

| Properties of 2D and 3D objects | |
|---|---|
| I can use mathematical instruments to accurately draw a variety of 2D shapes. | Accurate use of protractor and ruler. |

| Angle, symmetry and transformation | |
|---|---|
| I can name angles. |  <br>***Look Out**: when naming an angle using three letters, the vertex must always be the middle letter!*<br>$< ABC$ |
| I can identify corresponding and alternate angles. |  <br>Alternate Angles Corresponding Angles |
| I can list properties of triangles and quadrilaterals. |  |
| I can enlarge and reduce objects in size, showing understanding of linear scale factor. |  <br>**figure A** **figure B**<br>Figure A and Figure B are similar.<br>$Linear\ Scale\ Factor = \frac{8}{4} = 2$ |

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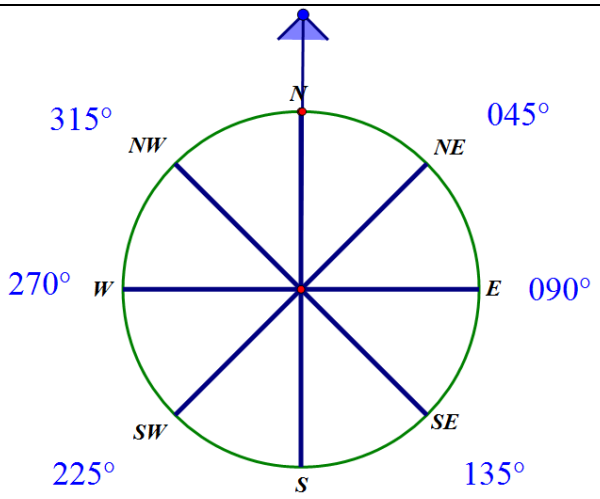
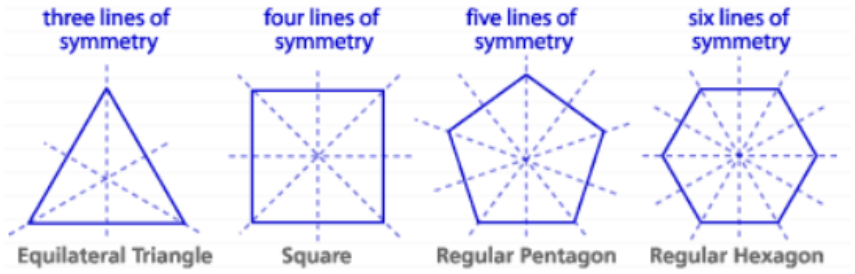
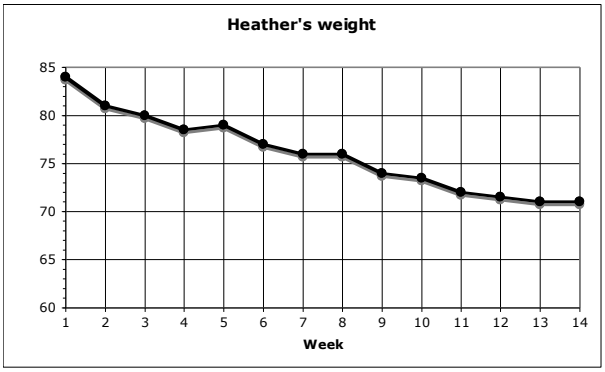
|---|---|
| I can use bearings. |  |
| I can identify all lines of symmetry in 2D shapes. |  |

| Data and analysis | |
|---|---|
| I can describe a method of collecting data. | Survey. |
| I can describe trends in data. | **Example** The graph below shows Heather's weight over 14 weeks as she follows an exercise programme.<br>  <br><br>The trend of the graph is that her weight is decreasing. |
| I can determine if data is robust, vague or misleading. | I consider:<br>1. Validity of the source.<br>2. Scale used.<br>3. Sample size.<br>4. Method of presentation.<br>5. Appropriateness of how the data was collected. |
| I can describe bias. | If data collected is described as biased, this means it does not give a fair representation.<br><br>Examples:<br>• Using leading questions.<br>• Having a small sample size. |
| I can organize and display data appropriately. | Bar graphs are often used to display data.<br>The horizontal axis should show the categories or class intervals, and the vertical axis the frequency.<br>All graphs should have a title, and each axis must be labelled.<br>Example: |

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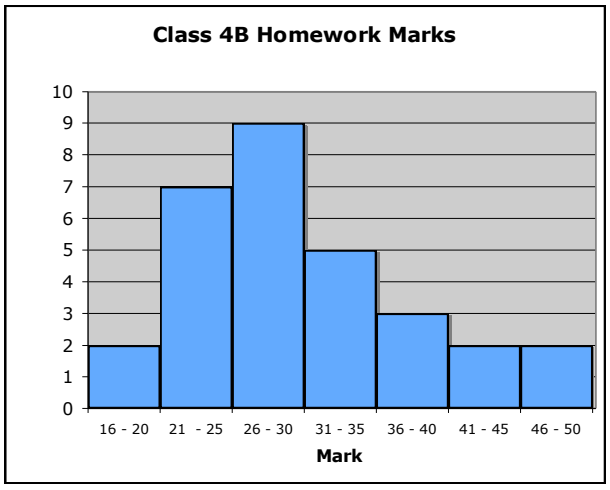
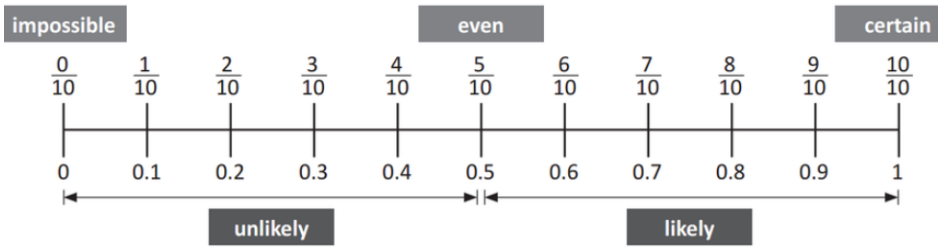
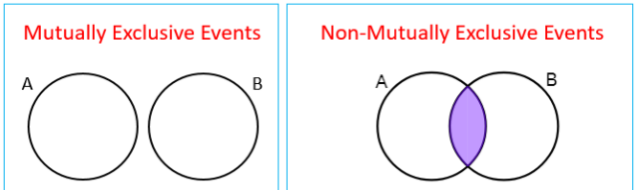
| |  |

| Ideas of chance and uncertainty | |
|---|---|
| I can use the probability scale of 0 to 1 showing probability as a fraction or decimal fraction. |  |
| I can calculate the probability of an event occurring. | **Question:** What is the probability of throwing a prime number on a 12 sided dice?<br><br>**Answer:** $P(prime) = \frac{Number\ of\ favourable\ outcomes}{Number\ of\ posisble\ outcomes}$<br><br>$= \frac{5}{12}$ |
| I can use a given probability to calculate an expected outcome. | **Question:** The probability of rain in June is 0.2, so how many days do we expect it to rain?<br><br>**Answer:** 30 x 0.2 = 6 days |
| I can describe mutually exclusive events. | Events are mutually exclusive if both cannot be true.<br>  |