

## Maths Curriculum Map Year 6

|                               | Autumn                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Spring                                                                                                                                        | Summer                                                                                                                                        |            |      |           |       |                 |                                      |                |                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
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| <b>Number and place value</b> | <ul style="list-style-type: none"><li>Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <ul style="list-style-type: none"><li>Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit</li></ul> | <ul style="list-style-type: none"><li>Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit</li></ul> |            |      |           |       |                 |                                      |                |                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>1 week</b>                 | <p><i>What must be added to 26 523 to change it to 54 525?</i></p> <p><i>Think about the number 34 567 800.</i></p> <p><i>What does the digit '8' represent?</i></p> <p><i>What does the digit '7' represent?</i></p> <p><i>Divide this number by 100 and 1000.</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <p><i>Give an example of a number which you might round to the nearest 10? Nearest 10 000?</i></p>                                            | <p><i>Miss Jones, the teacher, has four cards. On each card is a number:</i></p>                                                              |            |      |           |       |                 |                                      |                |                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Vocabulary:</b>            | <ul style="list-style-type: none"><li>Round any whole number to a required degree of accuracy</li></ul> <p><i>Round 265 496 to the nearest 10 000 (270 000)</i></p> <p><i>What is the smallest number which rounds to 500 000, to the nearest 1000? (499 500).</i></p> <ul style="list-style-type: none"><li>Solve number and practical problems that involve number, place value and rounding</li></ul> <p><i>What is the largest 5-digit number whose digits sum to 20? (99200).</i></p> <ul style="list-style-type: none"><li>Use negative numbers in context, and calculate intervals across zero</li></ul> <p><i>A scientist measures the depth of some objects below the surface of the sea. She records her measurements using negative numbers.</i></p> <table><tr><th>Object</th><th>Depth</th></tr><tr><td>Coral reef</td><td>−2 m</td></tr><tr><td>Shipwreck</td><td>−11 m</td></tr><tr><td>Pirate treasure</td><td>four times as deep as the coral reef</td></tr><tr><td>Sleeping shark</td><td>3 metres above the shipwreck</td></tr></table> <p><i>Which object is deepest? Explain your choice. Is the sleeping shark deeper than the pirate treasure? Explain your reasoning.</i></p> | Object                                                                                                                                        | Depth                                                                                                                                         | Coral reef | −2 m | Shipwreck | −11 m | Pirate treasure | four times as deep as the coral reef | Sleeping shark | 3 metres above the shipwreck | <p><i>Three pupils are asked to estimate the answer to the sum <b>4243 + 1734</b>.</i></p> <p><i>Andrew says, 'To the nearest 100, the answer will be 5900.'</i></p> <p><i>Bilal says, 'To the nearest 50, the answer will be 6000.'</i></p> <p><i>Cheng says, 'To the nearest 10, the answer will be 5970.'</i></p> <p><i>Do you agree with Andrew, Bilal or Cheng? Can you explain their reasoning?</i></p> <ul style="list-style-type: none"><li>Use negative numbers in context, and calculate intervals across zero</li></ul> <p><i>How much warmer is 5°C than −4°C? (9°C)</i></p> <ul style="list-style-type: none"><li>Solve number and practical problems that involve number, place value and rounding</li></ul> <p><i>What is the smallest number which rounds to 35 000, to the nearest 1000? (34 500).</i></p> <p><i>Put these numbers in order, from smallest to largest. 3·3, 3·03, 3·33, 3·303, 3·033</i></p> <p><i>−4·4, −4·44, −4·04, −4·404</i></p> <p><i>5834, 61·8 multiplied by 100, one tenth of 45813</i></p> <p><i>0·034, 3·6 divided by 100, ten times 0·0033</i></p> | <ul style="list-style-type: none"><li>Round any whole number to a required degree of accuracy</li></ul> <p><i>Miss Jones, the teacher, has four cards. On each card is a number:</i></p> <p><b>59996            59943            60026            62312</b></p> <p><i>She gives one card to each pupil. The pupils look at their card and say a clue.</i></p> <p><i>Anna says, 'My number is 60 000 to the nearest 10 thousand.'</i></p> <p><i>Bashir says, 'My number has exactly 600 hundreds in it.'</i></p> <p><i>Charis says, 'My number is 59900 to the nearest hundred.'</i></p> <p><i>David says, 'My number is 60 000 to the nearest 10. Can you work out which card each pupil had? Explain your choices.</i></p> <ul style="list-style-type: none"><li>Use negative numbers in context, and calculate intervals across zero</li></ul> <p><i>A scientist measured the temperature each day for one week at 06:00.</i></p> <p><i>On Sunday the temperature was 1·6°C.</i></p> <p><i>On Monday the temperature had fallen by 3°C.</i></p> <p><i>On Tuesday the temperature had fallen by 2·1°C.</i></p> <p><i>On Wednesday the temperature had risen by 1·6°C.</i></p> <p><i>On Thursday the temperature had risen by 4·2°C.</i></p> <p><i>On Friday the temperature had fallen by 0·9°C.</i></p> <p><i>On Saturday the temperature had risen by 0·2°C.</i></p> <p><i>What was the temperature on Saturday?</i></p> <ul style="list-style-type: none"><li>Solve number and practical problems that involve number, place value and rounding e.g. What is the smallest 4-digit integer whose digits sum to 20? (10199).</li></ul> |
| Object                        | Depth                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                               |                                                                                                                                               |            |      |           |       |                 |                                      |                |                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Coral reef                    | −2 m                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                               |                                                                                                                                               |            |      |           |       |                 |                                      |                |                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Shipwreck                     | −11 m                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                               |                                                                                                                                               |            |      |           |       |                 |                                      |                |                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Pirate treasure               | four times as deep as the coral reef                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                               |                                                                                                                                               |            |      |           |       |                 |                                      |                |                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Sleeping shark                | 3 metres above the shipwreck                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                               |                                                                                                                                               |            |      |           |       |                 |                                      |                |                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

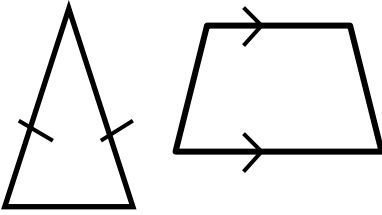
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| <p><b>Addition, subtraction, Multiplication &amp; Division</b></p> <p><b>3 weeks</b></p> <p><b>Vocabulary:</b></p> <p>increase, decrease, inverse, tens boundary, hundreds boundary, order of operation, common factors, common multiples, divisible by, factor, quotient, divided into, inverse, multiplication fact, multiple of, division facts, derive, composite numbers, prime number, prime factors, square number, cubed number, formal written method</p> <p><b>Plus Year 3 Vocabulary list.</b></p> | <ul style="list-style-type: none"> <li>Continue to practise the four operations for larger numbers using the formal written methods of columnar addition and subtraction, short and long multiplication, and short and long division</li> <li>Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication</li> <li>Perform mental calculations, including with mixed operations and large numbers e.g. <math>(13\ 500 \times 2) \div 9 = 3000</math></li> <li>Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why</li> </ul> <p><i>There are 6534 cars parked in a 3-storey car park; 1398 are on the first floor and 3765 are on the second floor; how many cars are parked on the third floor?</i></p> <p><i>Jasmine and Kamal have been asked to work out <math>5748 + 893</math> and <math>5748 - 893</math>.</i></p> <p><i>Jasmine says, '893 is 7 less than 900, and 900 is 100 less than 1000, so I can work out the addition by adding on 1000 and then taking away 100 and then taking away 7.'</i></p> <p><i>What answer does Jasmine get, and is she correct?</i></p> <p><i>Kamal says, '893 is 7 less than 900, and 900 is 100 less than 1000, so I can work out the subtraction by taking away 1000 and then taking away 100 and then taking away 7.'</i></p> <p><i>What answer does Kamal get, and is he correct?</i></p> <p><i>If you disagree with either Jasmine or Kamal, can you correct their reasoning?</i></p> <ul style="list-style-type: none"> <li>Solve problems involving addition, subtraction, multiplication and division</li> <li>Use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy.</li> </ul> | <ul style="list-style-type: none"> <li>Continue to practise the four operations for larger numbers using the formal written methods of columnar addition and subtraction, short and long multiplication, and short and long division</li> <li>Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication</li> <li>Perform mental calculations, including with mixed operations and large numbers</li> <li>Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why</li> </ul> <p><i>Three people won £365 496 on the lottery; one received £197 540, another received £40 010; how much did the third person receive?</i></p> <ul style="list-style-type: none"> <li>Solve problems involving addition, subtraction, multiplication and division</li> </ul> <p><i>I think of a number and subtract 5.6 from it then multiply the result by 6; the answer is 7.2; what was my number?</i></p> <ul style="list-style-type: none"> <li>Use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy</li> </ul> <p><i>A box contains approximately 52 matches; how many boxes can be filled with 10 000 matches? Find the perimeter of a football pitch with side lengths 105.3m and 46.8m (estimate: <math>(105+45) \times 2 = 300\text{m}</math>; actual: <math>(105.3+46.8) \times 2 = 304.2\text{m}</math> (same number of decimal places as numbers in the question))</i></p> <ul style="list-style-type: none"> <li>Identify common factors, common multiples and prime numbers</li> </ul> | <ul style="list-style-type: none"> <li>Continue to practise the four operations for larger numbers using the formal written methods of columnar addition and subtraction, short and long multiplication, and short and long division</li> <li>Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication</li> <li>Perform mental calculations, including with mixed operations and large numbers e.g. <math>(13\ 400 + 10\ 600) \times 4 \div 12 = 8000</math></li> <li>Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why e.g. <i>Write a number story for this number sentence: <math>23.5 = 20.4 + 4.9 - 1.8</math></i></li> <li>Solve problems involving addition, subtraction, multiplication and division</li> </ul> <p><i>Club A sold 3500 tickets for £9.50 each and Club B sold 8150 tickets for £3.50; how much more money did Club A make than Club B?</i></p> <p><i>396 children and 37 adults went on a school trip; buses seat 57 people; how many buses were needed?</i></p> <ul style="list-style-type: none"> <li>Use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy</li> <li>Identify common factors, common multiples and prime numbers</li> </ul> <p><i>e.g. Find the highest common factor and lowest common multiple of 54 and 81, 45 and 105. Find all the prime numbers between 80 and 100.</i></p> |
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|                                                                                                                                                                                                                                                                                                            | <ul style="list-style-type: none"> <li>Identify common factors, common multiples and prime numbers<br/><i>e.g. common factors of 12 and 15 are 1 and 3; common multiples of 4 and 6 are 12, 24, 36...; prime numbers are numbers with exactly 2 factors e.g. 2, 3, 5, 7, 11, 13, ...</i><br/><i>Find the smallest common multiple of 5, 6 and 8 (120)</i></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <ul style="list-style-type: none"> <li>Divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context</li> <li>Use their knowledge of the order of operations to carry out calculations involving the four operations <i>and using brackets</i>;<br/><i>e.g. <math>2 + 1 \times 3 + (7 - 4) \times 3 = 14</math>.<br/><math>14 \times (29 - 12) + 35 \div 5 = 245</math></i></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <ul style="list-style-type: none"> <li>Divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context</li> <li>Use their knowledge of the order of operations to carry out calculations involving the four operations <i>and using brackets</i></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <p><b>Fractions (Including decimals and percentages)</b></p> <p><b>2 weeks</b></p> <p><b>Vocabulary:</b></p> <p>eighth, fifth, twentieth, proportion, in every, for every decimal, equivalent decimal and fraction, decimal point, decimal place, degree of accuracy, simplify, percentage, percent, %</p> | <ul style="list-style-type: none"> <li>Use common factors to simplify fractions; use common multiples to express fractions in the same denomination<br/><i>e.g. as the numerator and denominator have a common factor of 4, <math>\frac{12}{16}</math> can be simplified to <math>\frac{3}{4}</math>; as the denominators have a common multiple of 12, <math>\frac{3}{4}</math> and <math>\frac{5}{6}</math> can both be expressed in <math>\frac{9}{12}</math> and <math>\frac{10}{12}</math> respectively</i></li> <li>List equivalent fractions to identify fractions with common denominators</li> <li>Compare and order fractions, including fractions <math>&gt;1</math> e.g. put these fractions in order from the smallest: <math>\frac{5}{4}</math>, <math>\frac{5}{6}</math>, <math>\frac{3}{2}</math>, <math>\frac{14}{8}</math></li> <li>Identify the value of each digit to three decimal places and multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places e.g. <math>205.6 \div 100 = 2.056</math></li> <li>Multiply one-digit numbers with up to two decimal places by whole numbers e.g. <math>0.6 \times 7</math></li> <li>Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts <i>e.g. order <math>\frac{4}{5}</math>, 75%, 0.9, <math>\frac{19}{20}</math></i><br/><i>e.g. find a decimal which lies between <math>\frac{3}{8}</math> and <math>\frac{1}{2}</math></i></li> </ul> | <ul style="list-style-type: none"> <li>Use common factors to simplify fractions; use common multiples to express fractions in the same denomination</li> <li>Compare and order fractions, including fractions <math>&gt;1</math> e.g. put these fractions in order from the smallest: <math>\frac{5}{4}</math>, <math>\frac{5}{6}</math>, <math>\frac{3}{2}</math>, <math>\frac{4}{3}</math></li> <li>Associate a fraction with division and calculate decimal fraction equivalents e.g. 0.375 for a simple fraction e.g. <math>\frac{5}{8}</math></li> <li>Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions e.g. <math>\frac{1}{2} + \frac{1}{8} = \frac{5}{8}</math></li> <li>Identify the value of each digit to three decimal places and multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places e.g. <math>\square \times 100 = 140.8</math></li> <li>Use written division methods in cases where the answer has up to two decimal places e.g. <math>458 \div 8 = 57.25</math></li> <li>Multiply and divide numbers with up to two decimal places by one-digit and two-digit whole numbers e.g. <math>3.15 \times 62</math></li> </ul> | <ul style="list-style-type: none"> <li>Use common factors to simplify fractions; use common multiples to express fractions in the same denomination</li> <li>Compare and order fractions, including fractions <math>&gt;1</math> e.g. put these fractions in order from the smallest: <math>\frac{5}{4}</math>, <math>\frac{5}{6}</math>, <math>\frac{3}{5}</math>, <math>\frac{4}{3}</math></li> <li>Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions e.g. <math>\frac{13}{4} - \frac{5}{6} = \frac{11}{12}</math></li> <li>Use a variety of images to support understanding of multiplication with fractions</li> <li>Multiply simple pairs of proper fractions, writing the answer in its simplest form e.g. <math>\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}</math></li> <li>Divide proper fractions by whole numbers e.g. <math>\frac{1}{3} \div 2 = \frac{1}{6}</math></li> <li>Identify the value of each digit to three decimal places and multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places e.g. <math>\div 1000 = 0.45</math></li> </ul> |



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| <p><b>Algebra</b><br/><b>1 week</b></p> <p><b>Vocabulary:</b></p> <p>linear number sentence, variables, substitute, known values, symbol, expression, equation, term, formulae, generate</p> | <ul style="list-style-type: none"> <li>Use symbols and letters to represent variables and unknowns in mathematical situations... <ul style="list-style-type: none"> <li>missing numbers, lengths, coordinates and angles e.g. <math>3x=24</math> or the angles in a triangle are <math>35^\circ</math>, <math>120^\circ</math> and <math>y^\circ</math>; find <math>y</math></li> <li>mathematics and science formulae e.g. <math>A=L \times w</math></li> <li>arithmetic rules e.g. <math>a+b=b+a</math></li> </ul> </li> <li>Express missing number problems algebraically e.g. <math>17 = x + 4.5</math></li> <li>Use simple formulae expressed in words e.g. write a formula for the number of months, <math>m</math>, in <math>y</math> years. (<math>y=12m</math>)</li> <li>Enumerate all possibilities of combinations of two variables e.g. investigate how many different ways 2 red eggs can be placed in a 6-space egg carton, by starting with a 3-space carton, 4-space carton etc?</li> <li>Find pairs of numbers that satisfy number sentences involving two unknowns. e.g. <math>a - b = 5</math>, give pairs of values that <math>a</math> and <math>b</math> could have (e.g. 8, 3 or 6.5, 1.5 or ...) or <math>p \times q = 24</math>; if <math>p</math> and <math>q</math> are both positive, even numbers, list all the possible combinations (e.g. <math>2 \times 12</math>, <math>4 \times 6</math>, ...)</li> </ul> | <ul style="list-style-type: none"> <li>Use symbols and letters to represent variables and unknowns in mathematical situations... <ul style="list-style-type: none"> <li>missing numbers, lengths, coordinates and angles e.g. <math>5y+1=16</math> or the angles in an isosceles triangle are <math>50^\circ</math>, <math>y^\circ</math> and <math>y^\circ</math>; find <math>y</math></li> <li>mathematics and science formulae e.g. <math>P=2(l+w)</math></li> <li>arithmetic rules e.g. <math>a \times b = b \times a</math></li> <li>generalising number patterns e.g. 3, 6, 9, 12, ... <math>3n</math></li> <li>number puzzles e.g. <math>a+b=8.5</math> and <math>a \times 6=15</math>; find <math>a</math> and <math>b</math></li> </ul> </li> <li>Express missing number problems algebraically e.g. the perimeter of a triangle is 20cm; it has two sides of length 8cm; what is the length of the other side? (<math>20=2 \times 8 + x</math> so <math>x=4</math>cm)</li> <li>Use simple formulae expressed in words e.g. write a formula for the cost of a party, <math>C</math>, which costs £100 plus £2 per person, <math>n</math>. (<math>C=100+2n</math>)</li> <li>Enumerate all possibilities of combinations of two variables e.g. investigate all possible half-time scores when the full time score of a football match is 4:2</li> <li>Generate and describe linear number sequences e.g. write the first 5 terms in a 'decrease by 9' sequence starting from 20, or find the <math>n</math>th term of a simple sequence e.g. 4, 8, 12, 16, ... <math>4n</math></li> <li></li> </ul> | <ul style="list-style-type: none"> <li>Use symbols and letters to represent variables and unknowns in mathematical situations... <ul style="list-style-type: none"> <li>missing numbers, lengths, coordinates and angles e.g. <math>68=6t-4</math> or the angles in a kite are <math>x^\circ</math>, <math>x^\circ</math>, <math>15^\circ</math> and <math>53^\circ</math>; find <math>x</math>, or plot points <math>(x, y)</math> where <math>x+y=10</math></li> <li>mathematics and science formulae e.g. <math>A=\frac{1}{2}l \times h</math></li> <li>arithmetic rules</li> <li>generalising number patterns e.g. 6, 11, 16, 21, ... <math>5n+1</math></li> <li>number puzzles e.g. <math>x+y=10</math> and <math>2x+y=13</math>; find <math>x</math> and <math>y</math></li> </ul> </li> <li>Express missing number problems algebraically e.g. I'm thinking of a number; I double it and subtract 12 from the result; the answer is 60; what was my number? (<math>2x-12=60</math>, so <math>2x=72</math>, so <math>x=36</math>)</li> <li>Use simple formulae expressed in words e.g. write a formula for the cost of a taxi journey, <math>C</math>, which is £2.10 plus £1.60 per kilometre, <math>k</math>. (<math>C=2.10+1.60k</math>)</li> <li>Enumerate all possibilities of combinations of two variables e.g. list all the combinations of boys and girls in a class where there are twice as many boys as girls and between 25 &amp; 35 children in the class altogether.</li> <li>Generate and describe linear number sequences e.g. 6, 13, 20, 27, ... <math>7n-1</math></li> <li>Find pairs of numbers that satisfy number sentences involving two unknowns. e.g. <math>a - b = 5</math>, give pairs of values that <math>a</math> and <math>b</math> could have (e.g. 8, 3 or 6.5, 1.5 or ...)</li> </ul> |
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| <p><b>Measurement</b></p> <p><b>1 week</b></p> <p><b>Vocabulary:</b></p> <p>convert, unit, standard unit, metric unit, imperial unit, breadth, edge, perimeter, millimetre, mass, area, square metres, (<math>\text{cm}^2</math>), surface, imperial units, metric units, circumference, yard, feet, foot, inch, inches, tonne, pound, ounce, measuring cylinder, gallon, pint, litres, millilitres, centilitres</p> <p><b>Plus Year 3 Vocabulary list.</b></p> | <ul style="list-style-type: none"> <li>• Use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to three decimal places <i>e.g. <math>4.52\text{kg} = 4520\text{g}</math>; <math>1.005\text{km} = 1005\text{m}</math></i></li> <li>• Recognise that shapes with the same areas can have different perimeters and vice versa <i>e.g. investigate rectangles with areas of <math>24\text{cm}^2</math> to find which has the smallest perimeter. Investigate parallelograms with areas of <math>24\text{cm}^2</math> to find which has the smallest perimeter</i></li> <li>• Recognise when it is possible to use formulae for area of shapes <i>e.g. find the length of rectangle which is 4m wide and has the same area as a square with a side length of 8cm.</i></li> <li>• Calculate the area of triangles, relating it to the area of rectangles, <i>e.g. compare the 'counting squares' method to using the formula for the area of a triangle</i></li> <li>• Solve problems involving the calculation and conversion of units of measure, using decimal notation to three decimal places where appropriate <i>e.g. Ben walked 850m to the bus stop, travelled on a bus for 8.67km and then a train for 120.9km; how far did he travel altogether?</i></li> </ul> | <ul style="list-style-type: none"> <li>• Use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to three decimal places</li> <li>• Recognise that shapes with the same areas can have different perimeters and vice versa <i>e.g. investigate triangles with areas of <math>12\text{cm}^2</math> to find which has the smallest perimeter</i></li> <li>• Recognise when it is possible to use formulae for area and volume of shapes <i>e.g. find the length of the side of a cube with a volume of <math>27\text{cm}^3</math></i></li> <li>• Calculate the area of parallelograms and triangles, relating it to the area of rectangles, <i>e.g. compare the 'counting squares' method to using the formula for the area of a parallelogram</i></li> <li>• Convert between miles and kilometres and other units commonly used <i>e.g. know that a mile is approximately 1.6km (and 1km is approximately 0.6miles) and use this to make rough calculations</i></li> <li>• Calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (<math>\text{cm}^3</math>) and cubic metres (<math>\text{m}^3</math>) and extending to other units, such as <math>\text{mm}^3</math> and <math>\text{km}^3</math>.</li> </ul> | <ul style="list-style-type: none"> <li>• Use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to three decimal places</li> <li>• Recognise that shapes with the same areas can have different perimeters and vice versa</li> <li>• Recognise when it is possible to use formulae for area and volume of shapes <i>e.g. find the height of cuboid which is 12cm long, 2cm high and has the same volume as a cube with sides of 6cm</i></li> <li>• Calculate the area of parallelograms and triangles, relating it to the area of rectangles</li> <li>• Solve problems involving the calculation and conversion of units of measure, using decimal notation to three decimal places where appropriate <i>e.g. A jug holds 550ml; how many jugs of water are needed to fill a 4.8 litre bucket?</i></li> <li>• convert between miles and kilometres and other units commonly used <i>e.g. use a conversion line graph or be able to work out that 6 pints of milk is a bit more than 3 litres</i></li> <li>• calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (<math>\text{cm}^3</math>) and cubic metres (<math>\text{m}^3</math>) and extending to other units, such as <math>\text{mm}^3</math> and <math>\text{km}^3</math>.</li> </ul> |
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| GEOMETRY                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
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| <p><b>Properties of shapes</b></p> <p><b>1 week</b></p> <p><b>Vocabulary:</b></p> <p>quadrilaterals, triangles, right angle, acute and obtuse angle, regular and irregular polygons, face, side, edge, sort, end, centre, radius, diameter, congruent, scalene triangle, hexagon, hexagonal, heptagon, octagon, octagonal, reflex angle, vertically opposite</p> <p><b>Plus Year 3 Vocabulary list.</b></p> | <ul style="list-style-type: none"> <li>Draw 2-D shapes using given dimensions and angles<br/><i>e.g. same length lines, parallel lines and same size angles:</i></li> </ul>  <ul style="list-style-type: none"> <li>Recognise, describe and build simple 3-D shapes, including making nets<br/><i>e.g. investigate different nets for a cube, recognising when 'nets' will fold to make a cube and when they will not.</i></li> </ul> | <ul style="list-style-type: none"> <li>Draw 2-D shapes using given dimensions and angles</li> <li>Recognise, describe and build simple 3-D shapes, including making nets<br/><i>e.g. visualise 3-D shapes drawn on isometric paper and begin to draw 2-D representations of 3-D shapes</i></li> <li>Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons</li> <li>Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles<br/><i>A triangle has been drawn carefully. You are told that the biggest angle is 20° larger than the second biggest angle and 40° larger than the smallest angle. Work out how big each angle is.</i></li> </ul> | <ul style="list-style-type: none"> <li>Draw 2-D shapes using given dimensions and angles<br/><i>e.g. construct a triangle or complete a parallelogram with given lengths and angles</i></li> <li>Recognise, describe and build simple 3-D shapes, including making nets</li> <li>Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons</li> <li>Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles</li> <li>Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius</li> </ul> |
| <p><b>Position and direction</b></p> <p><b>1 week</b></p> <p><b>Vocabulary:</b></p> <p>coordinates, translation, quadrant, four quadrants, x-axis, y-axis, perimeter, area,</p>                                                                                                                                                                                                                             | <ul style="list-style-type: none"> <li>Describe positions on the full coordinate grid (all four quadrants)</li> <li>Draw and translate simple shapes on the coordinate plane, and reflect them in the axes.</li> <li>Predict missing coordinates of quadrilaterals by using the properties of shapes, which may be expressed algebraically <i>e.g. translating vertex (a, b) to (a-2, b+3), or find the other vertices of a square, given two of them are (a, b) and (a+d, b+d)</i></li> </ul>                         | <ul style="list-style-type: none"> <li>Describe positions on the full coordinate grid (all four quadrants)</li> <li>Draw and translate simple shapes on the coordinate plane, and reflect them in the axes.</li> <li>Predict missing coordinates of quadrilaterals by using the properties of shapes, which may be expressed algebraically <i>e.g. translating vertex (a, b) to (a-2, b+3), or find the other vertices of a square, given two of them are (a, b) and (a+d, b+d)</i></li> </ul>                                                                                                                                                                                                                                                                                                                    | <ul style="list-style-type: none"> <li>Describe positions on the full coordinate grid (all four quadrants)</li> <li>Draw and translate simple shapes on the coordinate plane, and reflect them in the axes.</li> <li>Predict missing coordinates of quadrilaterals by using the properties of shapes, which may be expressed algebraically <i>e.g. translating vertex (a, b) to (a-2, b+3), or find the other vertices of a square, given two of them are (a, b) and (a+d, b+d)</i></li> </ul>                                                                                                                                                                                                                                    |

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| <p>dimensions, parallel, perpendicular, rotation</p> <p><b>Plus Year 3 Vocabulary list.</b></p>                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <p><b>Statistics</b></p> <p><b>1 week</b></p> <p><b>Vocabulary:</b></p> <p>line graph, survey, questionnaire, continuous data represent, mean, pie chart, construct, class interval, list, average, statistics</p> <p><b>Plus Year 3 Vocabulary list</b></p> | <ul style="list-style-type: none"> <li>Interpret and construct pie charts and line graphs and use these to solve problems<br/><i>e.g. draw a pie chart to show how Jack spends his £36 birthday money:</i> <ul style="list-style-type: none"> <li>£9 snacks</li> <li>£15 toys</li> <li>£12 books</li> </ul> </li> <li>Calculate and interpret the mean as an average.<br/><i>Ten pupils take part in some races on Sports Day, and the following times are recorded.</i><br/><b>Time to run 100 m (seconds):</b> 23, 21, 21, 20, 21, 22, 24, 23, 22, 20.<br/><b>Time to run 100 m holding an egg and spoon (seconds):</b> 45, 47, 49, 43, 44, 46, 78, 46, 44, 48.<br/><b>Time to run 100 m in a three-legged race (seconds):</b> 50, 83, 79, 48, 53, 52, 85, 81, 49, 84.<br/><i>Calculate the mean average of the times recorded in each race.</i></li> </ul> | <ul style="list-style-type: none"> <li>Calculate and interpret the mean as an average.<br/><i>e.g. find the mean height of these children: 1.2m, 1.07m and 1.12m</i></li> <li>Interpret and construct pie charts and line graphs and use these to solve problems<br/><i>e.g. create a conversion graph for pounds and Euros</i></li> <li>Encounter and draw graphs relating two variables, arising from their own enquiry and in other subjects (<b>Extra for top set</b>)<br/><i>e.g. a scatter graph connecting heights of children and their long-jump distance</i></li> </ul> | <ul style="list-style-type: none"> <li>Calculate and interpret the mean as an average.</li> <li>Interpret and construct pie charts and line graphs and use these to solve problems<br/><i>e.g. connect conversion from kilometres to miles in measure to its graphical representation.</i></li> </ul> <div data-bbox="1601 609 1892 890" data-label="Figure"> <p>The pie chart is divided into four sectors. The largest sector is green, representing apples. The next largest is purple, representing yoghurt. The red sector represents strawberries. The smallest sector is yellow, representing bananas. Labels for each ingredient are placed within their respective sectors.</p> </div> <p><i>The pie chart represents the proportions of the four ingredients in a smoothie drink. The sector representing the amount of strawberries takes up 22% of the pie chart. The sector representing the amount of apple is twice as big as the sector representing the amount of strawberries. The sectors representing the amount of yoghurt and the amount of banana are identical. Estimate the angle of the sector representing the amount of banana. Explain your reasoning.</i></p> <ul style="list-style-type: none"> <li>Encounter and draw graphs relating two variables, arising from their own enquiry and in other subjects.</li> </ul> |

