

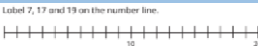
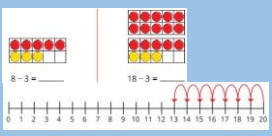
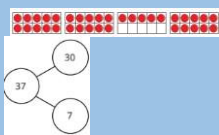
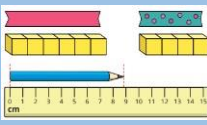
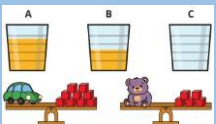
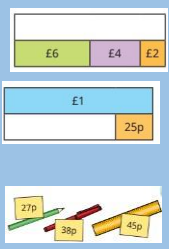
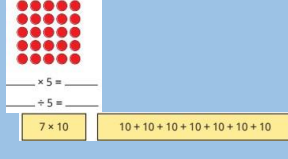

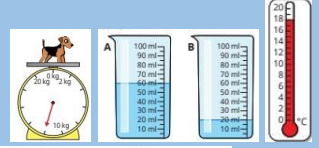
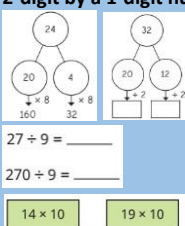
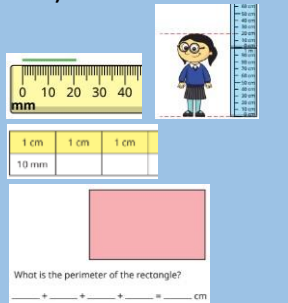
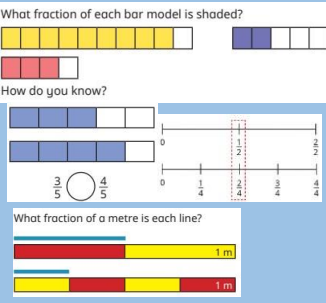
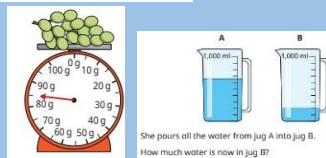




## ST. MARY'S MATHS CURRICULUM OVERVIEW – SPRING

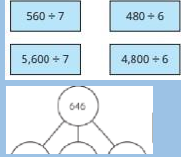
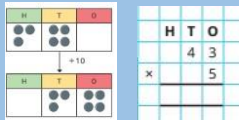
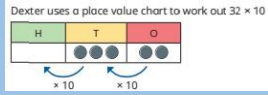
*\*This is a suggested sequence of mathematical learning. There is flexibility to the timings of this sequence in order to allow adaptations to be made in line with the needs of each cohort.*

	Spring 1	Spring 2			
<b>Reception</b>	<p><b>Introducing zero.</b>  <b>Find, subitise and represent numbers to 5</b>  <b>Comparing numbers to 5</b>  <b>Composition of 4 and 5</b>  <b>Number bonds to 5</b>  <b>1 more and less</b>  <b>Compare mass</b>  <b>Explore and compare capacity</b>  <b>Find and represent 6,7,8</b>  <b>Doubles to 8</b>  <b>Combing 2 groups</b></p> 	<p><b>Explore and compare height and length</b>  <b>Order and sequence time</b>  <b>Find and represent 9 and 10</b>  <b>Composition to 10</b>  <b>Doubles to 10</b>  <b>Bonds to 10</b>  <b>Recognise and use 3D shapes</b>  <b>Identify, copy and continue patterns</b></p> 			
<b>Outcomes</b>	<p>Count 10 objects accurately with one to one correspondance            Have an understanding of numbers to 10            Subitise to 5            Recall number bonds to 10 with reference to counting aids, and begin to recall some automatically            Compare 2 amounts up to 10 and say which is greater than/smaller than/the same  <b>Automaticity: recall some number bonds to 5</b></p> <ul style="list-style-type: none"> <li>Link the number symbol (numeral) with its cardinal number value.</li> <li>Understand the 'one more than/one less than' relationship between consecutive numbers.</li> <li>Automatically recall number bonds for numbers 0–5 and some to 10.</li> <li>Compose and decompose shapes so that children recognise a shape can have other shapes within it, just as numbers can</li> </ul>				
<b>Year 1</b>	<p><b>Place Value – Numbers to 20 (counting, comparing, ordering)</b></p> <p>Label 7, 17 and 19 on the number line.</p>  <p><input type="text"/> is greater than 15, but less than 20</p>	<p><b>Addition and Subtraction (within 20, number bonds, commutativity, counting on)</b></p> 	<p><b>Place Value – Numbers to 50 (counting forwards and backwards within 50, using groups of 10, partitioning)</b></p> 	<p><b>Length and Height (comparing language, measuring using nonstandard measures and then cm)</b></p> 	<p><b>Mass and Volume (first introduction to mass and volume: comparing, using balance scales to measure mass and volume using non-standard units)</b></p> 
<b>Outcomes</b>	<p>Children extend their counting to 20, securing teen numbers. They are able to compare and order numbers, count on from the bigger number and use bar models and number lines for support.</p>	<p>Children can add and subtract within 20, using number lines and frames to support. They recognise tens and count on from the bigger number to support efficiency.  <b>Automaticity: Children know the numbers bonds for numbers within 20</b></p>	<p>Children extend their counting to 50, securing tens numbers and using tens to support efficient counting.            Children start to use cm to measure length.            Children understand mass and volume, can compare using appropriate language and measure using non-standard units.</p>		

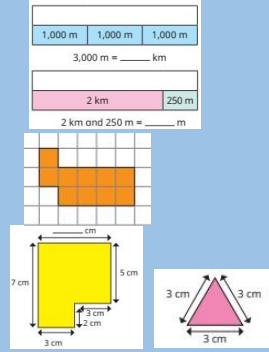
<p><b>Year 2</b></p>	<p><b>Money</b> (count in pence and pounds, add pence within £1 and pounds within £100, count up in coins up to 20p, find coin totals, combine coins to make values)</p> 	<p><b>Multiplication and Division</b> (make the connection between repeated addition and multiplication, make and add equal groups, use arrays to make multiplication sentences for grouping and sharing, multiply and divide by 2, 5 and 10, double and halve)</p> 	<p><b>Length and Height</b> (measure using a ruler (cm) and metre stick (m), comparing, ordering, problem solving)</p>  <p>A house is 6 m tall. The garage is half as tall as the house. How tall is the garage?</p>	<p><b>Mass, Capacity and Temperature</b> (compare mass, volume and capacity, measure in grams and kg, millilitres and litres, problem solving, use degrees Celsius to measure temperature, read scales)</p>  <p>A tomato has a mass of 40 g. An apple is 50 g heavier than the tomato. A pear is 20 g lighter than the apple. What is the mass of the pear?</p>
<p><b>Outcomes</b></p>	<p>Children recognise the coins and notes that we use and can use pence and £ notation. They can find, add and compare amounts of money using coins and notes within 100.</p>	<p>Children start to know the x and ÷ facts for the 2, 5 and 10 x tables. Ch understand that x is the same as repeated addition and can use x sentences. Ch understand division as sharing and grouping equally. <i>Automaticity: Children know the halves and doubles of numbers to 20 and the multiplication and division facts for the 2, 5 and 10 x tables</i></p>	<p>Children can measure length and height accurately in cm and m using rulers and draw given lengths in cm with a ruler. They can compare and order heights. They can use the four operations to solve problems involving length and height.</p>	<p>Children read scales to find mass, capacity and temperature. They can measure in standard units and use this to order and compare using appropriate language. They can use the four operations to solve problems involving mass and volume.</p>
<p><b>Year 3</b></p>	<p><b>Multiplication and Division</b> (10 x table and larger multiples of 10, use known facts to x larger numbers, multiply 2-digit by 1-digit no exchange, divide a 2-digit by a 1-digit number)</p>  <p>27 ÷ 9 = _____ 270 ÷ 9 = _____</p> <p>14 × 10      19 × 10</p>	<p><b>Length and Perimeter</b> (combine m and cm when measuring, use mm and combine cm and mm when measuring, compare measures, solve problems, use the key fact 1m = 100cm to add and subtract lengths, understand and find perimeter in cm)</p>  <p>What is the perimeter of the rectangle? _____ cm</p>	<p><b>Fractions</b> (extend knowledge of unit fractions from year 2, compare and order unit and non-unit fractions, understand the numerator in nonunit fractions, they can recognise and make the whole from given fractions, apply fractions to scales and number lines and use to recognise equivalent fractions.)</p>  <p>What fraction of each bar model is shaded? How do you know? What fraction of a metre is each line?</p>	<p><b>Mass and Capacity</b> (Use and read scales with intervals of 2/4/5/10/100, combine kg and grams when measuring, use the key fact 1000g = 1kg and 1000ml = 1l, compare, add and subtract mass and volume, measure volume and capacity using litres and ml and combine l and ml when measuring.)</p>  <p>4 kg 105 g + 2 kg 300 g</p> <p>She pours all the water from jug A into jug B. How much water is now in jug B?</p>
<p><b>Outcomes</b></p>	<p>Children use the ten times table to multiply larger multiples of ten. They use known facts to multiply larger numbers. They progress towards understanding the short multiplication formal method through using partitioning and visual representations. They understand the link between x and ÷</p>	<p>Children are able to use a range of measuring equipment to measure over a metre and write as __m and __cm. They measure in mm using a ruler and then measure using both: __cm and __mm. They know that 1m = 100cm. They understand the term perimeter and can measure perimeter in cm. <i>Automaticity: Children know what perimeter is. Children know 1m = 100cm</i></p>	<p>Children build on year 2 knowledge of ½, 1/4 and 1/3 with other unit fractions and look at changing numerators for non-unit fractions. They can compare and order unit and non-unit fractions with the same denominator, they can state the whole in relation to fractions. They can use number lines to count in fractions and recognise equivalent fractions using number lines and bar models.</p>	<p>Children can use and understand scales to read measurements in grams, kg They know that 1000g = 1kg and use it to find equivalent masses, linking to fraction knowledge (eg ½ kg = 500g). They know the difference between capacity and volume and can measure in litres and ml. <i>Automaticity: Children know 1kg = 1000g and 1l = 1000ml</i></p>

Year 4

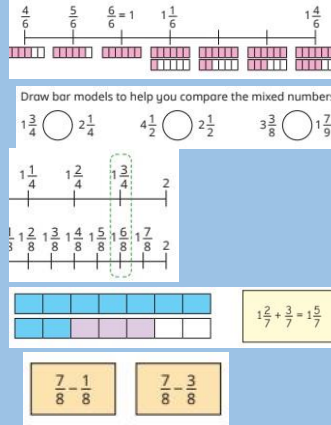
**Multiplication and Division** (identifying factors and factor pairs, multiply and divide any number by 10 and 100 staying within whole numbers, use known facts to solve scaled problems, multiply up to 3-digits by 1-digit using partitioning and then formal written method, divide up to 3-digits by 1-digit with remainders using partitioning and models.)



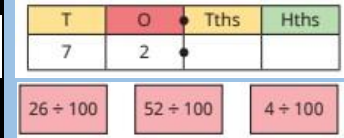
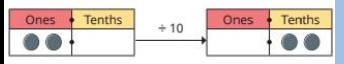
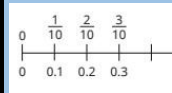
**Length and Perimeter** (Introduction to km, key fact 1000m = 1km and use to find equivalents, measure in km and m, find perimeter in rectilinear shapes on grids and then using measures and rectangles using side lengths, find missing lengths to solve perimeter)



**Fractions** (Fractions greater than 1 as mixed numbers, partition mixed numbers, compare and order mixed numbers, understand improper fractions and convert mixed numbers, find equivalent fractions beyond 1, add fractions and mixed numbers with same denominators, subtract fractions including from whole numbers and mixed numbers.)



**Decimals** (tenths and hundredths as fractions and decimals, divide 1 and 2-digit numbers by 10 and 100 using place value)



Outcomes

Children understand the term factors and can identify factor pairs. They can use place value to multiply and divide any number by 10 and 100 (not including decimals). They can multiply using the written short multiplication method including exchanges. They can divide 3-digits by 1digit using visual methods and finding remainders.

Automaticity: Children know all their times tables multiplication facts up to 12 x 12.

Children identify kilometres as a large unit of measure and know the key fact 1000m = 1km. They can find and draw perimeters of rectilinear shapes on grids and using measures and can find missing lengths. They can find the perimeter of a rectangle using side lengths. Children understand the terms 'regular and irregular polygon' and can use their understanding to calculate perimeter.

Automaticity: Children convert between measures using key facts

Children can count in fractions, going beyond 1 using both unit and non-unit fractions. They can partition mixed numbers into whole and fractions. They can compare and order mixed numbers. They understand the term improper fraction and can convert mixed numbers and vice versa. Children can find equivalent fractions beyond 1. They can add and subtract two or more fractions with the same denominator and fractions and mixed numbers. They can subtract from whole amounts.

Children recognise decimal numbers for the first time, starting with tenths and then hundredths. They can identify these on a place value chart and use this understanding to divide a 1 or 2 digit number by 10 or 100.

Automaticity: Children know the decimal-fraction equivalents to tenths and hundredths e.g.

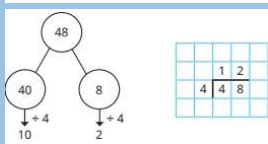
$\frac{1}{2} = 0.5$	$\frac{1}{10} = 0.1$	$\frac{1}{100} = 0.01$
$\frac{1}{4} = 0.25$	$\frac{2}{10} = 0.2$	$\frac{7}{100} = 0.07$
$\frac{3}{4} = 0.75$	$\frac{5}{10} = 0.5$	$\frac{21}{100} = 0.21$
	$\frac{6}{10} = 0.6$	$\frac{75}{100} = 0.75$
	$\frac{9}{10} = 0.9$	$\frac{99}{100} = 0.99$

Year 5

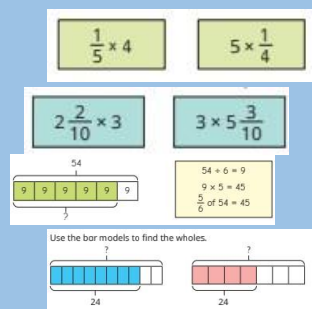
**Multiplication and Division** (short multiplication written method extended to 4 digits x 1 digit, use rounding to estimate answers, long multiplication method used for up to 4 digits x 2 digits, use to solve problems, use short division, use factors to be efficient with mental division)



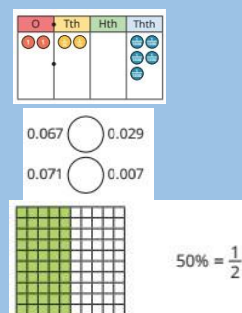
A machine makes 2,346 bags every day. How many bags will it make in 3 weeks?



**Fractions** (multiply unit and non-unit fractions by integers and mixed numbers, calculate a fraction of an amount, find the whole from fraction amounts)

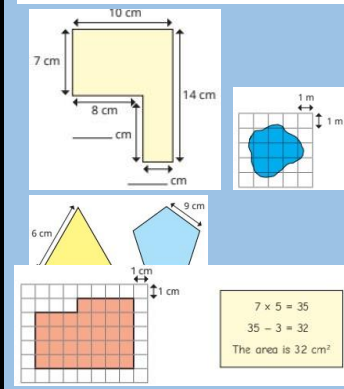


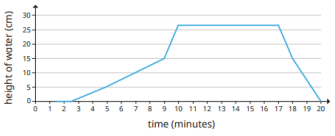
**Decimals and Percentages** (understand decimal numbers up to 3dp, thousandths introduced, recognise equivalent fractions and decimals (tenths and hundredths), order and compare decimals, round decimals to the nearest whole number or tenth, percentages introduced, find 10%, 5%, 1%, percentage-fraction-decimal equivalence)



**Perimeter and Area** (find perimeter by measuring and calculating, solve perimeter problems, find area of rectangles and compound shapes, use grids to estimate area.)

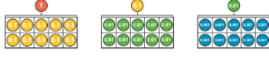
The perimeter of a square is 16 cm. What is the length of each side?



				<p><b>Statistics (Draw line graphs; read and interpret line graphs and tables; two-way tables; read and interpret timetables).</b></p> <p>The line graph shows the level of water in a bath. Write a story to explain what is happening in the graph.</p>  <p>How long did it take to fill the bath? How long did it take to empty?</p> <p>The bath does not fill at a constant rate. How does the graph show this? Why might this be the case?</p> <p>The table shows the six largest football stadiums in Europe.</p> <table border="1" data-bbox="1236 593 1572 784"> <thead> <tr> <th>Stadium</th> <th>City</th> <th>Country</th> <th>Capacity</th> </tr> </thead> <tbody> <tr> <td>Camp Nou</td> <td>Barcelona</td> <td>Spain</td> <td>99,365</td> </tr> <tr> <td>Wembley</td> <td>London</td> <td>UK</td> <td>90,000</td> </tr> <tr> <td>Signal Iduna Park</td> <td>Dortmund</td> <td>Germany</td> <td>81,359</td> </tr> <tr> <td>Estadio Santiago Bernabeu</td> <td>Madrid</td> <td>Spain</td> <td>81,044</td> </tr> <tr> <td>Luzhniki Stadium</td> <td>Moscow</td> <td>Russia</td> <td>81,006</td> </tr> <tr> <td>San Siro</td> <td>Milan</td> <td>Italy</td> <td>80,018</td> </tr> </tbody> </table> <p>Are the statements true or false?</p> <p>The fourth largest stadium is San Siro.</p> <p>There is one stadium with a capacity greater than 90,000.</p> <p>Three of the largest stadiums are in Spain.</p>	Stadium	City	Country	Capacity	Camp Nou	Barcelona	Spain	99,365	Wembley	London	UK	90,000	Signal Iduna Park	Dortmund	Germany	81,359	Estadio Santiago Bernabeu	Madrid	Spain	81,044	Luzhniki Stadium	Moscow	Russia	81,006	San Siro	Milan	Italy	80,018
Stadium	City	Country	Capacity																													
Camp Nou	Barcelona	Spain	99,365																													
Wembley	London	UK	90,000																													
Signal Iduna Park	Dortmund	Germany	81,359																													
Estadio Santiago Bernabeu	Madrid	Spain	81,044																													
Luzhniki Stadium	Moscow	Russia	81,006																													
San Siro	Milan	Italy	80,018																													
<p>Outcomes</p>	<p>Children use the short multiplication method to extend their number range. They can use the long multiplication method to multiply up to 4 digits by 2 digits. They can use short division in the bus stop method to divide up to 4 digits by 1 digit, including with remainders. Use multiplication and division skills to solve problems. They can identify and use factors to support efficient mental division.</p> <p><b>Automaticity: Children know the multiplication and division facts up to 12 x 12.</b></p>	<p>Children can multiply fractions by integers and mixed numbers. They can calculate unit and non-unit fractions of amounts and find the whole when a fraction amount is given.</p>	<p>Children can identify tenths, hundredths and thousandths in numbers and on a place value chart. They can give fraction and decimal equivalents for these values. They can order and compare decimals with up to 3dp. They can use place value and previous rounding knowledge to round decimals to the nearest whole number and nearest tenth. Children understand the term 'per cent' and can find equivalent percentages/ fractions and decimals.</p> <p><b>Automaticity: Children know the equivalences of decimals/ fractions and %:</b></p> <p>10% = <math>\frac{1}{10}</math> = 0.1      50% = <math>\frac{1}{2}</math> = 0.5  20% = <math>\frac{1}{5}</math> = 0.2  25% = <math>\frac{1}{4}</math> = 0.25      75% = <math>\frac{3}{4}</math> = 0.75</p>	<p>Children can explain what perimeter is and are able to find it in rectilinear shapes by measuring and calculating, including finding missing sides. They can say the length of a side of a square from the given perimeter. They can explain what area is and use cm squared. They can calculate area of rectangles and compound shapes. They can use grids to estimate the area of irregular shapes.</p> <p><b>Automaticity: Children know that area of rectangles = length x height</b></p> <p>Statistics: Children can solve comparison, sum and difference problems using information presented in a line graph; Complete, read and interpret information in tables, including timetables</p>																												

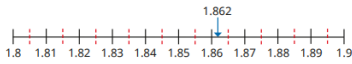
**Place Value and Decimal Numbers (Place value within 1; place value – integers and decimals; round decimals; add and subtract decimals; multiply by 10, 100 and 1000; divide by 10, 100 and 1000; multiply decimals by integers; divide decimals by integers; multiply and divide decimals in context)**

Use the diagrams to complete the sentences in as many ways as possible.



\_\_\_\_\_ is one-tenth the size of \_\_\_\_\_  
 \_\_\_\_\_ is 10 times the size of \_\_\_\_\_

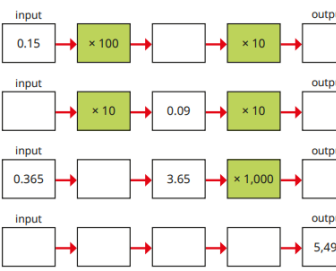
Use the number line to complete the sentences.



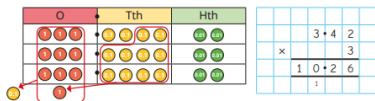
1.862 is closer to \_\_\_\_\_ than \_\_\_\_\_

1.862 rounded to the nearest hundredth is \_\_\_\_\_

Fill in the missing numbers.

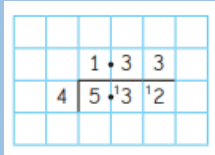


Dexter uses place value counters to work out  $3.42 \times 3$



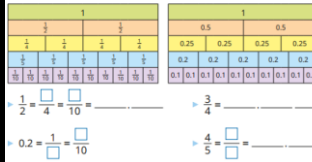
Use Dexter's method to work out the multiplications.

$2.31 \times 4$     $3.75 \times 3$     $0.55 \times 2$     $1.08 \times 3$

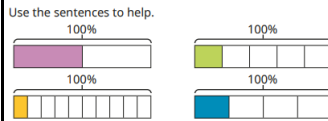


**Fractions, Decimals and Percentages (decimal and fraction equivalents; fractions as division; understand percentages; fractions to percentages; equivalent fractions, decimals and percentages; order fractions, decimals and percentages; percentage of an amount – one step and multi-step; percentages – missing values)**

Use the fraction and decimal walls to complete the equivalents.

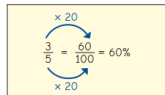


What percentage of each bar model is shaded?

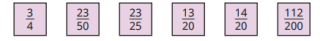


100% has been split into \_\_\_\_\_ equal parts.  
 Each part is worth \_\_\_\_\_%.

Whitney converts  $\frac{3}{5}$  to a percentage.

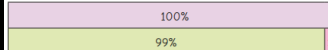


Use Whitney's method to convert the fractions to percentages.



Explain why  $\frac{13}{10}$  is greater than 87%.

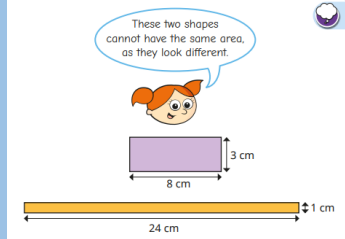
Rosie knows that 99% of an amount is 1% less than the full amount, so she finds 1% and takes that away from the total.



Use this to work out the percentages.

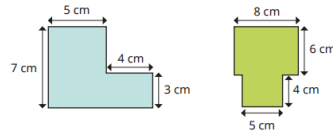
99% of 8,000   99% of 4.5   98% of 450   49% of 60

**Area, Perimeter and Volume (Shapes – same area; area and perimeter; area of a triangle – counting squares; area of a right-angled triangle; area of any triangle; area of a parallelogram; volume – counting cubes; volume of a cuboid)**

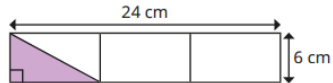


Do you agree with Alex?  
 Explain your answer.

Find the area and perimeter of each shape.

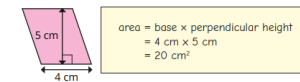


Calculate the area of the shaded triangle.

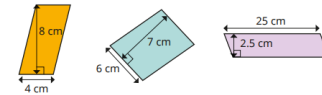


Compare methods with a partner.

Annie has worked out the area of this parallelogram.



Use Annie's method to find the areas of the parallelograms.



Dani makes this cuboid.

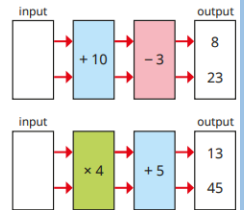


She makes another cuboid by increasing the height, width and depth by 1 cube.

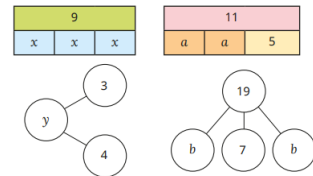
What is the difference in the volumes of the cuboids?

**Algebra (one and two-step function machines; form expressions; substitution; formulae; form equations; solve 1 and 2 step equations; find pairs of values; solve problems and two unknowns)**

Work out the missing inputs.



Write equations to match the models.



$a, b$  and  $c$  are integers between 0 and 5

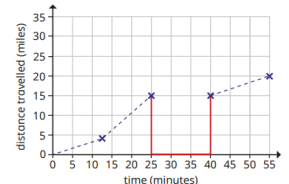
$a + b = 6$     $b + c = 4$

Find the values of  $a, b$  and  $c$ .

How many possibilities can you find?

**Statistics: (line graphs; read and interpret pie charts; pie charts with percentages; the mean)**

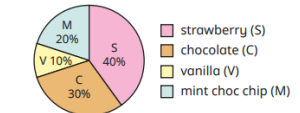
This graph shows the distance travelled by a car. The car stops between 25 and 40 minutes. Tiny has added the red line to show the car stopped.



Do you agree with Tiny?  
 Explain your answer.

150 children were asked to name their favourite flavour of ice cream.

The results are shown in the pie chart.



How many children chose each flavour of ice cream?

Here are the number of runs Jack scored in seven cricket matches.

134, 60, 17, 63, 38, 84, 10

Calculate the mean number of runs Jack scored in a match.

**Ratio: (Use ratio language and the ratio symbol; ratio and fractions; use scale factors; ratio and proportion problems; recipes)**

Complete the sentence to describe the counters.



For every \_\_\_\_\_ red counters, there is \_\_\_\_\_ yellow counter.  
 Can you complete it a different way?

				<p>Write the ratio of:</p> <ul style="list-style-type: none"> <li>bananas to strawberries</li> <li>cherries to strawberries</li> <li>strawberries to bananas to cherries</li> <li>cherries to strawberries to bananas</li> </ul> <p>Draw a bar model to represent each ratio.</p> 
Outcomes	<p>Children can identify the value of each digit in numbers given to 3 decimal places and multiply and divide numbers by 10, 100 and 1,000 giving answers up to 3 decimal places; Solve problems which require answers to be rounded to specified degrees of accuracy; Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why; Multiply 1-digit numbers with up to 2 decimal places by whole numbers; Use written division methods in cases where the answer has up to 2 decimal places; Solve problems involving addition, subtraction, multiplication and division</p> <p><b>Automaticity:</b> Children know how to multiply and divide by 10, 100, 1000.</p>	<p>Children can use common factors to simplify fractions; use common multiples to express fractions in the same denomination; Associate a fraction with division and calculate decimal fraction equivalents for a simple fraction; Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts; Compare and order fractions, including fractions &gt;1; Solve problems involving the calculation of percentages and the use of percentages for comparison</p> <p><b>Automaticity:</b> Children know some key FDP equivalences; quick recall of all times tables</p>	<p>Children can recognise that shapes with the same areas can have different perimeters and vice versa; Recognise when it is possible to use formulae for area and volume of shapes; Calculate the area of parallelograms and triangles; Calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm<sup>3</sup>) and cubic metres (m<sup>3</sup>), and extending to other units</p>	<p><b>Algebra:</b> Children can use simple formulae; Generate and describe linear number sequences; Enumerate possibilities of combinations of two variables; Find pairs of numbers that satisfy an equation with two unknowns; Express missing number problems algebraically;</p> <p><b>Statistics:</b> Children can interpret and construct pie charts and line graphs and use these to solve problems; Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs (consolidate from Year 4); Calculate and interpret the mean as an average</p> <p><b>Ratio:</b> Children can solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts; solve problems involving unequal sharing and grouping using knowledge of fractions and multiples; Solve problems involving similar shapes where the scale factor is known or can be found</p>

