

	Autumn	Spring	Summer
Number & place value 1 week	- Count in multiples of 6, 9, 25 and 1000 <i>625, 600, 575, 550, 525, 500, ...</i> <i>Find the missing numbers:</i> $30 \times \square \times 10 = 2700$, $12 \times \square = 12000$ <i>Gemma counts on in 25s from 50.</i> <i>Circle the numbers that she will say:</i> 990 550 125 755 150 - Find 1000 more or less than a given number <i>$45 + 1000$, $8904 - 1000$</i> - Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones) <i>In 9085, which digit is in the thousands place? Write the number is made up of 4 ones, 6 thousands and 8 hundreds</i> - Order and compare numbers beyond 1000 <i>1330 1303 1033 1003 1030</i> <i>He writes them in order from smallest to largest. Which number is smaller? 4213 or 4123</i> - Identify, represent and estimate numbers using different representations <i>including measures and measuring instruments</i> - Round any number to the nearest 10 or 100 - Solve number and practical problems that involve place value and rounding and with increasingly large positive numbers	- Count in multiples of 6, 7, 9, 25 and 1000 - Find 1000 more or less than a given number - Count backwards through zero to include negative numbers <i>8, 6, 4, 2, 0, -2, -4, -6, ...</i> <i>-40, -20, _____, 20, 30, 40, 50, find the missing number in this sequence. What will the fifteenth number in the sequence be?</i> - Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones) - Order and compare numbers beyond 1000 - Identify, represent and estimate numbers using different representations <i>How many different ways can you write 5510? Pupils should suggest answers such as: 551 tens, 55 hundreds and 1 ten, 5 thousands and 510 ones</i> <i>Write seventy five thousand, five hundred and five in figure.</i> - Round any number to the nearest 10 or 100 - Solve number and practical problems that involve place value and rounding and with increasingly large positive numbers	- Count in multiples of 6, 7, 9, 25 and 1000 - Find 1000 more or less than a given number - Count backwards through zero to include negative numbers - Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones) - Order and compare numbers beyond 1000 - Identify, represent and estimate numbers using different representations - Round any number to the nearest 10, 100 or 1000 - Solve number and practical problems that involve place value and rounding and with increasingly large positive numbers - Read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value. <i>$49 = XLIX$, $VL + XII = ?$ $C + CL = ?$ $CC - LV = ?$</i>

Addition & Subtraction

2 weeks

- Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate

e.g. $4762 + 972$, $1702 - 949$

$$\begin{array}{r} 4762 \\ + 972 \\ \hline \end{array} \quad \begin{array}{r} 1702 \\ - 949 \\ \hline \end{array}$$

- Estimate and use inverse operations to check answers to a calculation

e.g. $8702 - 499$ is approximately $9000 - 500 = 8500$; check $8203 + 499 = 8702$

- Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why

e.g. It costs £3.50 for Ben to go swimming and £5.70 for his mum; how much change is there from £10?

Mr Smith sets out on a 619 mile journey; he drives 320 miles before lunch and 185 miles after lunch; how much farther does he need to drive?

- Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate

- Estimate and use inverse operations to check answers to a calculation

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e.g. investigate which amounts of money cannot be made using exactly three coins.

- Use both mental and written methods with increasingly large numbers to aid fluency

e.g. mentally calculate $540 + 270$ or $900 - 365$

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- Estimate and use inverse operations to check answers to a calculation

- Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why

Ali, Sarah and Sam calculate $420 + 221 + 280$ using different strategies.

This is Sarah's strategy:
 $420 + 221 + 280$
 $420 + 221 = 641$
 $641 + 280 = 921$
 Answer = 921

This is Ali's strategy:
 $420 + 221 + 280$
 $420 + 280 = 700$
 $700 + 221 = 921$
 Answer = 921

This is Sam's strategy:
 420
 $+ 221$
 280
 $\hline 921$

Which do you prefer?

Explain your reasoning.

Now calculate $370 + 242 + 130$ using your preferred strategy.

Multiplication & Division

2 weeks

- Recall multiplication and division facts for multiplication tables up to 12×12
- Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers

e.g. $600 \div 3 = 200$; $4 \times 6 \times 2$
 $420 = 70 \times 6$; $5 \times 4 \times 9$

- Multiply two-digit and three-digit numbers by a one-digit number using formal written layout (see appendix)
- solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects

e.g. 3 skirts and 4 tops, how many different outfits?
 Three children calculated 7×6 in different ways. Identify each strategy and complete the calculations.

Annie
 $7 \times 6 = 7 \times 5 + \square$
 $= \square$

Bertie
 $7 \times 6 = 7 \times 7 - \square$
 $= \square$

Cara used the commutative law
 $7 \times 6 = \square \times \square$
 $= \square$

Now find the answer to 6×9 in three different ways.

- Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers
- Recognise and use factor pairs and commutativity in mental calculations e.g. factor pairs of 20 are 1 and 20, 2 and 10, 4 and 5; addition and multiplication are commutative e.g. $2 \times 6 \times 5 = 2 \times 5 \times 6 = 10 \times 6$
- Multiply two-digit and three-digit numbers by a one-digit number using formal written layout
- Solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects

Tom ate 9 grapes at the picnic. Sam ate 3 times as many grapes as Tom. How many grapes did they eat altogether?

- recall multiplication and division facts for multiplication tables up to 12×12
- use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers
- recognise and use factor pairs and commutativity in mental calculations
- Multiply two-digit and three-digit numbers by a one-digit number using formal written layout
- Solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects.

Multiply a number by itself and then make one factor one more and the other one less. What happens to the product?

E.g.

$4 \times 4 = 16$ $6 \times 6 = 36$ $7 \times 7 = 49$
 $5 \times 3 = 15$ $7 \times 5 = 35$ $8 \times 6 = 48$

What do you notice? Will this always happen?

Sally has 9 times as many football cards as Sam. Together they have 150 cards. How many more cards does Sally have than Sam?

Fractions (including decimals)

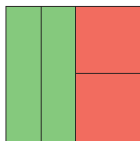
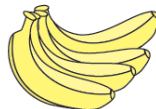
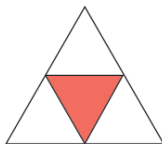
3 weeks

- Recognise and show, using diagrams, families of common equivalent fractions

$\frac{1}{2}$ is the same as $\frac{2}{4}$.



What's the same? What's different?



Children should be able to express the ideas that:
They are all divided into 4 equal parts.
Each part represents a quarter of the whole.
Each of the parts in the triangle are the same shape and area (congruent).
The shapes in the square are different but each has the same area (not congruent).
The bananas represent fractions of quantities.

- Count up and down in hundredths; recognise that hundredths arise when dividing an object by a hundred and dividing tenths by ten
e.g. $\frac{3}{10} = \frac{30}{100} = 0.30 = 0.3$

- Identify, name and write equivalent fractions of a given fraction, including tenths and hundredths
e.g. $\frac{6}{9} = \frac{2}{3}$

Draw diagrams to show two fractions that are equivalent to $\frac{2}{8}$

- Solve problems to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number

Find $\frac{4}{9}$ of 18 counters. What fraction of a day is 3 hours? Navid bakes 63 cakes. Two ninths are eaten. How many are left?
A soup recipe uses $\frac{3}{4}$ as many onions as carrots. Jo is making the soup and has 8 carrots.
How many onions does Jo use?

- Count using simple fractions and decimal fractions, both forwards and backwards and represent fractions and decimals on a number line

Put these fractions on the number line:



- Count up and down in hundredths; recognise that hundredths arise when dividing an object by a hundred and dividing tenths by ten

To find a tenth of a number I divide by 10 and to find a fifth of a number I divide by 5.
Do you agree? Explain your reasoning.

- Identify, name and write equivalent fractions of a given fraction, including tenths and hundredths

e.g. $\frac{6}{9} = \frac{2}{3}$ $\frac{3}{10} = \frac{30}{100}$

- Recognise and write decimal equivalents of any number of tenths or hundredths

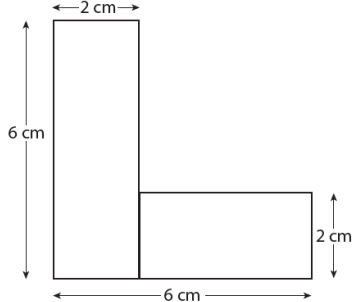
- Recognise and write decimal equivalents to $\frac{1}{4}$; $\frac{1}{2}$; $\frac{3}{4}$

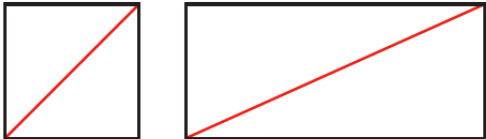
$\frac{1}{4} = 0.25$, $\frac{1}{2} = 0.50 = 0.5$, $\frac{3}{4} = 0.75$
Write the following decimal numbers as fractions. 2.5 7.25 1.75 3.1 5.25

- Find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as units, tenths and hundredths

$2.5 \div 10 = 0.25$ (the digit moves one place to the right). $2.5 \div 100 = 0.025$ (the digit moves two places to the right) $2.5 \div 1000 = 0.0025$ (the digit moves three places to the right)

- Recognise and show, using diagrams, families of common equivalent fractions
- Count using simple fractions and decimal fractions, both forwards and backwards and represent fractions and decimals on a number line
- Count up and down in hundredths; recognise that hundredths arise when dividing an object by a hundred and dividing tenths by ten
- Add and subtract fractions with the same denominator
 $\frac{1}{5} + \frac{2}{5} = \frac{3}{5}$
 $\frac{2}{5} + \frac{4}{5} = \frac{6}{5}$
True or false. Explain your reasoning.
 $\frac{1}{5} + \frac{2}{5} = \frac{3}{10}$
 $\frac{1}{5} + \frac{2}{5} = \frac{6}{10}$
Peter wrote down two fractions. He subtracted the smaller fraction from the larger and got 1.8 as the answer. Write down two fractions that Peter could have subtracted. Can you find another pairs?
- Solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number e.g. $\frac{1}{5}$ of is 9
- Recognise and write decimal equivalents of any number of tenths or hundredths
- Recognise and write decimal equivalents to $\frac{1}{4}$; $\frac{1}{2}$; $\frac{3}{4}$
- Find the effect of dividing a one- or two-digit number by 10 and 100,

	- Recognise and write decimal equivalents of any number of tenths or hundredths <i>e.g. $\frac{9}{10} = 0.9$; $\frac{9}{100} = 0.09$</i> - Recognise and write decimal equivalents to $\frac{1}{4}$; $\frac{1}{2}$; $\frac{3}{4}$ - Find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as units, tenths and hundredths	Divide £19.99 equally among 10 children. How much will each child get? - Round decimals with one decimal place to the nearest whole number <i>32.5 rounds to 33; 49.7 rounds to 50</i> - Compare numbers with the same number of decimal places up to two decimal places <i>Put in order: 2.56, 26.52, 2.65, 25.62, 2.62</i> <i>Which is bigger? 3.05 or 3.50</i> - Solve simple measure and money problems involving fractions and decimals to two decimal places. <i>e.g. two parcels weigh 5.5kg altogether, one weighs 3.8kg, what is the mass of the other?</i>	identifying the value of the digits in the answer as units, tenths and hundredths - Round decimals with one decimal place to the nearest whole number <i>Round to the nearest whole number.</i> <i>8 $\frac{3}{8}$ 8.38 8.83</i> - Compare numbers with the same number of decimal places up to two decimal places - Solve simple measure and money problems involving fractions and decimals to two decimal places <i>e.g. Ben buys a toy costing £4.55 and $\frac{1}{4}$ kg of sweets costing £3.20 per kilo; how much change does he receive from £10?</i>
Measurement 1 week	- Convert between different units of measure (e.g. kilometre to metre; hour to minute) <i>e.g. $4\frac{1}{2}\text{kg} = 4500\text{g}$; $1.25\text{km} = 1250\text{m}$, $90\text{ minutes} = 1\frac{1}{2}\text{ hours}$</i> - Estimate, compare and calculate different measures, including money in pounds and pence <i>e.g. put in order: £1.20, 98p, £0.89, £1.08</i> - Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days. <i>e.g. which of these children are 3 years old:</i> - Isabel 39 months - Ben 32 months - Cara 50 months - Dylan 42 months	- Read, write and convert time between analogue and digital 12 and 24-hour clocks <i>e.g. $\frac{1}{4}$ to 8 in the evening can be written as 19:45</i> - Estimate, compare and calculate different measures, including money in pounds and pence <i>e.g. put in order: 4.2kg, 4700g, $4\frac{1}{2}\text{kg}$, 490g</i> - Convert between different units of measure (e.g. kilometre to metre; hour to minute)	- Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days. - Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres <i>e.g. find the perimeter of an L-shape where the lengths are given or can be measured</i> - Find the area of rectilinear shapes by counting squares <i>e.g. find the area of an L-shape drawn on squared paper</i> <i>Work out the perimeter and area of this shape.</i> 

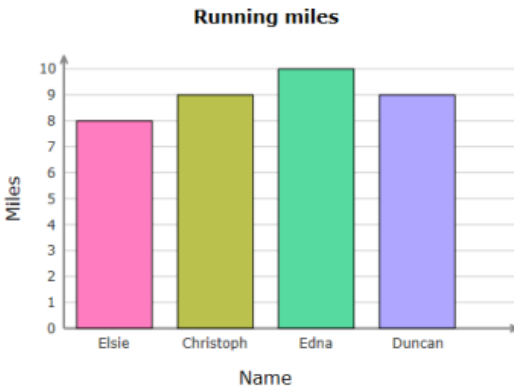
Geometry 1 week	- Compare and classify geometric shapes, including quadrilaterals (e.g. parallelogram, rhombus, trapezium) and triangles (e.g. isosceles, equilateral, scalene), based on their properties and sizes - Identify lines of symmetry in 2-D shapes presented in different orientations <i>Draw some 2-D shapes that have: no lines of symmetry, 1 line of symmetry 2 lines of symmetry.</i> <i>Tom says, 'In each of these shapes the red line is a line of symmetry.' Do you agree? Explain your reasoning.</i> 	- Compare and classify geometric shapes, including quadrilaterals (e.g. parallelogram, rhombus, trapezium) and triangles (e.g. isosceles, equilateral, scalene), based on their properties and sizes <i>e.g. sort triangles to find those that are isosceles and/or have a right angle. Sort quadrilaterals to find those with line symmetry or parallel edges</i> - Identify acute and obtuse angles and compare and order angles up to two right angles by size, without using a protractor	- Compare and classify geometric shapes, including quadrilaterals (e.g. parallelogram, rhombus, trapezium) and triangles (e.g. isosceles, equilateral, scalene), based on their properties and sizes - Identify acute and obtuse angles and compare and order angles up to two right angles by size, without using a protractor
Position & direction 1 week	- Describe positions on a 2-D grid as coordinates in the first quadrant - Plot specified points and draw sides to complete a given polygon. <i>e.g. find the coordinates of the missing vertex of a shape.</i>	- Describe positions on a 2-D grid as coordinates in the first quadrant - Plot specified points and draw sides to complete a given polygon. - Describe movements between positions as translations of a given unit to the left/right and up/down	- describe positions on a 2-D grid as coordinates in the first quadrant - Plot specified points and draw sides to complete a given polygon. - Describe movements between positions as translations of a given unit to the left/right and up/down

Statistics

1 week

- Interpret and present discrete data using appropriate graphical methods, including bar charts and time graphs
- Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs

The members of the track team compared how many miles they ran last week. Who ran the fewest miles?



- Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs
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