Bathwick St Mary Progression and Calculation Document—Overview **Year Four**

The following documents are used to provide us with a long term planning structure for teaching an learning over the year. We use the combination alongside our own teacher judgement and remain flexible for several reasons, taking into account:

- The pace of the children's understanding in line with our whole class teaching for mastery approach
- The small steps and depth of learning required to master certain topics

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Number: Place Value				Number: Addition and Subtraction			Measurement: Length and Perimeter	Number: Multiplication and Division			Consolidation
Spring	Number: Multiplication and Division			Measurement: Area	Number: Fractions				Number: Decimals			Consolidation
Summer	Number: Decimals		Measurement: Money		Measurement: Time	Statistics		Geometry: Properties of Shape			Geometry: Position and Direction	Consolidation

Bathwick St Mary Church School	Progression and Calculation Document— Place Value	Year Four

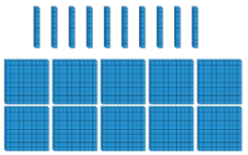
NC Learning Objectives:

- Count in multiples of 6, 7, 9, 25 and 1000
- Find 1000 more or less than a given number.
- Recognise the place value of each digit in a four digit number (thousands, hundreds, tens and ones).
- Order, compare and round numbers beyond 1000.
- Identify, represent and estimate numbers using different representations.
- Solve number and practical problems that involve all of the above and with increasingly large positive numbers.
- Count backwards through zero to include negative numbers.

Concrete

Place value cards

Deines



___ tens make ___ hundred.

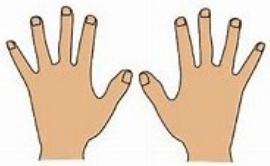
___ hundreds make ___ thousand.

Place value charts

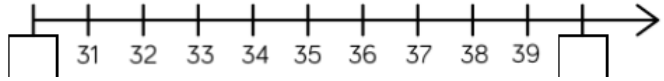
1000s	100s	10s	1s

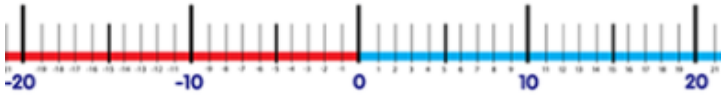
Place value counters particularly for 1000 more or less

Use of hands for strategies to learn times tables

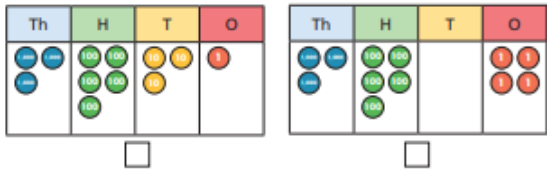


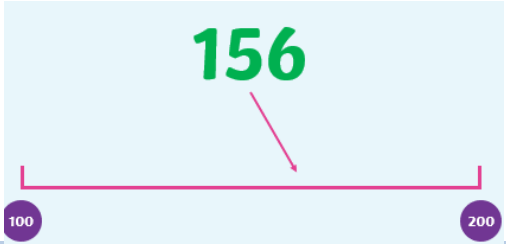
Pictorial





Which number is greater? Tick your answer





Abstract

Dexter is counting backwards out loud.
He says,
"Two, one, negative one, negative two, negative three ..."
What mistake has Dexter made?

Problems

Fill in the missing values.

9,523 + 10 = ☐

☐ + 3,589 = 3,689

3,891 + ☐ = 4,891

What could the missing digits be?

a) 4,523 is greater than 4,5_7

b) 7,000 < _,513

c) 3,854 > 3,85_

d) 5,650 > 4,_ 7_

Key Vocabulary:

Thousands, hundreds, tens, ones, place value, order, compare, multiples, more than, greater than, less than, digit, estimate, represent.

STEM Sentences:

What column do we look at when rounding to the nearest 10?
Always, sometimes or never true.

Additional Knowledge Covered in this area of Maths:

Place in here any additional Knowledge you think appropriate in each element having reviewed the knowledge organiser for your year group for each of the strands of maths.

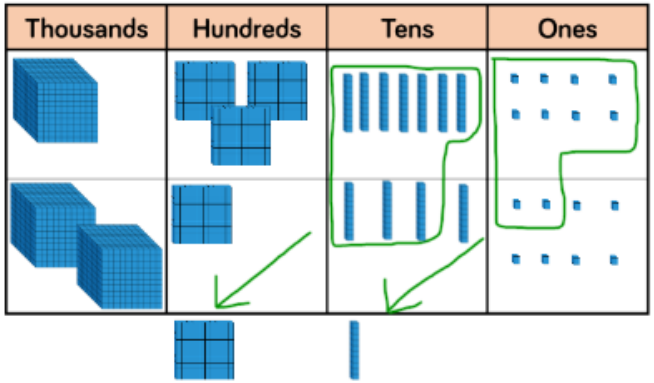
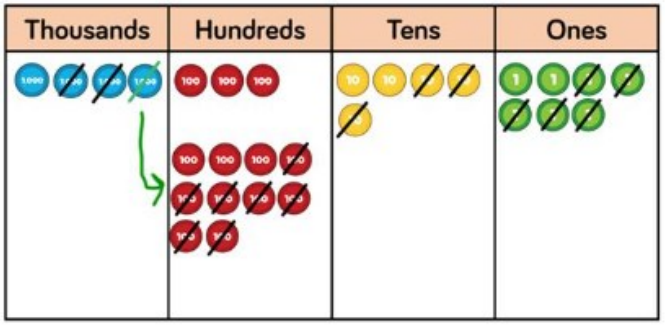
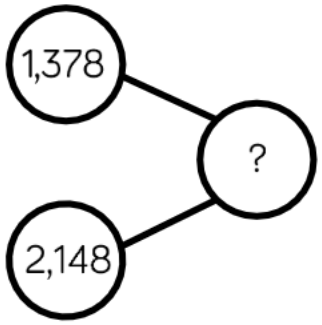
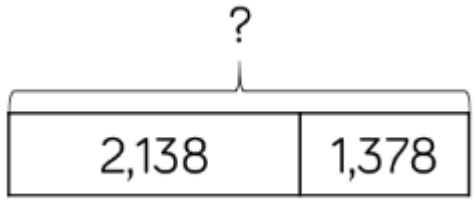
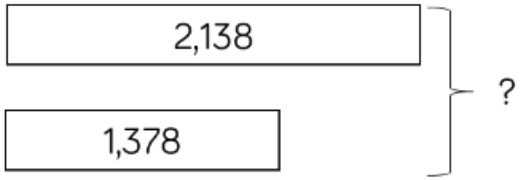
To read and write using Roman Numerals.

1 I	26 XXVI	51LI	76 LXXVI
2 II	27XXVII	52 LII	77 LXXVII
3 III	28XXVIII	53 LIII	78 LXXVIII
4 IV	29XXIX	54 LIV	79 LXXIX
5 V	30XXX	55 LV	80 LXXX
6 VI	31XXXI	56 LVI	81 LXXXI
7 VII	32XXXII	57 LVII	82 LXXXII
8 VIII	33 XXXIII	58 LVIII	83 LXXXIII
9 IX	34XXXIV	59 LIX	84 LXXXIV
10X	35XXXV	60 LX	85 LXXXV
11 XI	36XXXVI	61 LXI	86 LXXXVI
12XII	37 XXXVII	62 LXII	87 LXXXVII
13XIII	38 XXXVIII	63 LXIII	88 LXXXVIII
14XIV	39 XXXIX	64 LXIV	89 LXXXIX
15XV	40 XL	65 LXV	90 XC
16XVI	41 XLI	66 LXVI	91 XCI
17XVII	42 XLII	67 LXVII	92 XCII
18XVIII	43 XLIII	68 LXVIII	93 XCIII
19XIX	44 XLIV	69 LXIX	94 XCIV
20XX	45 XLV	70 LXX	95 XCV
21XXI	46 XLVI	71 LXXI	96 XCVI
22XXII	47 XLVII	72 LXXII	97 XCVII
23XXIII	48 XLVIII	73 LXXIII	98 XCVIII
24XXIV	49 XLIX	74 LXXIV	99 XCIX
25XXV	50 L	75 LXXV	100C

Bathwick St Mary Church School **Progression and Calculation Document— Addition and Subtraction** **Year Four**

NC Learning Objectives: Key Skills

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

Concrete	Pictorial	Abstract
 	  	$\begin{array}{r} 1378 \\ +\ 2148 \\ \hline 3526 \\ 1\ 1 \end{array}$ $\begin{array}{r} {}^{3}\cancel{4}^{1}357 \\ -\ 2735 \\ \hline 1622 \end{array}$

Key Vocabulary:

Thousands, hundreds, tens, ones, add, addition, subtract, subtraction, column, estimate, inverse, exchange, total.

STEM Sentences:

How many tens do we need to exchange for one hundred?
Why is it so important to show the exchanged digit on the column method?
How many bars are you going to use in your bar model?
Can you create your own scenario for a friend to work out?

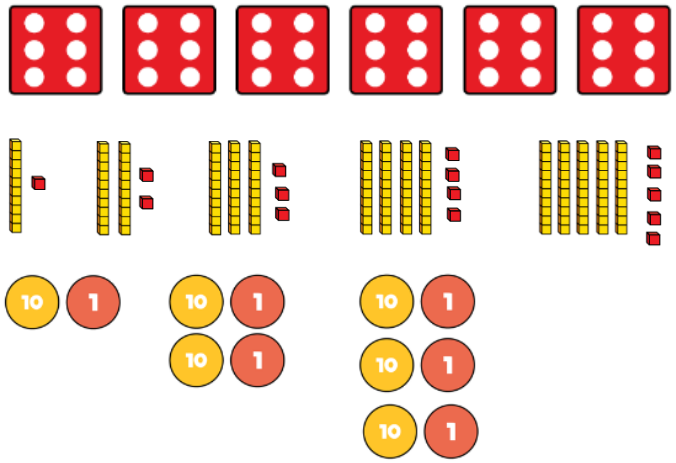
Additional Knowledge Covered in this area of Maths:

Place in here any additional Knowledge you think appropriate in each element having reviewed the knowledge organiser for your year group for each of the strands of maths.

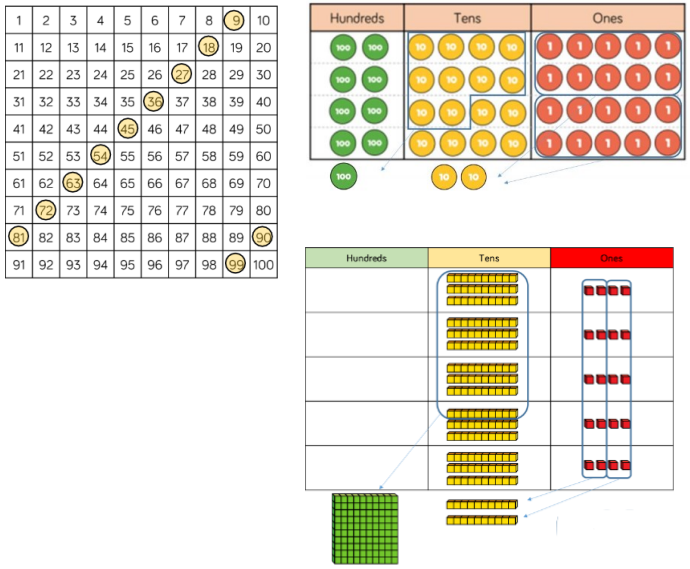
Bathwick St Mary Church School — Progression and Calculation Document— Multiplication and Division Year Four

- NC Learning Objectives:
- 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

Concrete



Pictorial



Abstract

$$245 \times 4 = 980$$

	H	T	O
	2	4	5
×			4
	9	8	0
	1	2	

Key vocabulary:
Multiply, divide, factors, factor pairs, multiple, commutative, digits, share, times, patterns,

STEM Sentences:
Can you explain what you did to a partner?
What do you notice when multiplying by 10?
Can you represent the calculation using manipulatives?

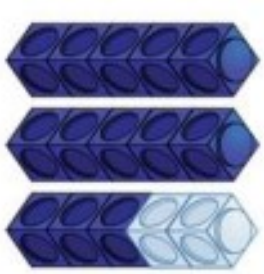
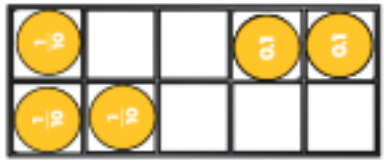
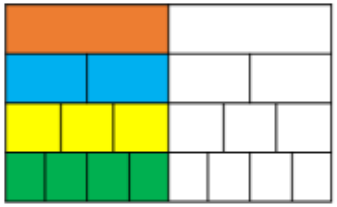
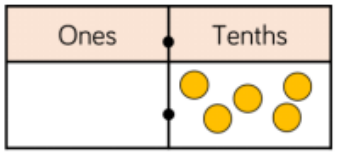
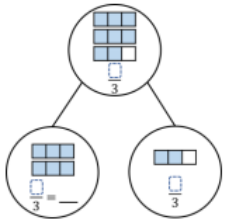
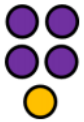
Additional Knowledge Covered in this area of Maths:

Place in here any additional Knowledge you think appropriate in each element having reviewed the knowledge organiser for your year group for each of the strands of maths.

Bathwick St Mary Church School — Progression and Calculation Document— Fractions and Decimals Year Four

NC Learning Objectives:

- recognise and show, using diagrams, families of common equivalent fractions
- count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten.
- 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
- add and subtract fractions with the same denominator
- recognise and write decimal equivalents of any number of tenths or hundredths
- recognise and write decimal equivalents to 1/4 , 1/2 , 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 ones, tenths and hundredths
- round decimals with one decimal place to the nearest whole number
- 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.

Concrete	Pictorial	Abstract
  	       	$\frac{\square}{4} + \frac{\square}{4} = \frac{7}{4}$ $\frac{2}{9}$ of $54 > \frac{3}{4}$ of $\square$ $55 \div 10 = \square$

Key Vocabulary:

Fractions, numerator, denominator, non-unit and unit fractions, whole, half, quarter, third, fourth, fifth, sixth, seventh, eight, ninth, tenth etc.

Decimals, tenths, hundredths, thousandths, decimal place, value, equivalent, partition.

STEM Sentences:

What fraction does each one represent?

Using Cuisenaire, how many white rods are equal to an orange rod? How does this help us work out what fraction the white rod represents?

What relationship can you see between the numerators and denominators? Are there any patterns?

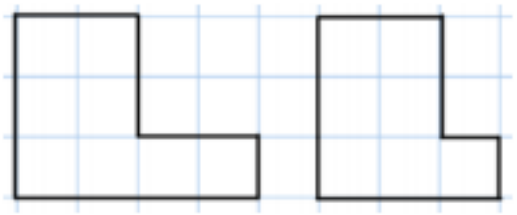
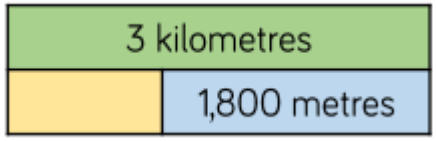
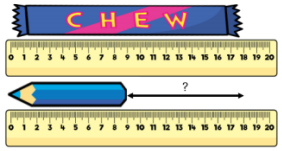
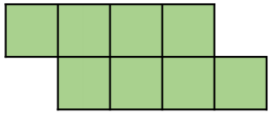
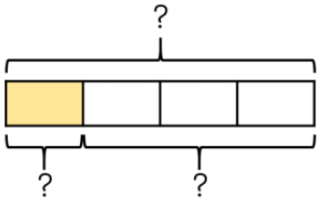
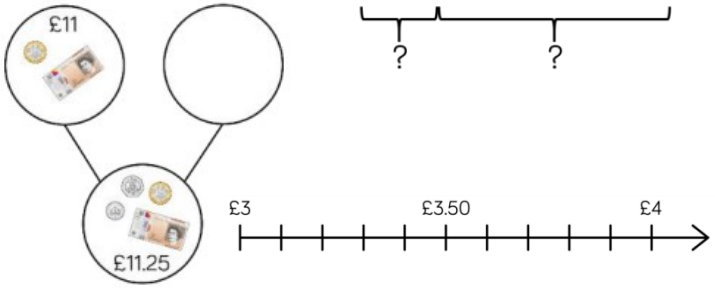
Additional Knowledge Covered in this area of Maths:

Place in here any additional Knowledge you think appropriate in each element having reviewed the knowledge organiser for your year group for each of the strands of maths.

Bathwick St Mary Church School	Progression and Calculation Document— Measurement Year Four

NC Learning Objectives:

- Convert between different units of measure [for example, kilometre to metre; hour to minute]
- measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres
- find the area of rectilinear shapes by counting squares
- estimate, compare and calculate different measures, including money in pounds and pence
- read, write and convert time between analogue and digital 12- and 24-hour clocks
- solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days.

Concrete	Pictorial	Abstract
 	    	5 cm + 10 cm = 15 cm 15 cm × 2 = 30 cm 6,209 p ◯ £60.09 Record these times using 24 hour digital format. 4 pm 8 pm 11 pm

Key Vocabulary:

Length, perimeter, metres, kilometres, centimetres, millimetres, rectangle, rectilinear, metric units, convert, hour, minute, seconds, estimate, compare, time analogue, digital, 12-hour, 24-hour, o'clock, past, half past, quarter past, quarter to, money, pounds, pence. decimal, area

STEM Sentences:

What strategy can you use to ensure you don't count a square twice?

Can we draw a shape that would have the same area as ____?

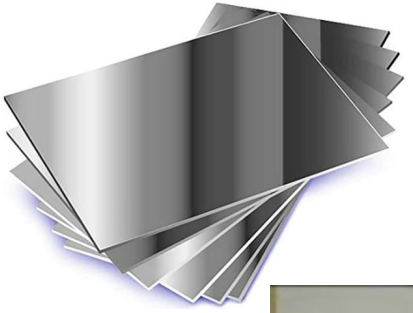
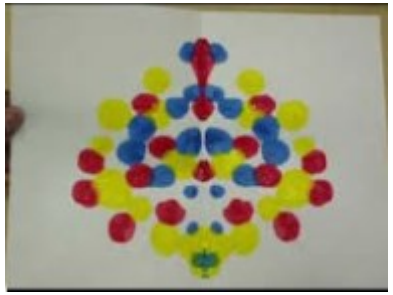
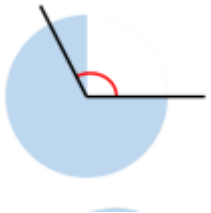
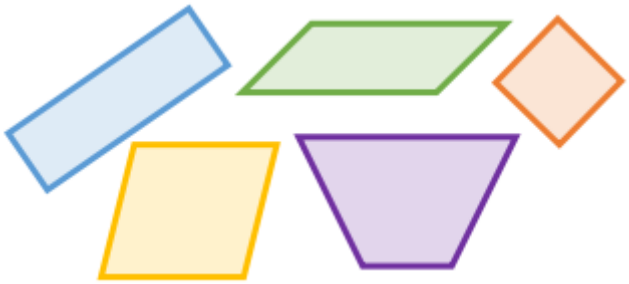
Additional Knowledge Covered in this area of Maths:

Place in here any additional Knowledge you think appropriate in each element having reviewed the knowledge organiser for your year group for each of the strands of maths.

Bathwick St Mary Church School — Progression and Calculation Document— Geometry Properties of Shapes Year Four

NC Learning Objectives:

- compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes
- identify acute and obtuse angles and compare and order angles up to two right angles by size identify lines of symmetry in 2-D shapes presented in different orientations
- complete a simple symmetric figure with respect to a specific line of symmetry.

Concrete	Pictorial	Abstract
 	 	Using a ruler, draw: • An isosceles triangle • A scalene triangle Draw and label: • a rhombus. • a parallelogram. • 3 different trapeziums

Key Vocabulary:

Angles, acute, obtuse, right angle, order, compare, size, triangles, quadrilaterals, symmetry, 2D, 3D

STEM Sentences:

What's the same about the quadrilaterals?
What's different about the quadrilaterals?
Why is a square a special type of rectangle?
Why is a rhombus a special type of parallelogram?

Additional Knowledge Covered in this area of Maths:

Place in here any additional Knowledge you think appropriate in each element having reviewed the knowledge organiser for your year group for each of the strands of maths.

Bathwick St Mary Church School — Progression and Calculation Document— Geometry Position and Direction Year Four

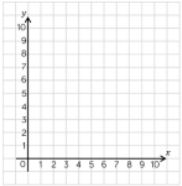
NC Learning Objectives:

- describe positions on a 2-D grid as coordinates in the first quadrant
- describe movements between positions as translations of a given unit to the left/right and up/down
- plot specified points and draw sides to complete a given polygon

Concrete

Here is a game to play in pairs:

Each player needs:



1 small cube

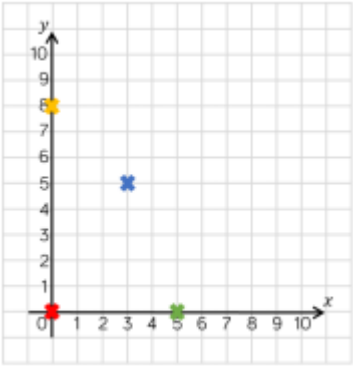
One barrier (e.g. a mini whiteboard)

The first player places a cube on their grid. They describe the original position and perform a translation.

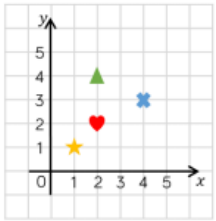
The second player listens to the instructions and performs the same translation.

They check to see if they have placed their cube at the same coordinate.

Pictorial



Describe the translation from:



Abstract

Plot these points on a grid.

(2, 4) (4, 2) (5, 8) (7, 6)

What shape has been created?

Key Vocabulary:

Y-axis, x-axis, translation, movement, direction, co-ordinate, grid, quadrant, polygon, position, left, right, up, down

STEM Sentences:

Can you describe the translation?

Can you describe the translation in reverse?

Why do we go left and right first when describing translations.

What are the coordinates for point _____?

Additional Knowledge Covered in this area of Maths:

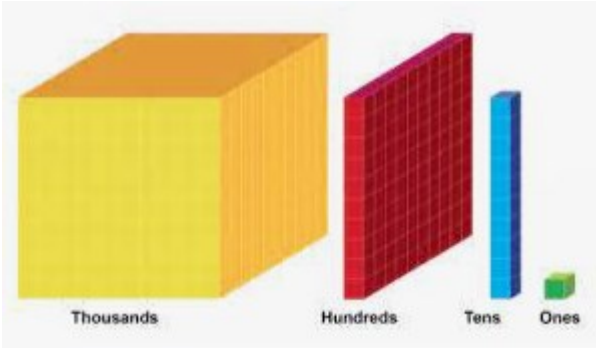
Place in here any additional Knowledge you think appropriate in each element having reviewed the knowledge organiser for your year group for each of the strands of maths.

Bathwick St Mary Church School — Progression and Calculation Document— Statistics Year Four

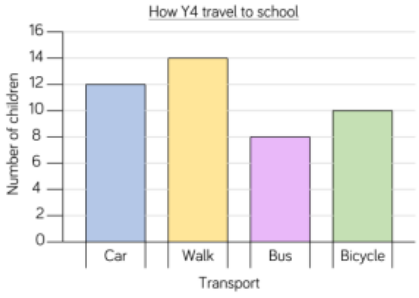
NC Learning Objectives/Key Skills

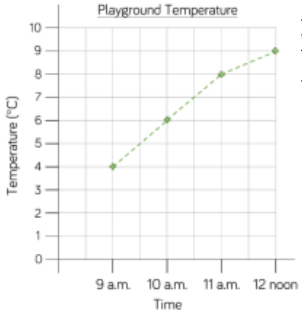
- interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs.
- solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.

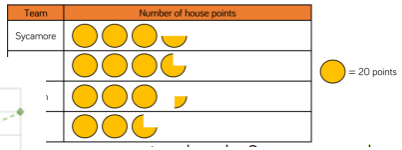
Concrete



Pictorial







Abstract

Class 4 grew a plant. They measured the height of the plant every week for 6 weeks.
The table shows the height of the plant each week.

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
4 cm	7 cm	9 cm	12 cm	14 cm	17 cm

Create a line graph to represent this information.
What scale would you use on the x and y axes?
Between which two weeks did the plant reach a height of 10 cm?

Key Vocabulary:

charts, interpret, comparison, sum, difference, present, discrete, continuous, data, graph, bar charts, time graphs, pictograms, tables, line graphs.

STEM Sentences:

Is this discrete or continuous data? How do you know?

What do you notice about the scale of the graph?

How could you make sure you read the graph accurately?

What other questions could you ask about the graph?

Additional Knowledge Covered in this area of Maths:

Place in here any additional Knowledge you think appropriate in each element having reviewed the knowledge organiser for your year group for each of the strands of maths.