Maths Year 3 Curriculum

Bold – National Curriculum objectives
Not bold- Ready to Progress document

Phase 1

Domain: **Place Value**

Revision year 2

- I can count within 100, forwards and backwards, starting with any number

- I can recognise the place value of each digit in a two-digit number
- I can decompose any two-digit number using standard and non-standard partitioning
- I can reason about the location of any two-digit number in a linear number sequence
- I can identify the multiple of 10 before and after any two-digit number

New learning- KPIs:

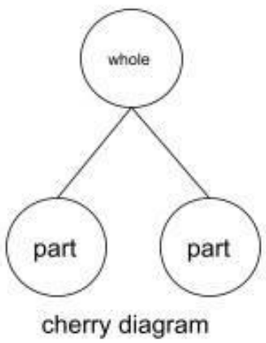
- I can add and subtract across 10
- I am secure in addition and subtraction facts that bridge 10 through continued practise

- I know that 10 tens are equivalent to 1 hundred
- I know that 100 is 10 times the size of ten
- I can identify and work out how many tens there are in three-digit multiples of 10
- I can recognise the place value of each digit in a three-digit number
- I can compose and decompose three-digit numbers using standard and non-standard partitioning
- I can reason about the location of any three-digit number in a linear number sequence
- I can identify the multiple of 10 and 100 before and after any three-digit number

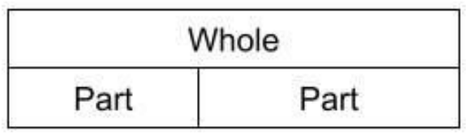
- **Compares and orders numbers up to 1000**
- **Solves number problems and practical problems involving place value knowledge**

Visualisation:

- **Part whole model** to show partitioning in a standard and non-standard way
- **Bar model** to model the partitioning of numbers

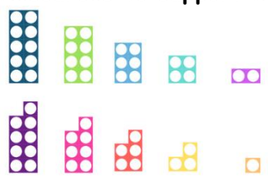


cherry diagram

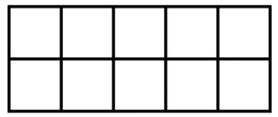


Bar model

Resources to support learning:



Numicon can be used to support children with number bonds to 10.



Tens frames with **place value counters** to support children to understand that 10 of something fit into…

Dienes to show children the relationship between numbers and what 'ten times bigger' looks like

Number lines to show children the position of numbers including negative numbers and how to round to the nearest multiple of…

10,000	20,000	30,000	40,000	50,000
1000	2000	3000	4000	5000
100	200	300	400	500
1	2	3	4	5
0.1	0.2	0.3	0.4	0.5
0.01	0.02	0.03	0.04	0.05
0.001	0.002	0.003	0.004	0.005

Gattengo charts to the value of each digit in a 4-digit number; this resource helps children to build numbers and understand the value of the digits in the number

Common misconceptions:

- Finding the multiple before or after the number which needs rounding for example multiple of 10 before 64 is 50
- Not understanding the relationship between tens and ones for example not knowing that 13 tens is equivalent to 130 ones
- Not having a secure understanding of the structure of numbers and not understanding what a number is made up of
- Non-standard partitioning being inaccuarte because of basic addition and subtraction facts

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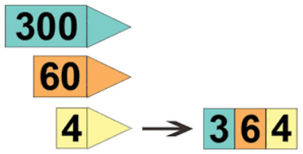

Place Value Arrow cards to show the value of each digit in a number

Vocabulary:
ones, tens, hundreds, digit, one-, two- or three-digit number, 'teens' number
place, place value, stands for, represents, exchange, the same number as, as many as, equal to
Of two objects/amounts:
greater, more, larger, bigger, less, fewer, smaller
Of three or more objects/amounts:
greatest, most, biggest, largest, least, fewest, smallest
one more, ten more, one hundred more, one less, ten less, one hundred less
compare, order, size
first, second, third… tenth… twentieth, twenty-first, twenty-second…
last, last but one, before, after, next, between, half-way between above, below

Domain: **Number facts**

Revision year 2:
- I can add and subtract across 10
- I can recognise the subtraction structure of 'difference' and answer questions of the form, "How many more…"

New learning- KPIs:
- I can divide 100 into 2, 4, 5 and 10 equal parts
- I can read number lines and scales marked in multiples of 100 with 2, 4, 5 and 10 equal parts
- I can calculate complements to 100 (54 + 46 = 100)
- I can apply place-value knowledge to known additive and multiplicative number facts (scaling by 10)

Resources to support learning:

Cuisenaire rods where the orange rod can represent 1 whole

Common misconceptions:
- A common error when calculating complements is to end up with a total that is too large, as children typically make an extra unit of 10
- Not making the parts equal – especially when placing intervals on a number line

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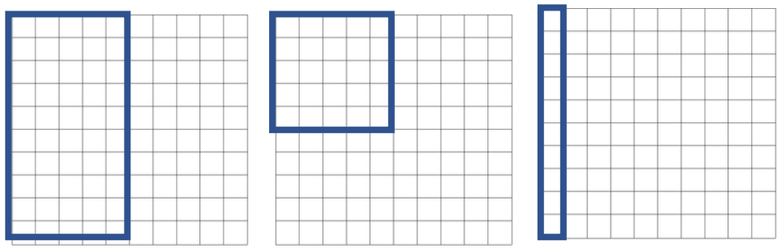
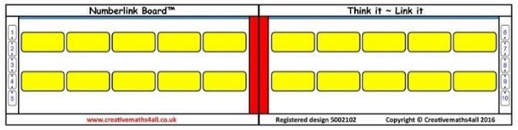
- I am fluent with addition and subtraction facts within ten through continued practise
- I can recognise repeated addition contexts, representing them with multiplication equations and calculating the product within the 2, 5 and 10 multiplication tables
- I can relate grouping problems where the number of groups is unknown to a multiplication equation with a missing factor and to division equations (quotative division)

Visualisation:

- **Empty 100 square** to show how to share into equal groups



Number lines to show children equal intervals



Numberlink boards to show children the relationship of multiplication facts and to teach the 1, 10, 5 derive structure

- Not understanding equivalent decimals for example one tenth being the same value as ten hundredths

Domain: **Addition and Subtraction (securing mental calculation)**

Revision year 2:

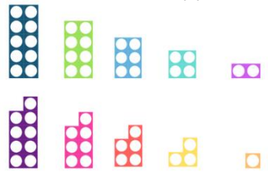
- I can add and subtract within 100 by applying related one-digit addition and subtraction facts
- I can add and subtract only ones or only tens to/from a two-digit number

- **I can show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot**
- **I can recognise and use the inverse relationship between addition and**

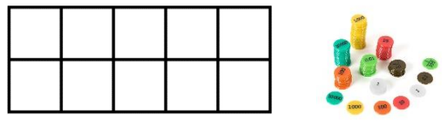
New learning- KPIs:

- I can manipulate the additive relationship in addition and understand the law of commutativity
- I understand the related property for subtraction
- I can understand the inverse relationship between addition and subtraction
- I can use the part-part-whole structure to represent addition and subtraction calculations

Resources to support learning:



Numicon can be used to support children to understand the law of commutativity



Tens frames with **place value counters** to support children to understand that 10 of something fit into

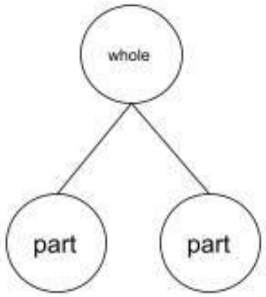
Common misconceptions:

- Thinking that subtraction is commutative. The difference and subtrahend can swap places in a calculation and the calculation will still be accurate. However, this isn't showing the law of commutativity
- In missing digit calculation, not understanding when and how to use the inverse operation

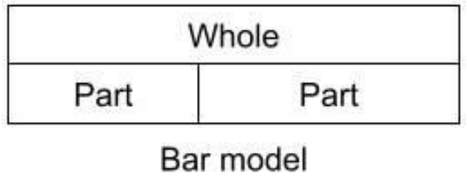
subtraction and use this to check calculations and solve missing number problems

Visualisation:

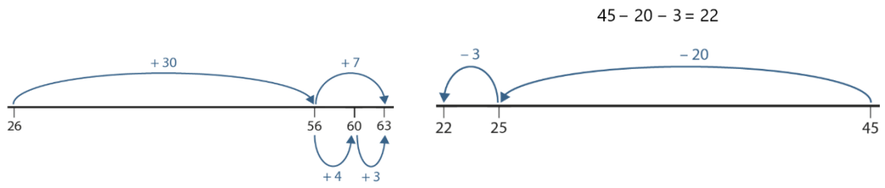
- **Part whole model** to show partitioning in a standard and non-standard way
- **Bar model** to model the partitioning of numbers
- **Number line** to show partitioned addition or subtraction and to model the strategy of counting on or counting back



cherry diagram



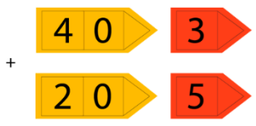
Bar model



Dienes to show children the relationship between numbers and what 'ten times bigger' looks like

Place value counters and dienes to show the partitioning of two-digit and three-digit numbers

Number lines to show children the position of numbers including negative numbers and how to round to the nearest multiple of…



Place Value Arrow cards identify how digits change in addition and what this looks like when the number is blended back together

Phase 2

Domain: **Column addition**

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Revision year 2:

- I can add and subtract within 100 by applying related one-digit addition and subtraction facts
- I know that 100 pennies are the same as 1 pound
- I know what value different coins represent

- **I can find different combinations of coins that equal the same amounts of money**
- **I can solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change**
- **I can recognise and use symbols for pounds (£) and pence (p) and can combine amounts to make a particular value**

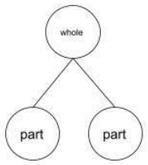
New learning- KPIs:

- I can add up to three-digit numbers using columnar method

- **I can apply my understanding of unitising and add and subtract numbers mentally, including:**
  - **-a 3-digit numbers and ones**
  - **-a 3-digit number and tens**
  - **-a 3-digit numbers and hundreds**
- **I can measure, compares, add and subtract lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)**
- **I can add amounts of money to give change, using both £ and p in practical contexts**
- **I can solve problems including missing numbers using number facts, place value, and more complex addition and subtraction**

Visualisation and context:

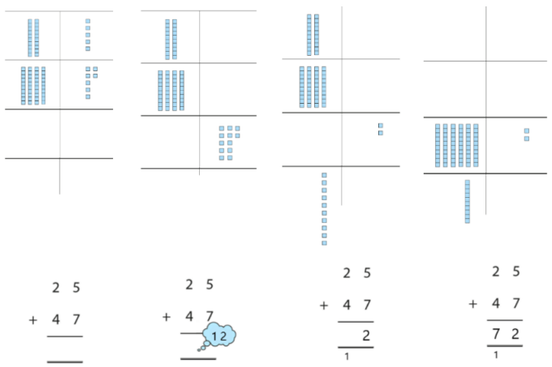
- **Money** as a real-life context for adding and subtracting (£ and p amounts **not decimal numbers**)
- **Part whole model** to show partitioning in a standard and non-standard way
- **Bar model** to model the partitioning of numbers
- **Online dienes alongside** column method to show regrouping



cherry diagram

Whole	
Part	Part

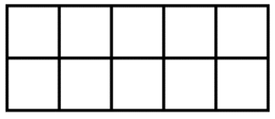
Bar model



Resources to support learning:

Dienes to support children to understand regrouping e.g. 10 ones becoming 1 ten

Place value counters to practise the skill of adding and subtracting



Tens frame to support children in understanding how to bridge through 10

Measuring scales to compare different weights and in addition lessons where the context of measure is used

Measuring jug to compare different measures of capacity and in addition lessons where the context of measure is used
multiple of…

Common misconceptions:

- Understanding how to regroup when addition crosses place value columns
- Knowing how to represent regrouping in a formal strategy and what the value of these digits represents
- Lining up the digits inaccurately and not adding the regrouping digits into the correct column
- Understanding 100p = £1

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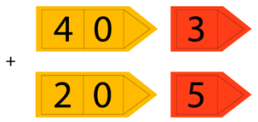

Place Value Arrow cards identify how digits change in addition and what this looks like when the number is blended back together

Ruler to compare different measures of length and in addition lessons where the context of measure is used

Domain: **Column subtraction**

Revision year 2:

- I can add and subtract within 100 by applying related one-digit addition and subtraction facts
- I can add and subtract any 2 two-digit numbers

- **I can solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change**
- **I can recognise and use symbols for pounds (£) and pence (p) and can combine amounts to make a particular value**

New learning- KPIs:

- I can subtract up to three-digit numbers using columnar method

- **I can apply my understanding of unitising and add and subtract numbers mentally, including:**
  - **-a 3-digit numbers and ones**
  - **-a 3-digit number and tens**
  - **-a 3-digit numbers and hundreds**
- **I can measure, compares, add and subtract lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)**
- **I can add amounts of money to give change, using both £ and p in practical contexts**
- **I can solve problems including missing numbers using number facts, place value, and more complex addition and subtraction**

Visualisation and context:

- **Money** as a real-life context for adding and subtracting (£ and p amounts **not decimal numbers**)
- **Part whole model** to show partitioning in a standard and non-standard way
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Resources to support learning:

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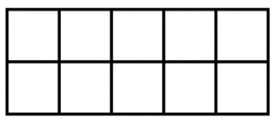
Place value counters to practise the skill of adding and subtracting



Tens frame to support children in understanding how to bridge through 10

Common misconceptions:

- Understanding how to regroup in subtraction in a formal method so that they don't subtract a value from the **subtrahend** instead of the **minuend**.

2 3 4 6 7 2 3 3	For example, taking 4 away from 7 and 3 away from 6

- Lining up the digits inaccurately and not adding the regrouping digits into the correct column
- Understanding 100p = £1

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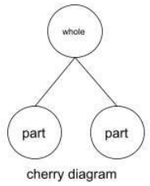
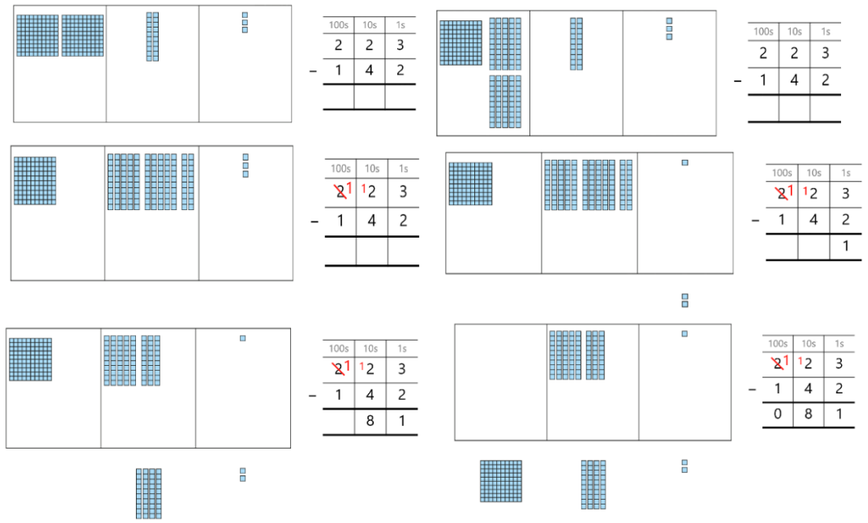


cherry diagram

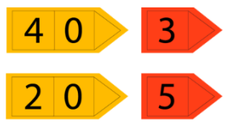
Whole	
Part	Part

Bar model



Measuring scales to compare different weights and in addition lessons where the context of measure is used

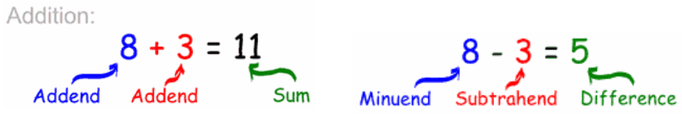
Measuring jug to compare different measures of capacity and in addition lessons where the context of measure is used
multiple of…



Place Value Arrow cards identify how digits change in addition and what this looks like when the number is blended back together

Ruler to compare different measures of length and in addition lessons where the context of measure is used

Vocabulary:



add, addition, more, plus, make, sum, total, altogether, double, near double, one more, two more… ten more… one hundred more,
How many more to make…? How many more is… than…? How much more is…?
subtract, subtraction, take (away), minus, leave, difference, one less, two less… ten less… one hundred less
How many are left/left over how many fewer is… than…? How much less is…?
difference between, half, halve

equals, sign, is the same as
tens boundary, hundreds boundary, unitise

Domain: **Multiplication and division**

Revision year 2:

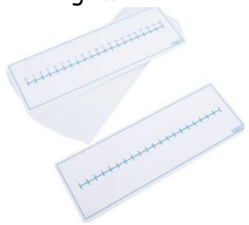
- I can double and halve any two-digit number
- **I can count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backwards**
- **I can recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables including recognising odd and even numbers**
- **I can calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs**

New learning- KPIs:

- I can apply known multiplication and division facts to solve contextual problems with different structures including quotative and partitive division
- I can recall multiplication facts and corresponding division facts in the 10, 5, 2, 4 and 8 multiplication tables
- I can recognise products in these multiplication tables as multiples of the corresponding number
- I can apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 10)
- I can apply the distributive law in order to find unknown multiples
- **Write and calculate mathematical statements for × and ÷ using the multiplication tables that are known, including 2-digit × 1-digit using both mental and formal written method**
- **Solves problems involving missing number problems, involving multiplication and division including integer scaling problems and corresponding problems in which n objects are connected to m objects**
- **Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables**

Resources to support learning:

Times table flash cards/ playing cards for rapid recall games



Double sided number line whiteboards to show the relationship between multiplication families

Common misconceptions:

- Thinking that 1 is a prime number even though it only has one factor (not two)
- Thinking that 2 is a composite number because it is even
- Understanding the difference between factors and multiples and accurately using this terminology
- To make a number ten times bigger you add a 0
- Understanding that multiplication using a formal strategy requires unitising 4 x 3, 4 x 3 tens, 4 x 6 hundreds, 4 x 8 thousands

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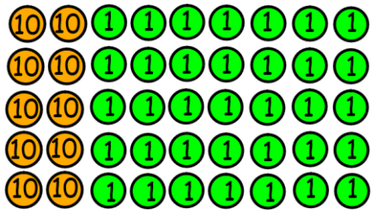
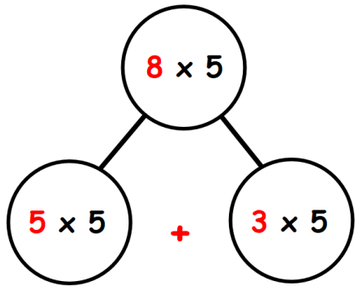
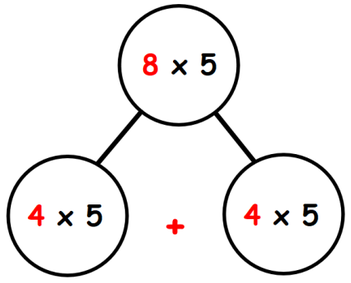
- **I can show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot**
- **I can solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.**

Visualisation and context:

- **Place value counters** to arrays for multiplication to model the **distributive** law
- **Part whole** to support with application of the **distributive** law
- **1, 10, 5 derive** to find unknown multiplication facts



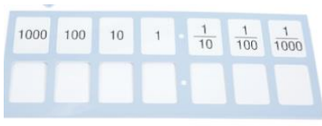




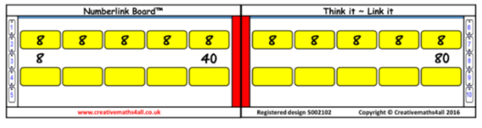
Red and yellow counting stick to count up in multiples of and to help children identify patterns in times table families

Magnetic bar model set to show how many equal groups fit into a whole

Place value counters for children who need to build arrays or to show 'groups of' in division



Sliding place value charts when teaching how numbers change when multiplying and dividing by powers of 10



Numberlink boards to make connections between multiplication families

Place value counters for children to build long multiplication arrays and to apply the distributive law

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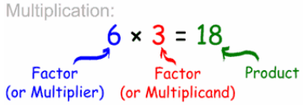
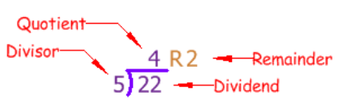
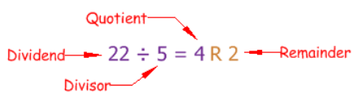
Vocabulary

lots of, groups of, , times, multiply, multiplication, multiplied by, multiple of, product

once, twice, three times… ten times…times as (big, long, wide… and so on),repeated addition, array, row, column, double, halve, share, share equally, one each, two each, three each…group in pairs, threes… tens, equal groups of, , divide, division, divided by, divided into, left, left over, remainder

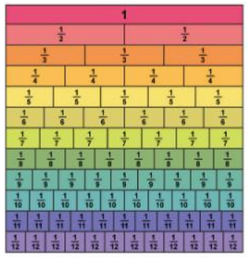






Phase 3

Domain: **Fractions**

Revision year 2:	**New learning- KPIs:**	**Resources to support learning:**	**Misconceptions:**
• **I can recognise, find, name and write fractions 1/3, 1/4, 2/4 and 3/4 of a length, shape, set of objects or quantity** • **I can write simple fractions for example 1/3 of 6 = 3 and recognise the equivalence of 2/4 and 1/2**	• I can interpret and write proper fractions to represent 1 or several parts of a whole that has been divided into equal parts • I can find unit fractions of quantities using known division facts (and multiplication tables fluency) • I can interpret and write proper fractions to represent 1 or several of a whole that has been divided into equal parts • I can reason about the position of any fraction within 1 in the linear number system • I can add and subtract fractions with the same denominator within 1 • **I can recognise and shows, using diagrams, equivalent fractions with small denominators** • **Recognises, finds and writes fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators**	 **Fraction walls** to identify equivalent fractions	• When you add and subtract fractions with different denominators, adding or subtraction both the numerator and denominator (without finding a common denominator) • The larger the denominator the larger the fraction because the digit on the bottom has a larger cardinal value

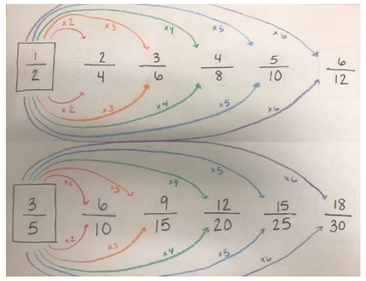
Maths Year 3 Curriculum

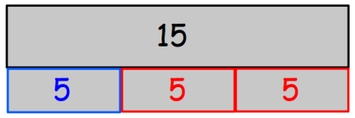
Bold – National Curriculum objectives
Not bold- Ready to Progress document

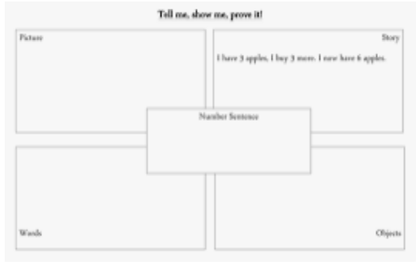
- **Counts up and down in tenths: recognises that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10**
- **Compares and orders unit fractions with the same denominators**
- **Add and subtract fractions with the same denominator within one whole**
- **Solves problems involving understanding of fractions**

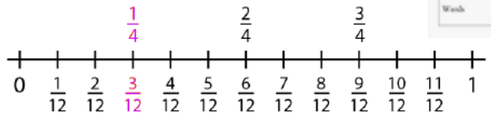
Visualisation and context:

- **Fraction rainbows** to show how to find equivalent fractions
- **Explain**, **make** and **prove** it grids
- **Bar model** to show fractions of amount
- **Double number lines** to show equivalent fractions









Cuisenaire rods to identify and build fraction families

Fraction dice to support in lessons when identifying fractions of amount and the relationship between denominators

Pattern blocks to support with teaching equivalent fractions

Red and yellow counters to teach fractions of amount

Vocabulary:
Equivalent, Numerator, Denominator
part, equal parts, fraction, one whole, one half, two halves
one quarter, two… three… four quarters, one third, two thirds, three thirds, one tenth

Domain: Geometry

Maths Year 3 Curriculum

Bold – National Curriculum objectives
Not bold- Ready to Progress document

Revision from year 2:

- I can use precise language to describe the properties of 2D and 3D shapes
- I can compare 2D and 3D shapes by reasoning about their similarities and differences in properties
- **I can identify and the number of sides and lines symmetry in a vertical line**
- **I can identify and describe the number of edges, vertices and faces in 3D shapes**
- **I can identify 2D shapes on the surface of 3D shapes (for example, a circle on a cylinder and a triangle on a pyramid)**
- **I can compare and sort common 2D and 3D shapes and everyday objects**
- **I can order and arrange combinations of mathematical objects in patterns and sequences**

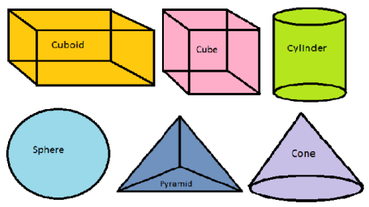
New learning- KPIs:

- I can recognise right angles as a property of shapes or a description of a turn
- I can identify right angles in 2D shapes presented in different orientations
- I can draw polygons by joining marked points
- I can identify parallel and perpendicular sides in a shape

- **I recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn; identifies whether angles are greater than or less than a right angle**
- **Recognises angles as a property of a shape or a description of a turn**
- **Identifies horizontal and vertical lines and pairs of perpendicular and parallel lines**
- **Draws shapes and makes 3D shapes using modelling materials; recognises 3D shapes in different orientations and describes them.**

Visualisation and context:

- **Angle family** to support with identifying different types of angles in shapes
- **2D images** of 3D shapes to support with classification and description of 3D shapes



Resources to support learning:

Folding plastic geometric shapes to support children with classification of 3D shapes and to understand nets

Misconceptions:

- Confusion between vertex, vertices, edges and faces
- Lines aren't parallel if they are not straight

Domain: Statistics and time

Revision from year 2:

- **I can compare and sequence intervals of time**
- **I can tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times**

New learning-KPIs:

- **Interprets and presents data using bar charts, pictograms and tables**
- **Solves one and two step questions using information presented in scaled bar charts and pictograms and tables**
- **Tells and writes the time from an analogue clock and 12-hour and 24-hour clocks**
- **To compare durations of events, for example to calculate the time taken for particular events or tasks**

Resources to support learning:

Plastic clocks to teach children how to read the time

Misconceptions:

- Reading the time and confusing the minute and hour hand
- Reading the coordinates on a graph incorrectly – reading the y coordinate before the x coordinate
- Knowing half a picture on a picto-gram represents half of the amount

Maths Year 3 Curriculum

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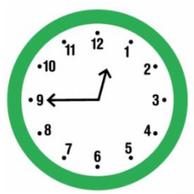
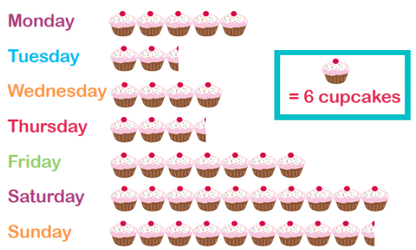
• **I know the number of minutes in an hour and the number of hours in a day** • **I can interpret and construct simple pictograms, tally charts, block diagrams and simple tables** • **I can ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity** • **I can ask and answer questions about totalling and comparing categorical data.**	**Visualisation and context:** • **Pictograms** • **Calendars** • **12- and 24-hour clocks**     	**Number lines** with intervals of 5 to 60 to represent the 12-hour clock as a more familiar number line structure	