# Year 1 

## Maths Curriculum

| KNOW IT! |
| :--- |
| TEACH IT! |
| APPLY IT! |

Year 1

## PLACE VALUE

Count in multiples of 2,5 and 10

Count reliably from 0-20.

Begin to recognise place value in numbers beyond 20

Know the language of equal to, more than, less than, fewer, most and least.

Recognise numbers 0-20.

Know odd and even numbers.

Order numbers to 20

## FRACTIONS

Recognise $1 ⁄ 2$ as 2 equal parts

Recognise $1 / 4$ as 4 equal parts.

Know that for something to be equal it must have the same amount.

Know mathematical language used to describe shapes.

## Key Objectives

- Count to and across 100 forwards and backwards beginning with 0 or 1 or from any given number.
- Count, read and write numbers to 100 in numerals.
- Read and write numbers from 1 to 20 in numerals and words.
- Count reliably with numbers to 10
- Link names of numbers and numerals to their value, to 10 .
- Count in multiples of twos, fives and tens.
- Explore patterns of numbers within 10 , including even and odd.
- Identify and represent numbers using objects and pictorial representations, including the number line and use the language of equal to, more than, less than, most and least.
- Use the language of more and fewer to compare two sets of objects.
- Given a number, identify one more and one less.
- Find one more or one less from a group of up to 5 objects, then 10 .

Possible Teaching Sequence

## Count to and across 100 forwards...

$\Rightarrow$ Count forwards and backwards to 10 in 1 s from any number; then to 20 ; then to 50
$\Rightarrow$ Count forwards and backwards to 100 in 1 s from any number (with the help of a 100 square).
$\Rightarrow$ Count on or back to continue a number sequence.
Count, read and write numbers to 100 in numerals.
$\Rightarrow$ Count, read and write numbers to 10 on a number track/line; then 20; 50; 100- on a 100 square too

## Count in multiples of twos, fives and tens.

$\Rightarrow$ Count in 10s to 100 (use this skill with Base 10 to identify the value of 2-digit numbers).
$\Rightarrow$ Count in 5s to 50; then 100.
$\Rightarrow$ Count in 2 s to 20 ; then 2 s to 50 ; then 100 .
$\Rightarrow$ Count back in $2 \mathrm{~s}, 5 \mathrm{~s}$ and 10 s within 50
$\Rightarrow$ Draw attention to patterns in the number system.
Given a number, identify one more and one less,
$\Rightarrow$ Find one more, then one less within 10 using concrete resources, then move on to within 20.
$\Rightarrow$ Find one more (the number after) within 10 by counting on with the help of a number track then without; repeat for one less, then move on to within 20.
$\Rightarrow$ Find 1 more \& less within 50 using number tracks \& 1-50 grids. Teach that the tens digit inn't affected unless it is 9 and apply known facts e.g. 1 more than 7 is 8 so 1 more than 47 is 48 .
$\Rightarrow$ Find one more by adding one and one less by taking one away, within 100 using concrete materials, number tracks and a 100 square.
Identify and represent numbers using objects...
$\Rightarrow$ Compare two groups of objects using equal to, more than/greater, less than/fewer, most and least.
$\Rightarrow$ Compare two numbers using equal to, more than/greater, less than/fewer, most and least.
$\Rightarrow$ Show that one ten is equal to ten ones using concrete resources.
$\Rightarrow$ Show that numbers 11-19 have 1 ten and some ones. Use this idea to create 2 digit numbers, for example $34-3$ tens and 4 ones, using concrete and pictorial representations (sticks and dots).
$\Rightarrow$ Order three groups of objects by comparing two groups initially or by lining the groups of objects up. State the greatest and smallest.
$\Rightarrow$ Order numbers from smallest to greatest (using concrete resources or pictorial representations to check answers). Compare numbers using the tens digit first e.g. $15>8$ because it has a ten however, $23 \& 26$ both have 2 tens, so we compare the ones $\Rightarrow$ Identify the position of each number/set of objects using ordinal language e.g. first/last.
$\Rightarrow$ Find the difference between two numbers/groups of objects.
$\Rightarrow$ Read and write numbers from 1 to 20 in numerals and words.
$\Rightarrow$ Use phonic skills to write numbers to 20 in words.

Stem Sentences

- 'There are ten ones in a ten.'
- 'There are one hundred ones in a hundred.'
- 'There are ten tens in a hundred.'
- '38 is 38 ones.'
- ' 38 is 3 tens and 8 ones.'
- 'Zero is the digit 0 , which stands for no amount.'
- 'One more is the number that come after.'
- 'One less is the number that comes before.'

VOCABULARY

- Zero
- Count
- Represent
- Greater
- Smaller
- Largest
- Smallest
- Number line

Number track

- Forwards
- Backwards
- More

Less

- Fewer
- Compare
- Most
- Least
- Equal

Order

- First
- Last
- Tens
- Ones
- Digit
- Pairs

One more/les
Count on/back

- Sort
- Group
- Even/odd
- 'Teen’ numbers- saying threeteen instead of thirteen and fiveteen instead of fifteen.
- Finding 10 more instead of 1 more e.g. more than 13 is 23 instead of 14 .
- Mixing up 'ty' and 'teen' e.g. Forty = fourteen.
- Inaccurate counting when crossing 10 s boundaries e.g. 42, 41, 40, 49 .

Writing 2 digit numbers with 3 digits e.g. $56=506$.

- Mistakenly counting forwards instead of backwards and vice-versa.
- Counting tens as ones when using concrete resources and pictorial representations e.g. 3 tens and 6 ones $=$ 9 instead of 36 .
- Reversal of digits e.g. $17=71$
$\Rightarrow$ Value - the amount a digit is worth
$\Rightarrow$ Equal- the same amount or value.
$\Rightarrow$ Greater - when a number/amount is bigger/larger than others.
$\Rightarrow$ Fewer - when a number/amount is smaller/less than others.
$\Rightarrow$ Order - putting things in the correct place.
$\Rightarrow$ Digit - written numeral from 0-9 that forms part of a number.
$\Rightarrow$ First - coming before all others
$\Rightarrow$ Last - coming after all others.
$\Rightarrow$ Partition - to split or break a number into 2 or more parts.


## New Learning

## Key Objectives

- Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=).
- In practical activities and through discussion, begin to use the vocabulary involved in adding and subtracting.
- Represent and use number bonds and related subtraction facts within 20.
- Automatically recall number bonds for numbers 0-5 and for 10, including corresponding partitioning facts.
- Add and subtract one-digit and two-digit numbers to 20 , including zero.
- Find the total number of items in 2 groups by counting them all.
- 'Addition can be done in any order.' 'Subtraction cannot be done in any order.'
- 'A whole can be split into two or more parts.'
- 'I know that $2+8=10$ and $8+2=$ 10 , so $12+8=20$ and $18+2=20$
- 'I know that $5+1=6$ and $1+5=6$ so $6-1=5$ and $6-5=1$.'


## Read, write and interpret..

$\Rightarrow$ Reinforce language of addition using practical resources and real-life.
$\Rightarrow$ Introduce addition symbol to create number sentences e.g. $6+3=9$ ( 6 apples plus 3 apples is equal to 9 apples).
$\Rightarrow$ Use fact families to record number sentences that show the order of an addition sentence can be varied (i.e. addition is commutative).
$\Rightarrow$ Introduce language of subtraction as taking away in real-life contexts (birds flying away, sweets being eaten etc) then introduce the subtraction symbol.
$\Rightarrow$ Use fact families to show the relationship between addition and subtraction within 10 to begin and then within 20 e.g. $5+1=6 ; 1+5=6 ; 6-5=1 ; 6-1=5$.

## Represent and use number bonds.

$\Rightarrow$ Explore number bonds by finding how many different ways a number can be partitioned, start with the whole to work systematically ( $5+0=5 ; 4+1=5 ; 3+2=5$ etc)
$\Rightarrow$ Use tens frame, bead strings and fingers to systematically explore number bonds within 10 and record the matching number sentences.
$\Rightarrow$ Compare two sets of number bonds represented in number sentences e.g. $5+3$ is greater than $4+2$.
$\Rightarrow$ Explore the related subtraction facts
$\Rightarrow$ Find the missing value ( $7=2+$ ?).
$\Rightarrow$ Use number bonds to 10 to find number bonds to $20(7+3=10 ; 17+3=20)$ Add and subtract one-digit..
$\Rightarrow$ Add 2 sets of objects within 10 using concrete resources \& pictorial representations.
$\Rightarrow$ Add on to find the total using a number line to begin and then mentally by putting the largest number in head and count on
$\Rightarrow$ Use knowledge of number bonds to add numbers within 20 e.g. partition 8 into 4 and 4 , to bridge through 10: $6+8=6+4+4$
$\Rightarrow$ Subtract by removing objects/crossing out pictures e.g. 9-5 = 4 Tom has 9 cars. He gives 5 of them away. How many does he have left?
$\Rightarrow$ Count back to subtract within 10 using a number line to begin and then mentally by putting the start number in our head.
$\Rightarrow$ Find the difference within 10 by counting back from the largest number, on from the smallest number or by making both amounts using concrete resources or pictorially.
$\Rightarrow$ Partition numbers to help subtract when crossing ten using concrete resources and pictorial representations to begin with e.g. Partition 5 into 2 and 3: 12-5 $=12-2-3$
$\Rightarrow$ Compare 2 number sentences by working out each one $\&$ deciding if they're equal to each other or greater than/less than.

## COMMON MISCONCEPTIONS

## Key Definitions

- Including the starting number when counting back $(5-3=5 \ldots 4 \ldots 3)$
- Thinking that subtraction can be done in any order
- Disregarding zero when thinking of number bonds.
- Assuming that the calculation must always come before the equals sign.
-Whole
- Part
- Addition
- Add
- Plus
- Equal to
- Total
- Altogether
- Represent
- Number bond
- Subtraction
- Subtract
- Take away
- Difference
- Count on
- Count back
- Calculate
- Less than
- More than
- Greater
- Fewer
- Group
- Missing part
$\Rightarrow$ Partition - to split or break a number into 2 or more parts.
$\Rightarrow$ Plus - to add two or more numbers/amounts
$\Rightarrow$ Difference - subtracting one number from another.
$\Rightarrow$ Fact family - a group of related numbers facts using the same 3 numbers.
$\Rightarrow$ Part-Whole Model - a diagram used to work out how 2 or more parts combine to make a whole.



## Key Objectives

## Possible Teaching Sequence

## Recognise, find and name a half as ....

$\Rightarrow$ Explore finding half of shapes and objects.

$\Rightarrow$ Find a half of a small quantity by sharing equally into two (using concrete resources)

## Recognise, find and name a quarter as...

$\Rightarrow$ Explore finding quarters of shapes and objects.
$\Rightarrow$ Find a quarter of a small quantity by sharing equally into four (using concrete resources). For example, put $1 / 4$ of the cakes into the tin.


COMMON MISCONCEPTIONS

- Assuming that 4 parts is always quarters even when they are not equal parts e.g.
- Equal parts have to look the same when they do not.
- They are only equal if you split them into squares or rectangles.


Therefore these are equal.


Therefore thinking that these are not equal


Equal Parts Non-equal Parts

- 'Half of ___ is ___.
- 'Quarter of ___ is __.
- 'A part is smaller than a whole.'
- 'A quarter is 1 of 4 equal parts.'
- 'A half is 1 of 2 equal parts.

Key Definitions
$\Rightarrow$ Fraction - an equal part of something.
$\Rightarrow$ Half - one of two equal parts.
$\Rightarrow$ Quarter - one of four equal parts.

## Key Objectives

- Compare, describe and solve practical problems for:
$\Rightarrow$ lengths and heights [for example, long/short, longer/ shorter, tall/short, double/half];
$\Rightarrow$ mass/weight [for example, heavy/light, heavier than, lighter than];
$\Rightarrow$ capacity and volume [for example, full/empty, more than, less than, half, half full, quarter];
$\Rightarrow$ time [for example, quicker, slower, earlier, later]
- Measure and begin to record the following:
$\Rightarrow$ lengths and heights;
$\Rightarrow$ mass/weight;
$\Rightarrow$ capacity and volume
$\Rightarrow$ time (hours, minutes, seconds)
- Use everyday language to talk about size, weight, capacity, distance and time to compare quantities and objects and to solve problems.
- Recognise and know the value of different denominations of coins and notes
- Use everyday language to talk about money to compare quantities and objects and to solve problems.
- Sequence events in chronological order using language [for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening].
- Order and sequences familiar events.
- Recognise and use language relating to dates, including days of the week, weeks, months and years.
- Tell the time to the hour and half past the hour and draw the hands on a clock face to show these times.
- Measure short periods of time in simple ways.


## Possible Teaching Sequence

## Length \& Height

$\Rightarrow$ Describe and compare the length of different objects.
$\Rightarrow$ Use non-standard units (cubes/straws) to measure length \& height
$\Rightarrow$ Use a ruler to measure objects.

## Mass \& Weigh

$\Rightarrow$ Describe and compare the weight of different objects (in their hands before using scales to check) using the language heavy/light
$\Rightarrow$ Use non-standard units (cubes) to measure the mass of an object.
$\Rightarrow$ Use balance scales to compare two objects.

## Volume \& Capacity

$\Rightarrow$ Describe the volume in a container by describing whether it is full, almost full, empty, nearly empty.
$\Rightarrow$ Compare the volume in two containers by describing which has more or less than another.
$\Rightarrow$ Measure the capacity of different containers using non-standard units (a spoon, a cup etc.)
$\Rightarrow$ Compare the capacity of different containers using non-standard units of measure.
Money
$\Rightarrow$ Recognise each coin and name its value
$\Rightarrow$ Match coins with equivalent values e.g. One 5 p coin = Five 1 p coins
$\Rightarrow$ Recognise each note and name its value.
$\Rightarrow$ Show that one note can represent many pounds and may also be worth many times the value of another note.
$\Rightarrow$ Count in $2 \mathrm{~s}, 5 \mathrm{~s}$ and 10 s to count money Time
$\Rightarrow$ Describe, sort and order events.
$\Rightarrow$ Name the days of the week.
$\Rightarrow$ Explore and use a calendar to learn about the months of the year, picking out some special dates within the year e.g. their birthday.
$\Rightarrow$ Read the time to the hour and draw the hands to show o'clock.
$\Rightarrow$ Read the time to the half hour and draw the hands to show half past.
$\Rightarrow$ Explore equipment (stopwatches, sand timers etc.) to measure durations of time e.g. how long it takes to run around the playground or how many star jumps you can do in 30 seconds.
$\Rightarrow$ Compare amounts of time (faster, slower, earlier, later).

- 'The hour hand is the shorter hand.'
- 'The minute hand is the longer hand.'
- 'When the minute hand is pointing to 12 , it is an o'clock time.
- 'When the minute hand is pointing to 6 , it is a half past time.'
- 'The object that is up is light.'
- 'The object that is down is heavy.'

Vocabulary

## - Long, longer, longest

- Short, shorter, shortest
- Tall, taller, tallest
- Equal to
- Compare
- Measure
- Ruler
- Heavy, heavier, heaviest
- Light, lighter, lightest
- Weigh
- Balance
- Scales
- Full, empty
- Container
- More, less
- Large, larger, largest
- Small, smaller, smallest
- Coin
- Note
- Before, after
- First, next, then
- Morning, Afternoon, Evening
- Today, Yesterday, Tomorrow
- Day, Week, Month, Year
- O'clock, Half past
- Hour, Minute, Second
- Hand
- Faster, Slower
- Earlier, Later
- Pound $£ /$ Pence p
- Coin/note
- Value
- Total
- Difference
- Date


## COMMON MISCONCEPTIONS

## Key Definitions

- Larger objects are always heavier or taller containers always have a larger capacity
- Larger quantities of coins are worth more than smaller quantities.
- Larger coins are worth more than smaller coins.
- Mixing up the hour and minute hands.
- Not lining up non-standard units correctly when measuring objects or using non-standard units of different lengths to measure an object inaccurately.
- Measuring objects starting at the end of the ruler instead of 0 .
$\Rightarrow$ Value - the amount a digit/thing is worth.
$\Rightarrow$ Mass and weight - how heavy something is.
$\Rightarrow$ Volume - amount of space occupied by an object (measured in $\mathrm{cm}^{3}$ ).
$\Rightarrow$ Capacity - the amount a container or object can hold, (measured in $\mathrm{ml} / \mathrm{l}$ ).
$\Rightarrow$ Length - how long something is.
$\Rightarrow$ Height - how tall something is.

| KEY OBJECTIVES |
| :--- |
| - Recognise and name common 2-D and 3-D shapes, <br> including: |
| $\Rightarrow$2-D shapes [for example, rectangles (including <br> squares), circles and triangles]; |
| $\Rightarrow$3-D shapes [for example, cuboids (including cubes), <br> pyramids and spheres]. |

- Explore characteristics of everyday objects and shapes and use mathematical language to describe them.
- Select a particular named shape.
- Use mathematical names for 'solid' 3D shapes and 'flat' 2D shapes, and mathematical terms to describe shapes.
- Describe position, direction and movement, including whole, half, quarter and three-quarter turns.
- Use everyday language to talk about position to compare objects and to solve problems.
- Describe their relative position such as 'behind' or 'next to'.


## Possible Teaching Sequence

## Recognise and name common 2-D and 3-D shapes...

$\Rightarrow$ Name simple 3D shapes presented in different orientations.
$\Rightarrow$ Sort and group 3D shapes according to simple properties (including type, size, colour).
$\Rightarrow$ Explore whether 3D shapes can roll or be stacked.
$\Rightarrow$ Consider 2D shapes they can see as faces on 3D shapes and name them.
$\Rightarrow$ Describe and compare simple properties of 2D shapes.
$\Rightarrow$ Sort and group 2D shapes according to simple properties (including type, size, colour).
$\Rightarrow$ Use 2D and 3D shapes (in different orientations) to make and complete patterns.

## Describe position, direction and movement..

$\Rightarrow$ Describe turns made by shapes and objects (using the language full, half, quarter and three-quarter).
$\Rightarrow$ Describe position and direction of shapes and objects from different starting positions (left, right, forwards, backwards).
$\Rightarrow$ Describe position of shapes and objects in relation to others (top, bottom, above, below, in between).

STEM SENTENCES
Vocabulary

- 'Full turn means you or the object will end up - Cube facing the same way again.'
- 'Half turn means you or the object will face the opposite way.'
- Cuboid
- Cylinder
- Pyramid
- Cone
- Sphere
- Roll
- Stack
- Sort
- Group
- Faces
- Flat/flat face
- Curved/curved face
- Edge
- Triangle
- Square
- Rectangle
- Circle
- Sides
- Turn
- Full/Half/quarter/three-quarter
- Position
- Direction
- Left/Right
- Forwards/Backwards
- Top/Bottom
- Above/Below
- In between
- Thinking that a square is no longer a square if it has been rotated.

- Mixing up left and right.
- Name 3D shapes by the name of their 2D face.
$\Rightarrow$ 2D shape - a shape that is flat (with only 2 dimensions).
$\Rightarrow$ 3D shape - a shape that has a solid form (with 3 dimensions).
$\Rightarrow$ Pattern - a sequence that repeats itself over and over again.
$\Rightarrow$ Direction - the way something is going.
$\Rightarrow$ Position - where something is in comparison to something else.
$\Rightarrow$ Vertex - a point where two or more sides/edges meet.


## Problem-Solving and reasoning should be applied throughout all teaching not just within isolated lessons.

## Problem Solving and Reasoning

The following strategies are a very powerful way of developing pupils' problem-solving and reasoning skills and can be used flexibly across all strands of maths.

- Spot the mistake/Which is different?
- True or false?
- What comes next?
- Do, then explain.
- Make up an example/Write more statements/Create a question/Another and another.
- Possible answers/other possibilities.
- Missing numbers/Missing symbols/Missing information.
- Working backwards/Use of inverse/Undoing/ Unpicking.
- Hard and easy questions/Order from easiest to hardest.
- What else do you know?/Use a fact
- Fact families.
- Convince me/Prove it/Generalising/Explain thinking
- Connected calculations.
- Make an estimate/Size of an answer.
- Always, sometimes, never
- Making links/Application.
- Can you find?
- Odd one out.
- Complete/continue the pattern.
- Ordering.

The answer is...

- Visualising
- Answer free zone.
- Justify.
Place Value
Eva is counting from 38 to 24.
Will she say the number 39?
Will she say the number 29?
Will she say the number 19?
Explain how you know.
Mo says that it is hard to find half of an odd
number. Do you agree with Mo? Explain your
answer.

