

# **WELCOME**

## **to the Year 1 & 2**

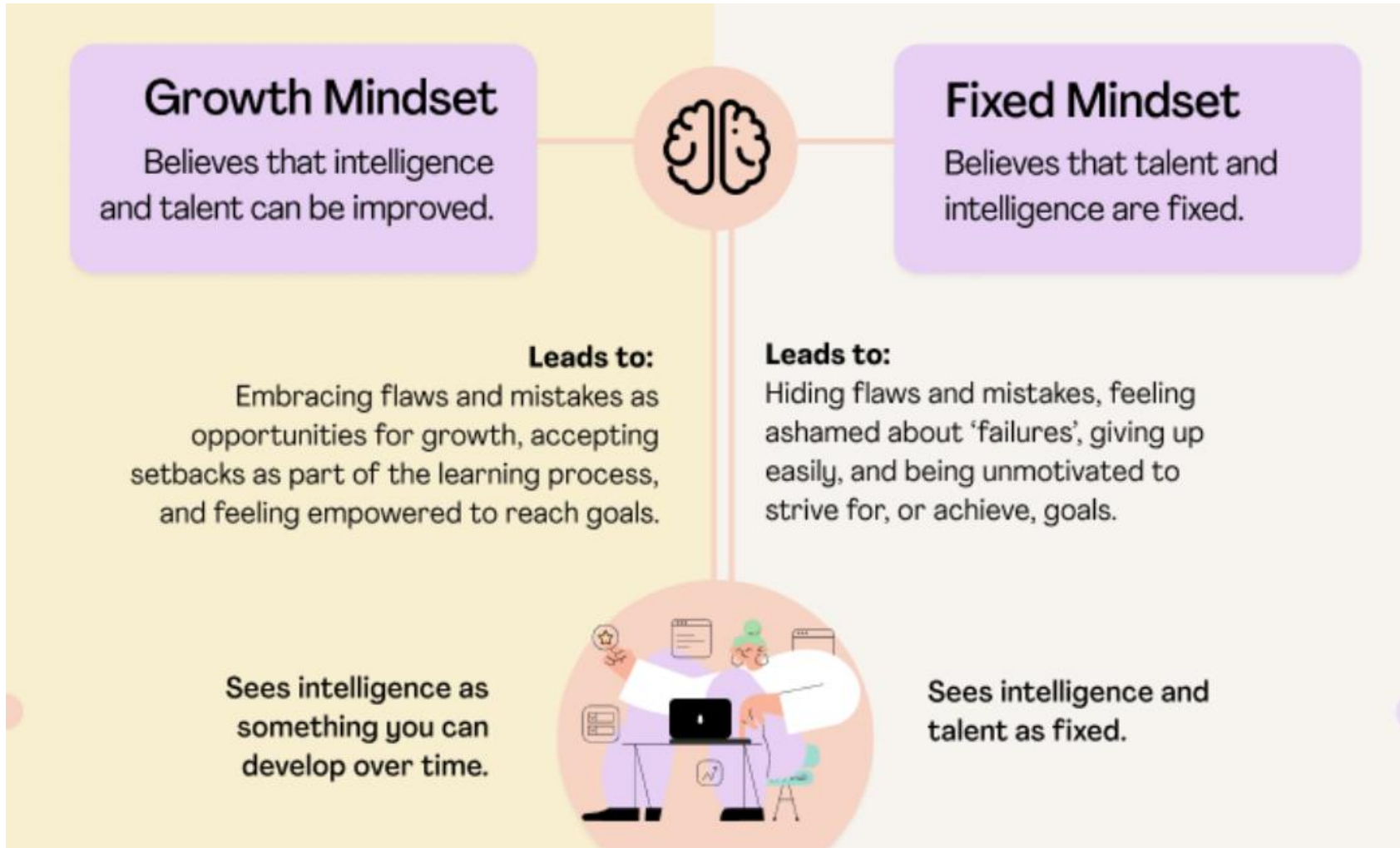
### **Calculation Workshop**



## Aims:

- ▶ To highlight the importance of Growth Mindset in learning
- ▶ To share how calculations are taught in Yr1 & 2
- ▶ To share expectations for recall facts for Y1 & Y2 pupils
- ▶ To share a range of approaches for supporting children with learning recall facts at home

# Growth Mindset!



- Everyone can achieve in Maths.
- Hard work, effort and commitment all contribute towards success.
- Children's belief in their potential is heavily influenced by perceptions of the adults around them.

# How can we help?

## DEVELOPING A **GROWTH MINDSET**



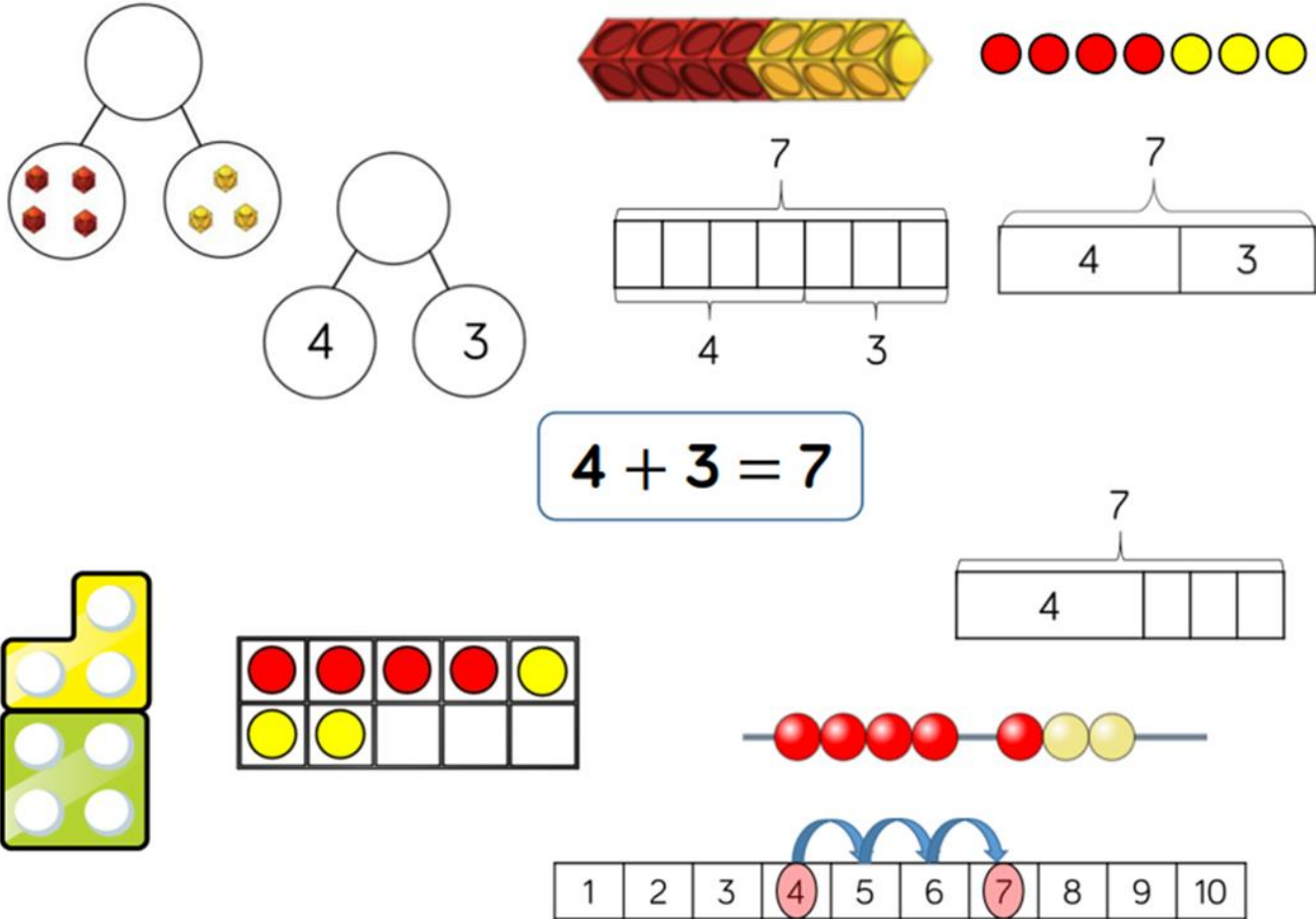
<b>INSTEAD OF.....</b>	<b>TRY THINKING....</b>
I'm not good at this	What am I missing?
I give up	I'll use a different strategy
It's good enough	Is this really my best work?
I can't make this any better	I can always improve
This is too hard	This may take some time
I made a mistake	Mistakes help me to learn
I just can't do this	I am going to train my brain
I'll never be that smart	I will learn how to do this
Plan A didn't work	There's always Plan B
My friend can do it	I will learn from them

## We are not covering the whole Maths curriculum in this presentation!

The principal focus of mathematics teaching in key stage 1 is to ensure that pupils develop confidence and mental fluency with whole numbers, counting and place value. This should involve working with numerals, words and the **four operations**, including with practical resources.

- ▶ Place Value
- ▶ **Addition and subtraction**
- ▶ **Multiplication and division**
- ▶ Measurement
- ▶ Geometry - properties and shapes, position and direction
  
- ▶ **Fluency**
- ▶ Reasoning
- ▶ Problem solving

# Year 1 Addition

Skill: Add 1-digit numbers within 10	Year: 1
 <p><math>4 + 3 = 7</math></p>	<p>When adding numbers to 10, children can explore both aggregation and augmentation.</p> <p>The part-whole model, discrete and continuous bar model, number shapes and ten frame support aggregation.</p> <p>The combination bar model, ten frame, bead string and number track all support augmentation.</p>

# Recall facts - Number bonds

$0 + 2 = 2$

$0 + 3 = 3$

$0 + 4 = 4$

$0 + 5 = 5$

$0 + 6 = 6$

$2 + 0 = 2$

$1 + 2 = 3$

$1 + 3 = 4$

$1 + 4 = 5$

$1 + 5 = 6$

$1 + 1 = 2$

$2 + 1 = 3$

$2 + 2 = 4$

$2 + 3 = 5$

$2 + 4 = 6$

$3 + 0 = 3$

$3 + 1 = 4$

$3 + 2 = 5$

$3 + 3 = 6$

$4 + 0 = 4$

$4 + 1 = 5$

$4 + 2 = 6$

$5 + 0 = 5$

$5 + 1 = 6$

$6 + 0 = 6$

# Recall Facts - Number bonds

$$0 + 7 = 7$$

$$1 + 6 = 7$$

$$2 + 5 = 7$$

$$3 + 4 = 7$$

$$4 + 3 = 7$$

$$5 + 2 = 7$$

$$6 + 1 = 7$$

$$7 + 0 = 7$$

$$0 + 8 = 8$$

$$1 + 7 = 8$$

$$2 + 6 = 8$$

$$3 + 5 = 8$$

$$4 + 4 = 8$$

$$5 + 3 = 8$$

$$6 + 2 = 8$$

$$7 + 1 = 8$$

$$8 + 0 = 8$$

$$0 + 9 = 9$$

$$1 + 8 = 9$$

$$2 + 7 = 9$$

$$3 + 6 = 9$$

$$4 + 5 = 9$$

$$5 + 4 = 9$$

$$6 + 3 = 9$$

$$7 + 2 = 9$$

$$8 + 1 = 9$$

$$9 + 0 = 9$$

$$0 + 10 = 10$$

$$1 + 9 = 10$$

$$2 + 8 = 10$$

$$3 + 7 = 10$$

$$4 + 6 = 10$$

$$5 + 5 = 10$$

$$6 + 4 = 10$$

$$7 + 3 = 10$$

$$8 + 2 = 10$$

$$9 + 1 = 10$$

$$10 + 0 = 10$$



## Making Connections



$$5 + 2 = 7$$

What do you notice?



$$15 + 2 = 17$$

# Year 1 / 2 Addition

# Skill: Add 1 and 2-digit numbers to 20

Year: 1/2

The figure illustrates the addition of 8 and 7 to reach 15 using various mathematical tools:

- Tree Diagram:** A circle with two branches, one labeled 7 and the other 8.
- Ten-Frame:** A rectangular frame divided into two sections, with 8 in the left section and 7 in the right section. The total 15 is written above the frame.
- Base Ten Blocks:** Two vertical rods. The left rod is blue with 8 white dots. The right rod is green with 7 white dots.
- Number Line:** A horizontal line with numbers from 0 to 20. A blue arrow starts at 8 and points to 10, labeled +2. Another blue arrow starts at 10 and points to 15, labeled +5.
- Bead String:** A horizontal string with 15 beads. The first 8 beads are red, and the next 7 beads are white.
- Base Ten Blocks (Exchange):** A diagram showing 10 individual sticks being bundled together into a single bundle of 10 sticks, with an arrow indicating the exchange.
- Equation Box:** A box containing the equation  $8 + 7 = 15$ .
- Base Ten Blocks (Arrays):** Two 2x5 grids. The left grid has 8 red dots in the top row and 7 yellow dots in the bottom row. The right grid has 8 red dots in the top row and 7 yellow dots in the bottom row.
- Equation with Partitioning:** The equation  $8 + 7 = 15$  with a bracket under 8 labeled 2 and a bracket under 7 labeled 5.

When adding one-digit numbers that cross 10, it is important to highlight the importance of ten ones equalling one ten. In Year 1, this is only done just by counting on. From Year 2, use different manipulatives can be used to represent this exchange alongside number lines to support children in understanding how to partition their jumps.

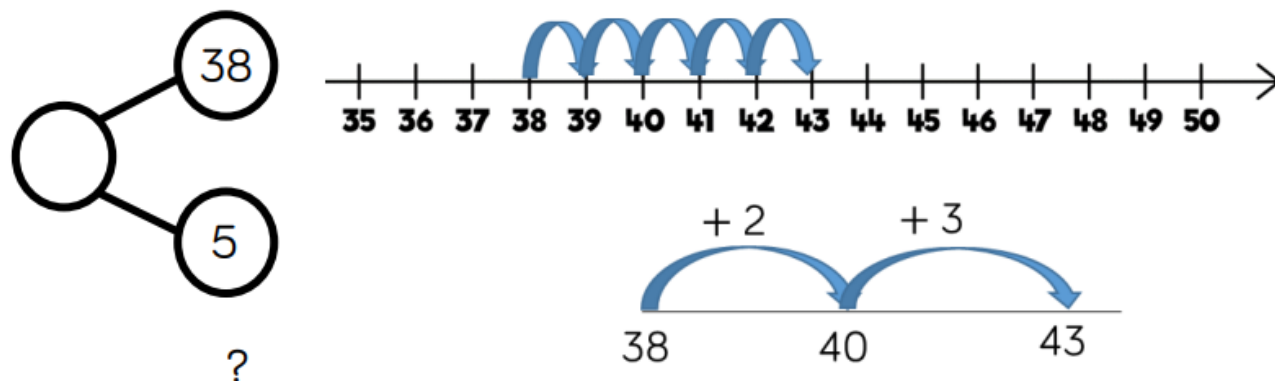
# Year 2 Addition

Skill: Add three 1-digit numbers	Year: 2
<div data-bbox="384 391 899 801"></div> <div data-bbox="965 398 1684 668"></div> <div data-bbox="927 819 1398 929"><math display="block">7 + 6 + 3 = 16</math></div> <div data-bbox="392 1015 843 1258"></div> <div data-bbox="886 1058 1128 1200"><math display="block">7 + 6 + 3 = 16</math> 10</div> <div data-bbox="1212 1001 1702 1322"></div>	<p>When adding three 1-digit numbers, children should be encouraged to look for number bonds to 10 or doubles to add the numbers more efficiently.</p> <p>This supports children in their understanding of commutativity.</p> <p>Manipulatives that highlight number bonds to 10 are effective when adding three 1-digit numbers.</p>

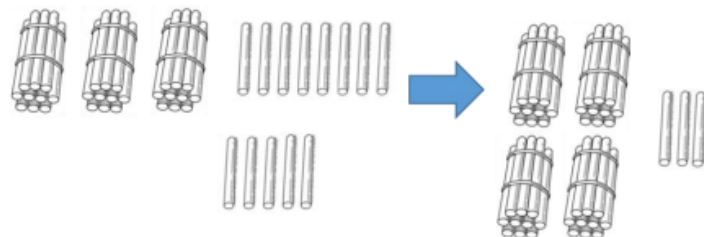
# Year 2/3 Addition

Skill: Add 1-digit and 2-digit numbers to 100

Year: 2/3



$$38 + 5 = 43$$



1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

When adding single digits to a two-digit number, children should be encouraged to count on from the larger number.

They should also apply their knowledge of number bonds to add more efficiently e.g.  $8 + 5 = 13$  so  $38 + 5 = 43$ .

Hundred squares and straws can support children to find the number bond to 10.



# Year 1 Subtraction

Skill: Subtract 1-digit numbers within 10	Year: 1
<div data-bbox="293 421 751 664"></div> <div data-bbox="369 721 675 842"></div> <div data-bbox="280 935 624 1170"></div> <div data-bbox="458 1178 802 1342"></div> <div data-bbox="802 821 1133 928"><div>7 - 3 = 4</div></div> <div data-bbox="955 385 1363 578"></div> <div data-bbox="980 628 1439 778"></div> <div data-bbox="879 971 1516 1135"><div>First      Then      Now</div><div></div></div> <div data-bbox="980 1170 1439 1235"></div> <div data-bbox="853 1292 1567 1363"></div>	<p>Part-whole models, bar models, ten frames and number shapes support partitioning.</p> <p>Ten frames, number tracks, single bar models and bead strings support reduction.</p> <p>Cubes and bar models with two bars can support finding the difference.</p>

# Year 1/2 Subtraction

Skill: Subtract 1 and 2-digit numbers to 20	Year: 1/2
<p><math>14 - 6 = 8</math></p>	<p>In Year 1, subtracting one-digit numbers that cross 10, is done by counting back, using objects, number tracks and number lines. From Year 2, children should be encouraged to find the number bond to 10 when partitioning the subtracted number. Ten frames, number shapes and number lines are particularly useful for this.</p>

# Year 2/3 Subtraction

Skill: Subtract 1 and 2-digit numbers to 100	Year: 2/3						
<div data-bbox="318 392 598 692"></div> <div data-bbox="700 392 1414 564"></div> <div data-bbox="840 578 1592 806"></div> <div data-bbox="318 821 777 935"><table border="1"><tr><td data-bbox="318 821 598 935">?</td><td data-bbox="598 821 777 935">28</td></tr></table></div> <div data-bbox="840 835 1312 949"><div><math>65 - 28 = 37</math></div></div> <div data-bbox="331 1035 853 1306"><table border="1"><thead><tr><th data-bbox="331 1035 598 1085">Tens</th><th data-bbox="598 1035 853 1085">Ones</th></tr></thead><tbody><tr><td data-bbox="331 1085 598 1306"></td><td data-bbox="598 1085 853 1306"></td></tr></tbody></table></div>	?	28	Tens	Ones			<p>Children can also use a blank number line to count back to find the difference. Encourage them to jump to multiples of 10 to become more efficient.</p> <div data-bbox="1668 849 2068 1385"></div>
?	28						
Tens	Ones						

# Recall Facts



Shut the box



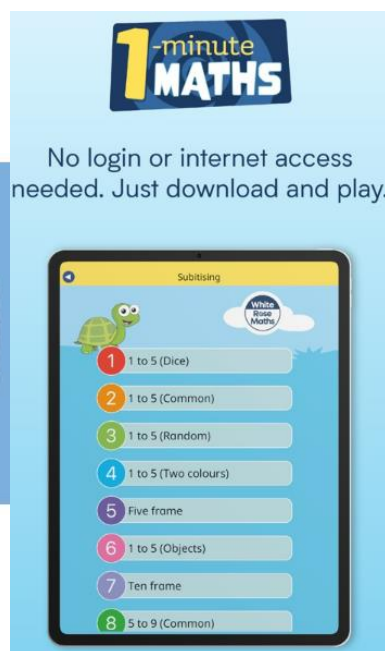
21s, Blackjack, Pontoon



[topmarks.co.uk/maths-games/hit-the-button](http://topmarks.co.uk/maths-games/hit-the-button)



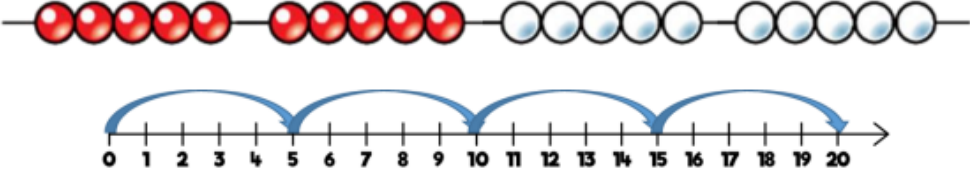

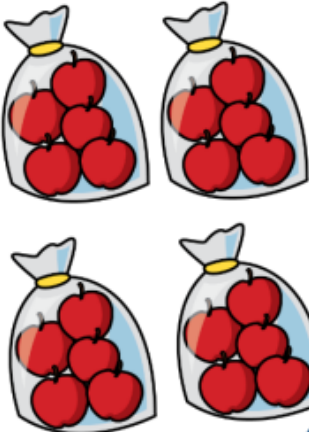
1-Minute Maths



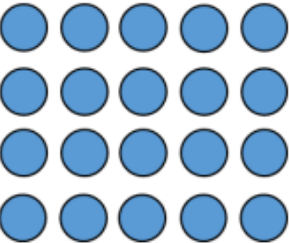
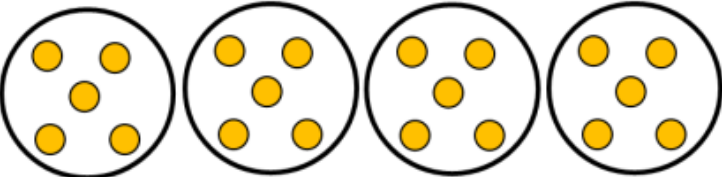
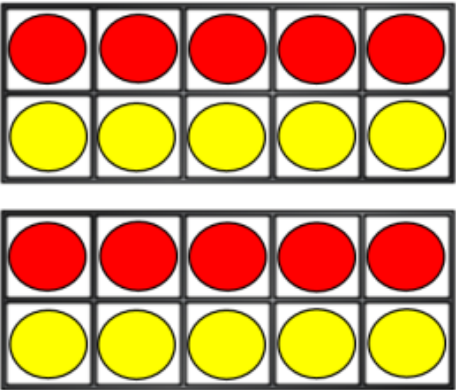
Hit the Button Maths (£2.99)



# Year 1 & 2 Multiplication



One bag holds 5 apples.  
How many apples do 4 bags hold?

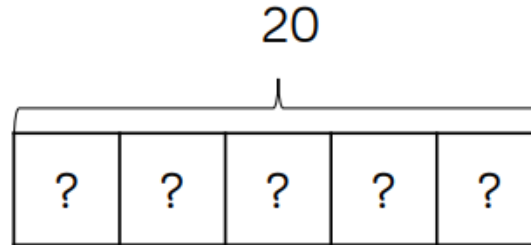

$$5 + 5 + 5 + 5 = 20$$
$$4 \times 5 = 20$$
$$5 \times 4 = 20$$

Children represent multiplication as repeated addition in many different ways.

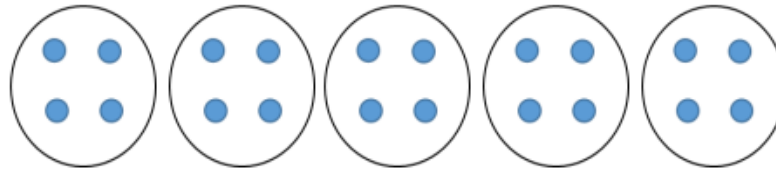
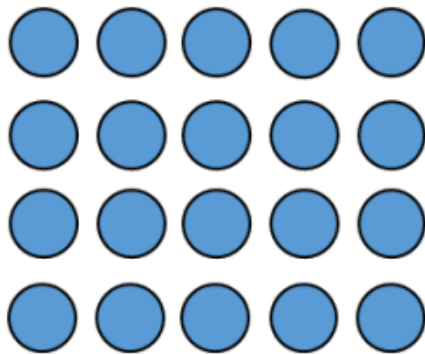
In Year 1, children use concrete and pictorial representations to solve problems. They are not expected to record multiplication formally.

In Year 2, children are introduced to the multiplication symbol.

# Year 1 & 2 Division by sharing



There are 20 apples altogether.  
They are shared equally between 5 bags.  
How many apples are in each bag?



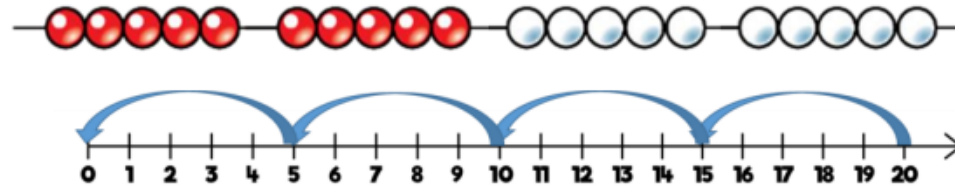
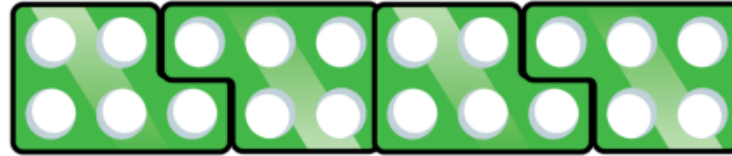
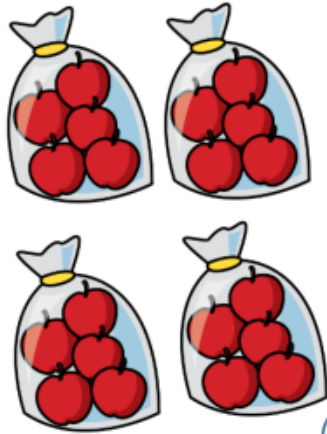
$$20 \div 5 = 4$$

Children solve problems by sharing amounts into equal groups.

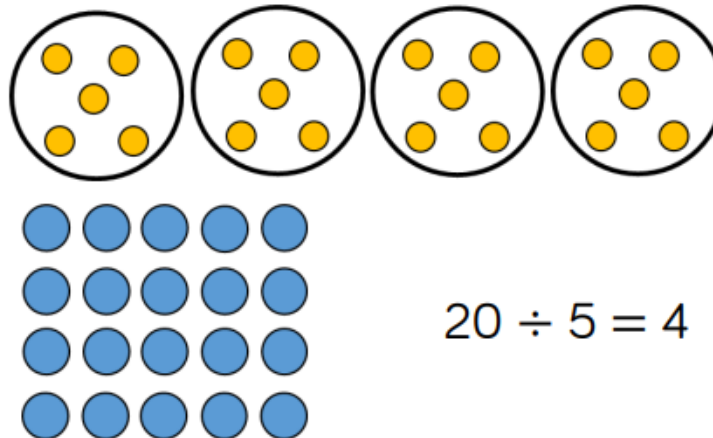
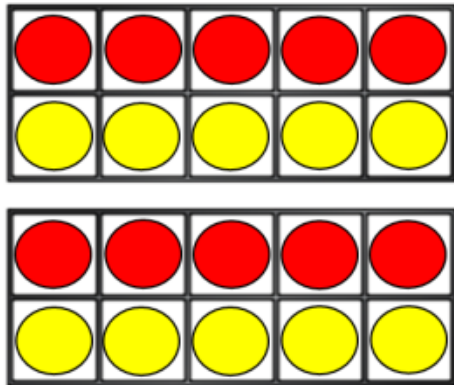
In Year 1, children use concrete and pictorial representations to solve problems. They are not expected to record division formally.

In Year 2, children are introduced to the division symbol.

# Year 1 & 2 Division by grouping



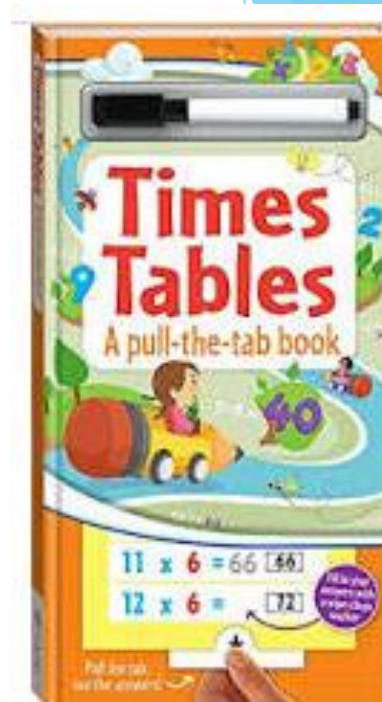
There are 20 apples altogether.  
They are put in bags of 5.  
How many bags are there?



$$20 \div 5 = 4$$

Children solve problems by grouping and counting the number of groups. Grouping encourages children to count in multiples and links to repeated subtraction on a number line. They can use concrete representations in fixed groups such as number shapes which helps to show the link between multiplication and division.

# Recall - Times Tables Facts



1-Minute Maths



[topmarks.co.uk/maths-games/hit-the-button](https://topmarks.co.uk/maths-games/hit-the-button)



Hit the Button Maths (£2.99)



# Any Questions?



## I can change my **MINDSET** with my words!



I will figure out how to do it!



I am on the right track

I can always improve, so I will keep trying



This will take time and effort, I will do it!



I am going to train my brain in maths



Plan A did not work, I will try plan B

