

Calculation Workshop: Y1



Avonwood Primary School

The best in everyone™

Part of United Learning



YEAR 1: Addition

Key vocabulary

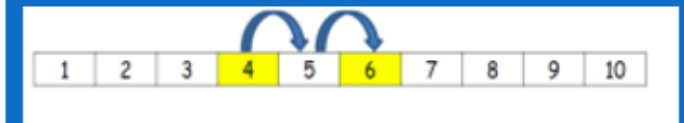
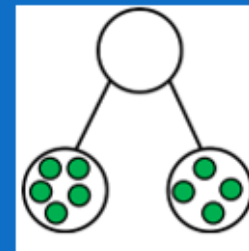
Place value: ones, tens, column

Addition: sum, addend, add

Manipulatives

A collage of mathematical manipulatives. On the left, there are two vertical rods of base ten blocks, one green and one red. Next to them is a ten-frame with two rows of five red dots each. To the right is another ten-frame with three white dots in the top row and two white dots in the bottom row. Further right is a plus sign followed by a ten-frame with two white dots in the top row, followed by an equals sign. To the right of the equals sign are five teddy bear counters: three yellow and two purple. At the bottom right, the equation $3 + 2 = 5$ is written in a simple font.

Representations



Key learning



Make a tower using two different-coloured cubes.

Ask children to complete the sentences.

There are _____ red cubes.

There are _____ yellow cubes

There are _____ cubes altogether.

Get children to repeat this for other towers of cubes.



- Complete the sentences to match the ten frame.

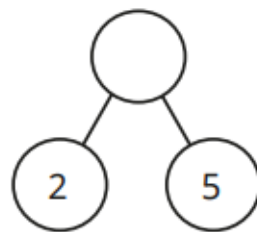


- ▶ There are _____ stars.
- ▶ There are _____ circles.
- ▶ There are _____ shapes altogether.

- Here are some flowers.



Complete the part-whole model and number sentence to match the flowers.



$$\underline{\quad} + \underline{\quad} = \underline{\quad}$$

- Complete the table to match the birds.



	$\underline{\quad} + \underline{\quad} = \underline{\quad}$ $\underline{\quad} = \underline{\quad} + \underline{\quad}$
<p>_____ is a part. _____ is a part. The whole is _____</p>	

Make up a story to match the part-whole model.



YEAR 1: Addition

Factual knowledge

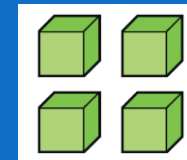
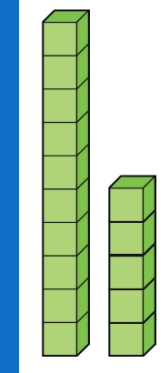
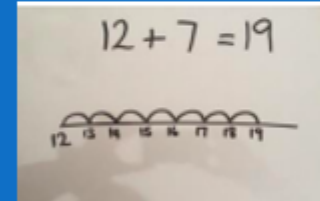
Number Bonds
Story to 10

2 Story of 2 1+1=2 2+0=2 0+2=2 2-1=1 2-2=0	3 Story of 3 1+2=3 2+1=3 3+0=3 3-1=2 3-2=1	4 Story of 4 1+3=4 2+2=4 3+1=4 4+0=4 4-1=3 4-2=2 4-3=1
5 Story of 5 1+4=5 2+3=5 3+2=5 4+1=5 5+0=5 5-1=4 5-2=3 5-3=2 5-4=1	6 Story of 6 1+5=6 2+4=6 3+3=6 4+2=6 5+1=6 6+0=6 6-1=5 6-2=4 6-3=3 6-4=2 6-5=1	7 Story of 7 1+6=7 2+5=7 3+4=7 4+3=7 5+2=7 6+1=7 7+0=7 7-1=6 7-2=5 7-3=4 7-4=3 7-5=2 7-6=1
8 Story of 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 8-1=7 8-2=6 8-3=5 8-4=4 8-5=3 8-6=2 8-7=1	9 Story of 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 9-1=8 9-2=7 9-3=6 9-4=5 9-5=4 9-6=3 9-7=2 9-8=1	10 Story of 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 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

Number Bonds to 20
There are 21 ways to make 20

0+20 = 20	20+0 = 20
1+19 = 20	19+1 = 20
2+18 = 20	18+2 = 20
3+17 = 20	17+3 = 20
4+16 = 20	16+4 = 20
5+15 = 20	15+5 = 20
6+14 = 20	14+6 = 20
7+13 = 20	13+7 = 20
8+12 = 20	12+8 = 20
9+11 = 20	11+9 = 20
10+10 = 20	

Procedural knowledge



Fluency video

Fluency Fast Facts - Monday



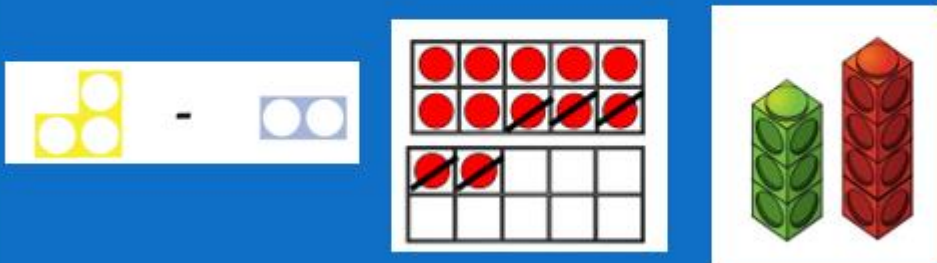
$$0 + 10 =$$



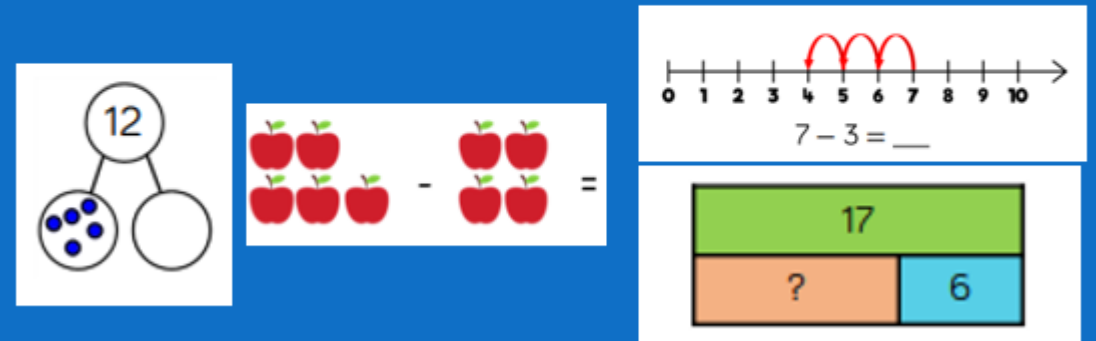
Key vocabulary

Subtraction: difference, subtrahend, subtract, partition

Manipulatives



Representations





YEAR 1: Subtraction

Factual knowledge

+		Addition and Subtraction Facts to 20		-	
$20 + 0 = 20$			$14 + 6 = 20$		
$0 + 20 = 20$			$6 + 14 = 20$		
$20 - 0 = 20$			$20 - 14 = 6$		
$20 - 20 = 0$			$20 - 6 = 14$		
$14 + 1 = 15$			$13 + 7 = 20$		
$1 + 14 = 15$			$7 + 13 = 20$		
$20 - 14 = 6$			$20 - 13 = 7$		
$20 - 1 = 19$			$20 - 7 = 13$		
$18 + 2 = 20$			$13 + 8 = 20$		
$2 + 18 = 20$			$8 + 12 = 20$		
$20 - 18 = 2$			$20 - 12 = 8$		
$20 - 2 = 18$			$20 - 8 = 12$		
$17 + 3 = 20$			$11 + 9 = 20$		
$3 + 17 = 20$			$9 + 11 = 20$		
$20 - 17 = 3$			$20 - 11 = 9$		
$20 - 3 = 17$			$20 - 9 = 11$		
$16 + 4 = 20$			$10 + 10 = 20$		
$4 + 16 = 20$			$20 - 10 = 10$		
$20 - 16 = 4$					
$20 - 4 = 16$					
$15 + 5 = 20$					
$5 + 15 = 20$					
$20 - 15 = 5$					
$20 - 5 = 15$					

Procedural knowledge

$$18 - 7 = 11$$
$$16 - 8 = 8$$

Key learning



Take the class outside and find some leaves.

Ask children how many there are.

Now remove some of the leaves.

Ask children how many you took away.

Ask children how many are left.

Get children to tell a story about what has happened.

First there were _____ leaves.

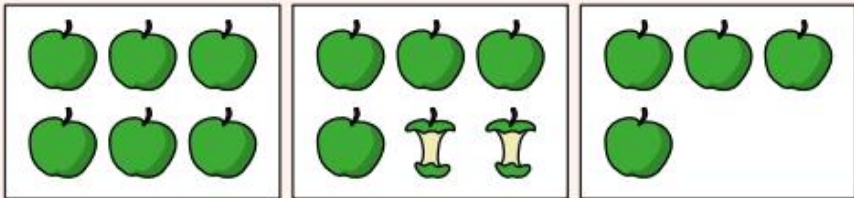
Then _____ leaves were taken away.

Now there are _____ leaves.



Show children the pictures.

Ask them to tell a "first, then, now" story that matches the pictures.



- There are 7 birds in a tree.

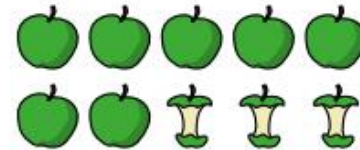
3 birds fly away.

Complete the sentences.

- ▶ First there were _____ birds in the tree.
- ▶ Then _____ of the birds flew away.
- ▶ Now there are _____ birds in the tree.



- Complete the sentences to write a story.



- ▶ First there were _____ apples.
- ▶ Then _____ of the apples were eaten.
- ▶ Now there are _____ apples.

Draw a part-whole model for the story.

- Write a story to match the pictures.



Draw a part-whole model for your story.

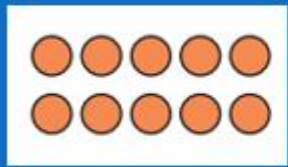


YEAR 1: Multiplication

Key vocabulary

Multiplication: **product**, **multiply**, **multiple**, **repeated addition**

Manipulatives



Representations

?	?	?	40	42	44	46
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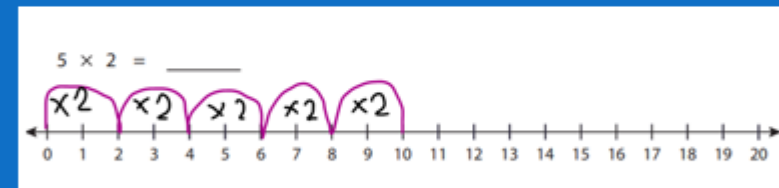


YEAR 1: Multiplication

Factual knowledge

2 times table	5 times table	10 times table
0 x 2 = 0	0 x 5 = 0	0 x 10 = 0
1 x 2 = 2	1 x 5 = 5	1 x 10 = 10
2 x 2 = 4	2 x 5 = 10	2 x 10 = 20
3 x 2 = 6	3 x 5 = 15	3 x 10 = 30
4 x 2 = 8	4 x 5 = 20	4 x 10 = 40
5 x 2 = 10	5 x 5 = 25	5 x 10 = 50
6 x 2 = 12	6 x 5 = 30	6 x 10 = 60
7 x 2 = 14	7 x 5 = 35	7 x 10 = 70
8 x 2 = 16	8 x 5 = 40	8 x 10 = 80
9 x 2 = 18	9 x 5 = 45	9 x 10 = 90
10 x 2 = 20	10 x 5 = 50	10 x 10 = 100
11 x 2 = 22	11 x 5 = 55	11 x 10 = 110
12 x 2 = 24	12 x 5 = 60	12 x 10 = 120

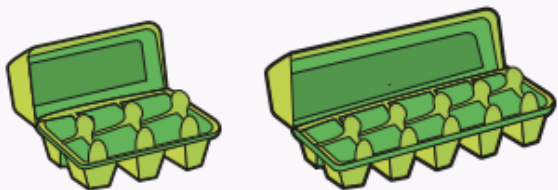
Procedural knowledge



Key learning



Use cubes and a range of containers such as bun trays, egg boxes and paint pallets.

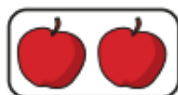


Allow children to explore using the cubes and discuss all the different ways to fill the containers.

There are _____ rows/columns.

There are _____ cubes in each row/column.

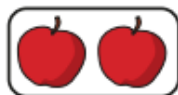
- Use counters to make an array that matches the apples.



Complete the sentences.



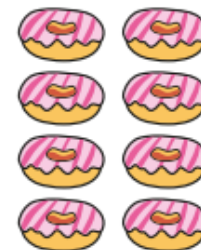
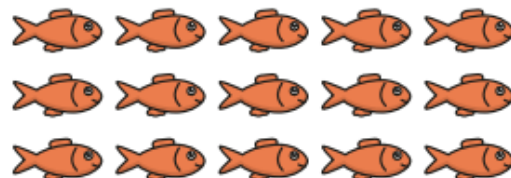
There are _____ apples in each row.



There are _____ rows.

There are _____ apples altogether.

- Here are some arrays.



- ▶ Count the **rows** and complete the sentences to describe each array.

There are _____ rows of _____

There are _____ altogether.

- ▶ Count the **columns** and complete the sentences to describe each array.

There are _____ columns of _____

There are _____ altogether.

What do you notice?

- Draw an array to match the story.

There are 5 trees.
There are 2 birds in each tree.

Write a number sentence to match your array.

YEAR 1: Division



Key vocabulary

Division: quotient, divisor, dividend, divide, repeated subtraction

Manipulatives

$$10 \div 2$$

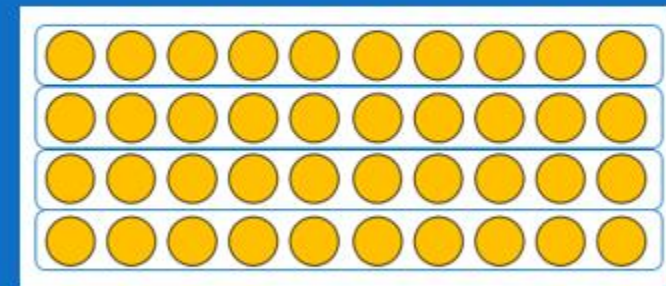
Sharing



Grouping



Representations





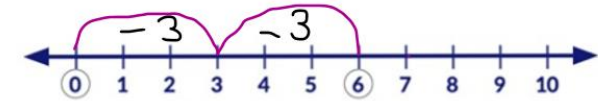
YEAR 1: Division

Factual knowledge

2 times table			5 times table			10 times table		
0	x	2 = 0	0	x	5 = 0	0	x	10 = 0
1	x	2 = 2	1	x	5 = 5	1	x	10 = 10
2	x	2 = 4	2	x	5 = 10	2	x	10 = 20
3	x	2 = 6	3	x	5 = 15	3	x	10 = 30
4	x	2 = 8	4	x	5 = 20	4	x	10 = 40
5	x	2 = 10	5	x	5 = 25	5	x	10 = 50
6	x	2 = 12	6	x	5 = 30	6	x	10 = 60
7	x	2 = 14	7	x	5 = 35	7	x	10 = 70
8	x	2 = 16	8	x	5 = 40	8	x	10 = 80
9	x	2 = 18	9	x	5 = 45	9	x	10 = 90
10	x	2 = 20	10	x	5 = 50	10	x	10 = 100
11	x	2 = 22	11	x	5 = 55	11	x	10 = 110
12	x	2 = 24	12	x	5 = 60	12	x	10 = 120

Procedural knowledge

6 apples are divided in groups of 3. How many groups of apples will be formed?



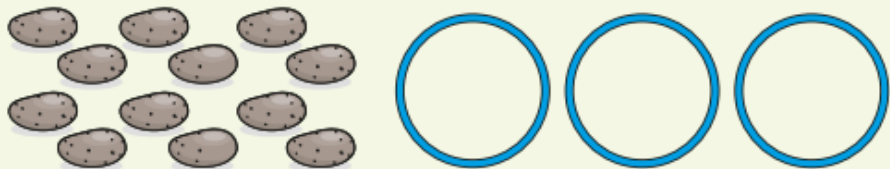
$$\square \div \square = \square \text{ groups of apples}$$



Key learning



Take children outside to collect 12 sticks or pebbles. Ask them to share their items equally between 3 hoops.



Can they share them equally between 2/4/6 hoops?

Can they share them equally between 5/7 hoops?

Repeat for other numbers.



Provide modelling clay to represent cupcakes and counters to represent sweets.

Children can then explore different ways of decorating the cupcakes.

Tell children to make 3 cupcakes. Give them 15 sweets to share equally between the 3 cupcakes. Ask how many sweets there are on each cupcake.

Repeat for different numbers of cupcakes and sweets.

- Share the muffins equally between the 2 plates.



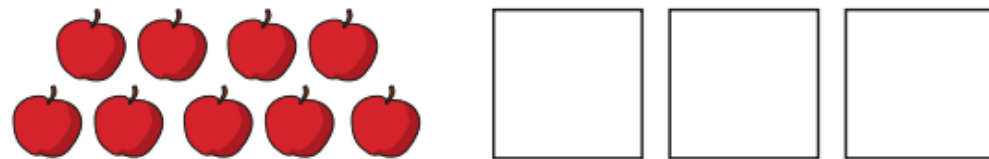
Complete the sentences.

There are _____ muffins.

They are shared equally between _____ plates.

There are _____ muffins on each plate.

- Share the apples equally between the 3 boxes.



Complete the sentences.

_____ apples are shared equally between _____ boxes.

There are _____ in each group.

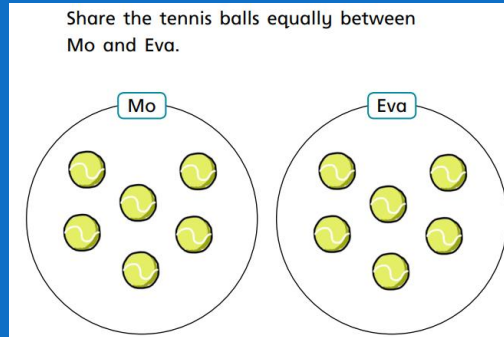
- Fay has 16 bananas.
She shares them equally between 4 people.
How many bananas does each person get?



YEAR 1: Fractions

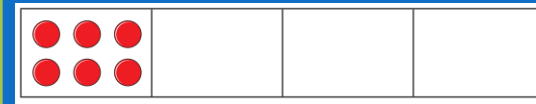
Manipulatives

The recommended manipulatives (physical resources) for fractions are **counters or real-life objects**.

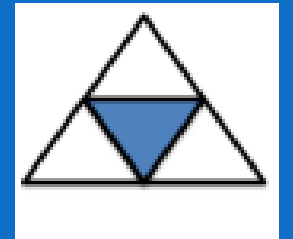
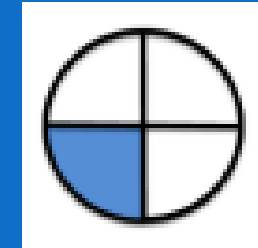
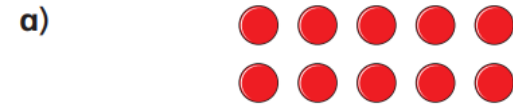


Representations

The key representations are **shapes, bar models and arrays**.

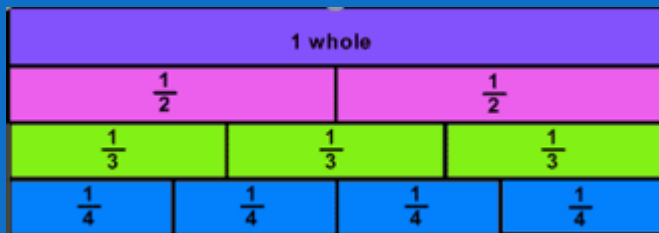


Find half of each group.



Factual knowledge

The key factual knowledge includes the recall and recognition of equivalent fractions of half and two quarters.



Procedural knowledge