

Year 2 Parent Maths Workshop



Aims of this workshop

- ▶ Explain taught mathematics strategies in year one
- ▶ To familiarise you with taught processes using concrete materials
- ▶ How simple objects around your house can have a huge impact on your child's learning.
- ▶ How to support your child at home

- ▶ **MATHS IS EVERYWHERE**

Positivity is the key...

- ▶ Children who succeed at maths are usually the ones who enjoy it most, so remember - maths is fun, everyone!
- ▶ Something we aim to promote in year one.... Even if that's not the way you remember it from your own childhood. We all know how easily children pick up on the things we say, so it's vital that you don't pass on your dislike or fear of maths by saying things like 'I was never any good at maths' or 'I hated maths at school.'
- ▶ We want mathematics to be a positive experience for everyone.

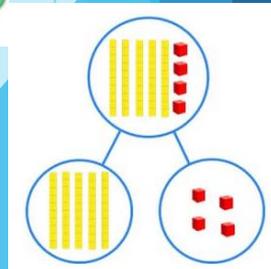
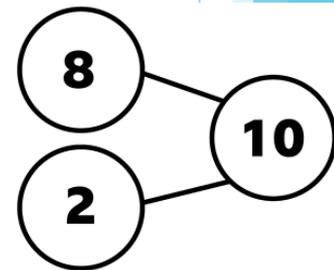
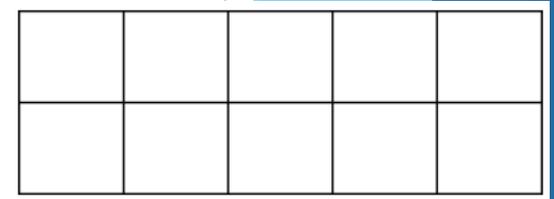
Maths Mastery: fluency, reasoning and problem solving

▶ Fluency:

- ▶ involves knowing key mathematical facts and being able to recall them quickly and accurately.
- ▶ This means being able to apply the same skill and knowledge to multiple contexts and be able to choose the most appropriate method for a particular task.

▶ We teach the content using a range of concrete resources to deepen the children's understanding by having them represent it in a variety of ways, ensuring that all children have sufficient time to practise what has been taught.

▶ We move from concrete materials, to pictorial representations to abstract questions. We encourage children to continue to use the resources to solve their problems and help to justify the answers.



Reasoning:

What is reasoning in maths?

- ▶ Reasoning in maths is the process of applying logical thinking to a situation.
- ▶ Because we teach a range of strategies, this give children a solid base and skill level to use the correct problem solving strategy for a given question. They are encouraged to use their mathematical language and methods to describe the solution.
- ▶ It is the “how do you know...?” or “why is the answer six and not seven?”
- ▶ Mathematical reasoning is the bridge between fluency and problem solving. It allows pupils to use their fluency to accurately carry out the problem solving.

What is problem solving in maths?

- ▶ It is a process or series of processes to solve mathematical problems. This follows, logic, reasoning and communication.
- ▶ Problem solving in maths is finding a way to apply knowledge and skills you have to answer unfamiliar types of problems.

8 The numbers have been ordered smallest to greatest...



1 ... 3 ... 4 ... ? ... 7 ... 8

Write a number that could go in the box. _____

Write a number that could not go in the box. _____

Mathematical Language

Year 2 Addition and Subtraction

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

add
altogether
sum

and
total

plus

minus
take away
subtract

difference
less

equals

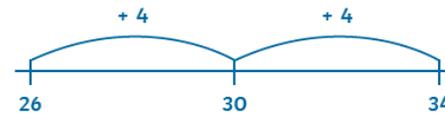
makes

visit [twinkl.com](https://www.twinkl.com)

Empty Number Lines

Use for adding a 2 digit number with single digit number.

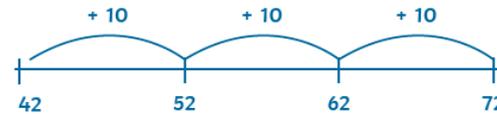
$$26 + 8 = ?$$



$$26 + 8 = 34$$

Use for adding a 2 digit number with a multiple of 10.

$$42 + 30 = ?$$

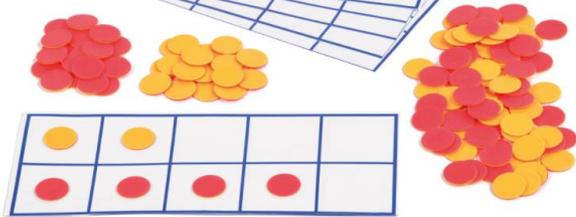
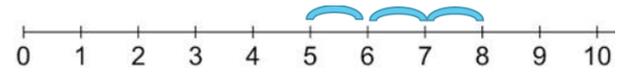
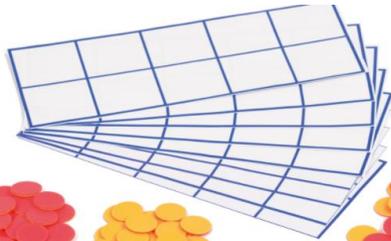
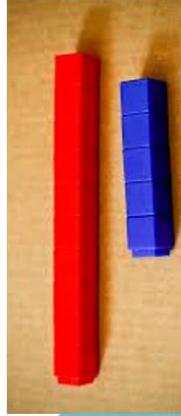


$$42 + 30 = 72$$

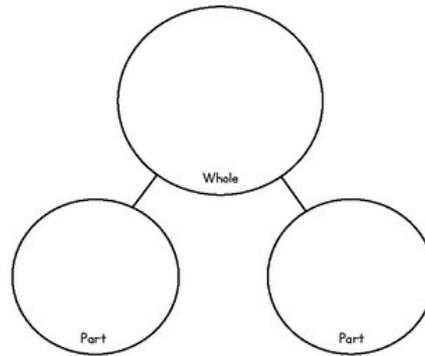
Mathematical language

- ▶ Mathematical language is all around children - words and expressions such as “bigger”, “smaller”, “shorter”, “taller”, “greater than”, “less than”, “equal to,” “beside,” “above,” “below,” “heavy,” “light,” “same,” “different.”
- ▶ Using a variety of vocabulary helps children to develop understanding and have a wide range of language and gain more confidence in the process.

Resources



$$5 + 3 = 8$$

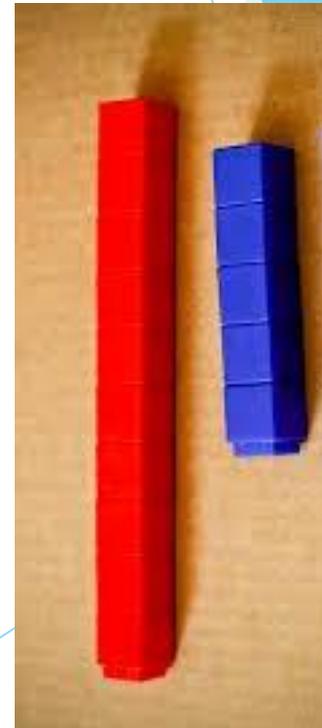


Cubes

- ▶ Cubes- making groups of numbers counting out 10... to make a 10 train

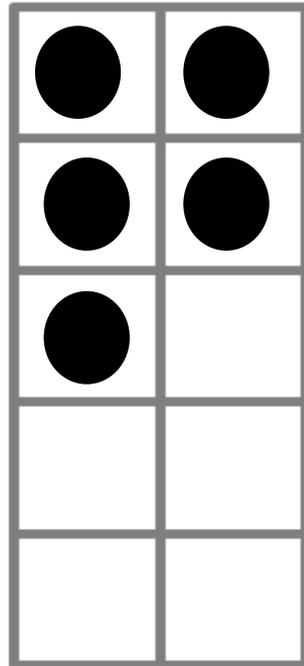
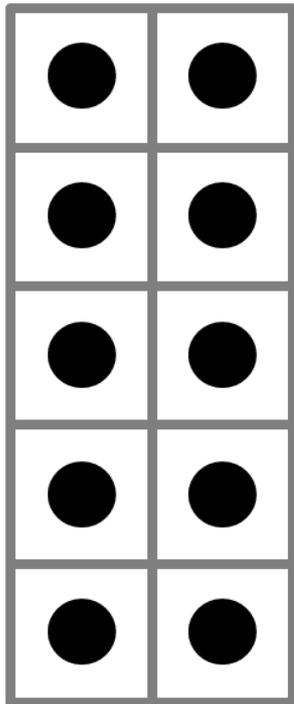


This is 15..
One group of 10 and 5
extra ones

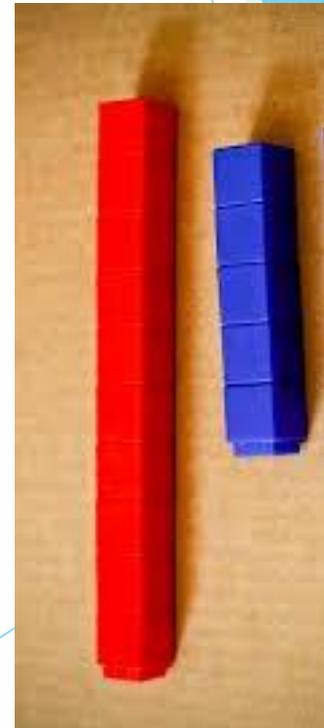


Cubes ~ Counters ~ Tens Frames

- ▶ Use the tens frame to represent numbers in different ways.



This is 15..
One group of 10 and 5
extra ones



Numicon

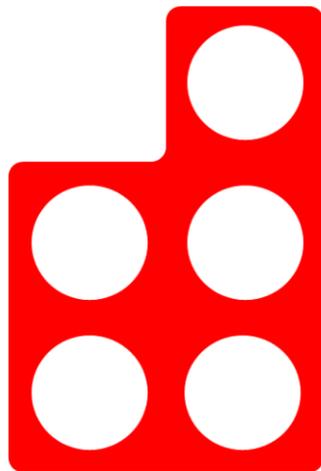
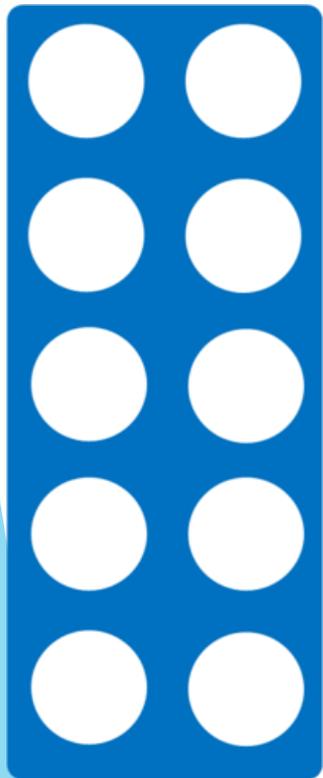
- ▶ Great for number bonds, representing numbers, addition, subtraction, place value, shape, patterning.
- ▶ Multisensory which allows children to deepen their knowledge of fluency, reasoning and problem solving.



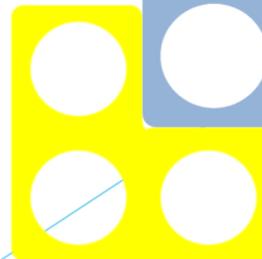
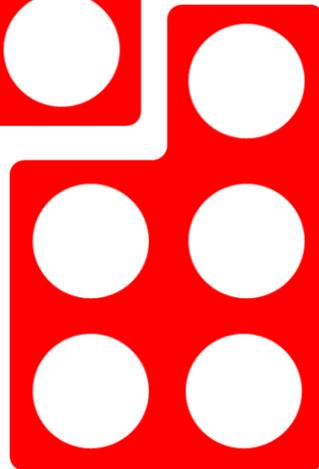
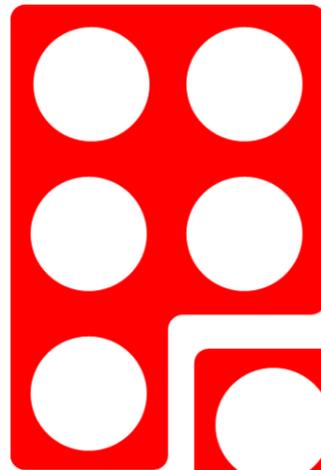
Numicon

- ▶ Use the tens frame to represent numbers in different ways.

This is 15..
One group of 10 and 5
extra ones

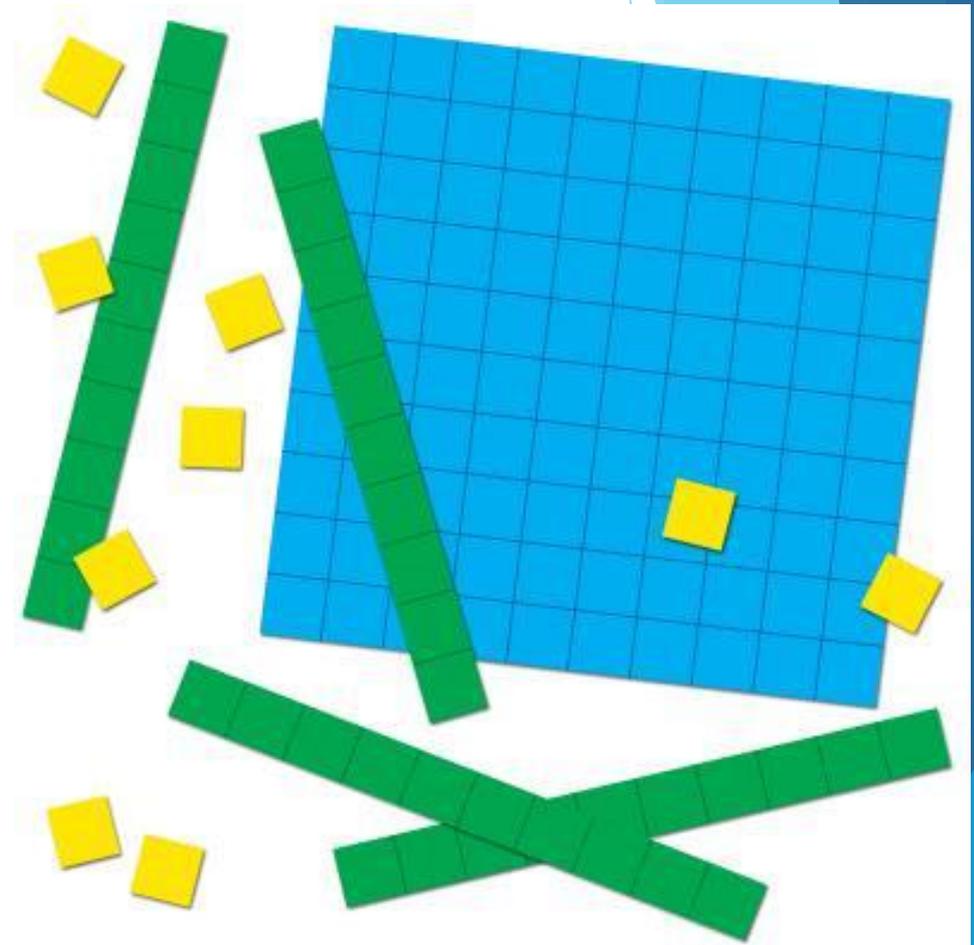


or



Dienes- Tens and Ones

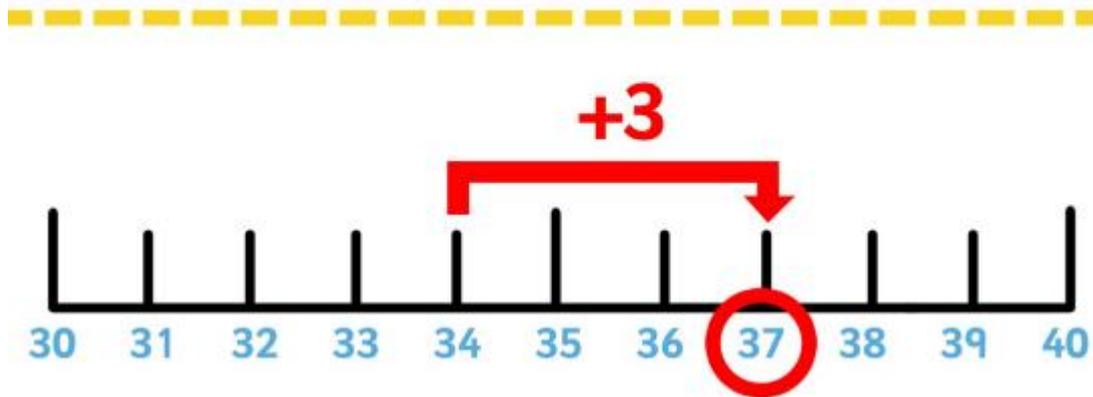
- ▶ Great for building numbers to 100
- ▶ Understanding groups of tens and 'extra ones'



Number line

▶ How we use it- **ADDITION**

$$34 + 3 =$$

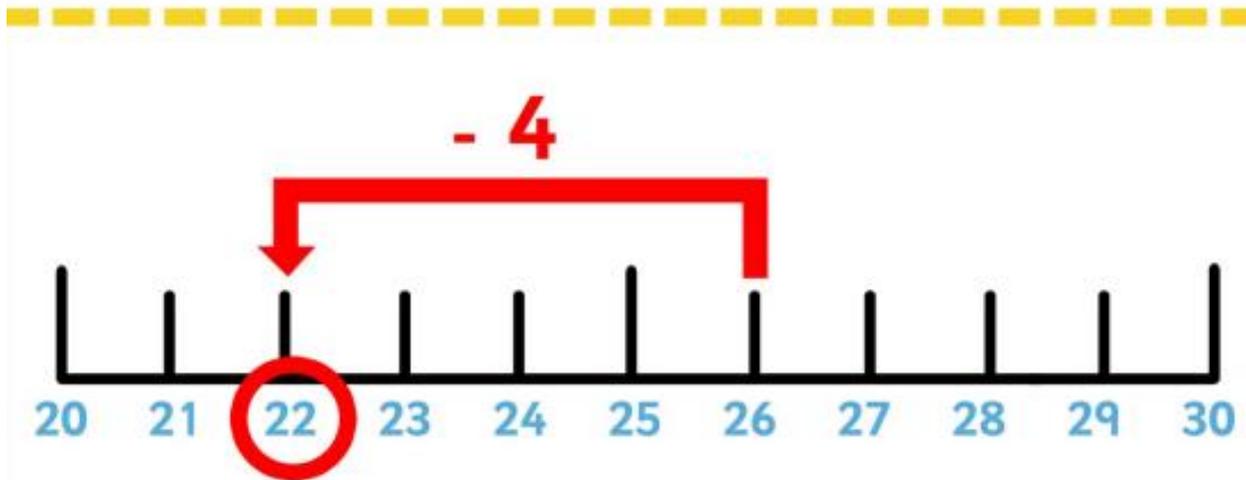


Jump forwards

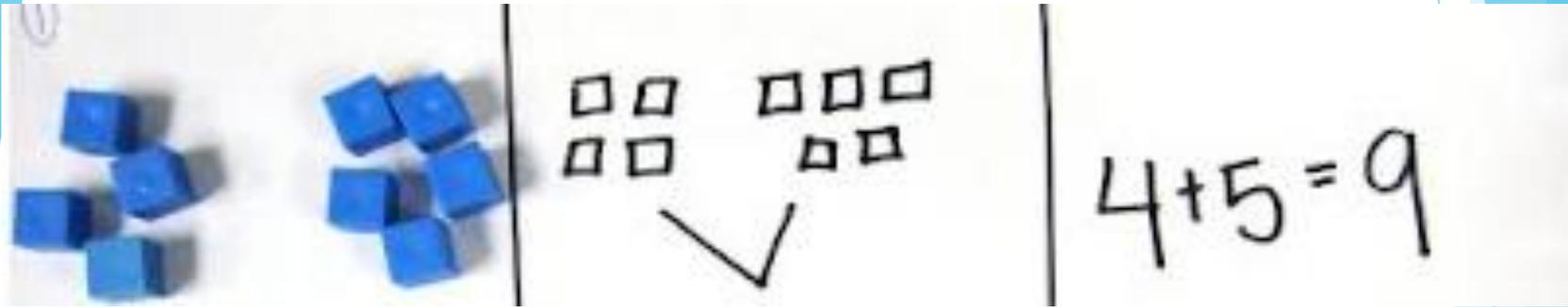
Number line

► How we use it - SUBTRACTION

$$26 - 4 =$$



Concrete, Pictorial, Abstract



Number and Place Value

Year 2 | Autumn Term | Week 1 to 3 – Number: Place Value



Represent Numbers to 100

Notes and Guidance

Children need to be able to represent numbers to 100 using a range of concrete materials, such as bead strings, straws, Base 10 equipment etc.

Children should also be able to state how a number is made up. For example, they can express 42 as 4 tens and 2 ones or as 42 ones.

Mathematical Talk

How have the beads been grouped? How does this help you count?

Can you show me the tens/ones in the number?

Which resource do you prefer to use for larger numbers? Which is quickest? Which would take a long time?

Varied Fluency

Here is part of a bead string.



Complete the sentences.

There are ____ tens and ____ ones.

The number is ____.

Represent 45 on a bead string and complete the same sentence stems.

Match the number to the correct representation.



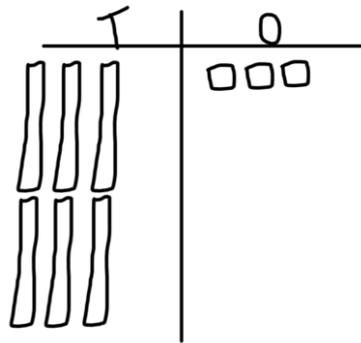
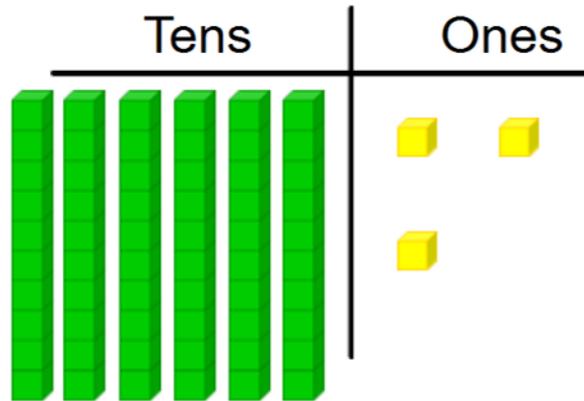
One ten and five ones

Thirty-five

25

Represent 67 in **three different** ways.

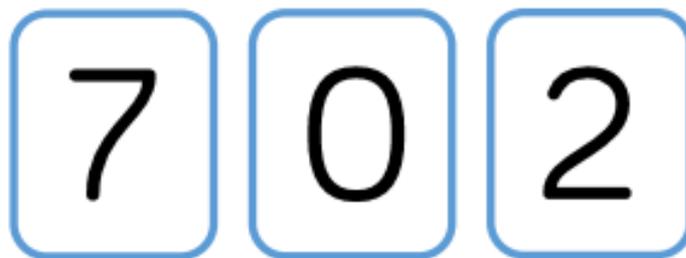
Concrete, Pictorial, Abstract



6 tens and 3 ones
six tens and 3 ones
sixty-three

Reasoning and Problem Solving

How many two digit numbers can you make using the digit cards?



What is the largest number?
Prove it by using concrete resources.

What is the smallest number?
Prove it by using concrete resources.

Why can't the 0 be used as a tens number?

Addition and Subtraction

Fact Families

Notes and Guidance

Children apply their understanding of known addition and subtraction facts within 20 to identify all related facts. This will include an understanding of the relationship between addition and subtraction, and knowing the purpose of the equals sign, as well as the addition and subtraction signs. Showing the link between representations, such as part-whole models and bar models can support and deepen the children's understanding.

Mathematical Talk

What if we took away the red flowers? What are the parts? What is the whole?

Does it change the answer if we add the blue and red flowers in a different order?

What does each circle represent on the part-whole model?

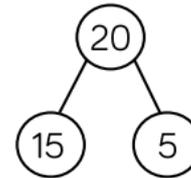
How many different number sentences are there in the fact family?

Varied Fluency

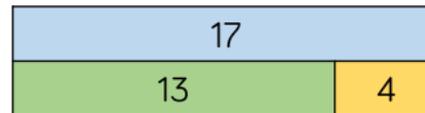
- Using concrete apparatus, can you talk about the relationships between the different flowers?



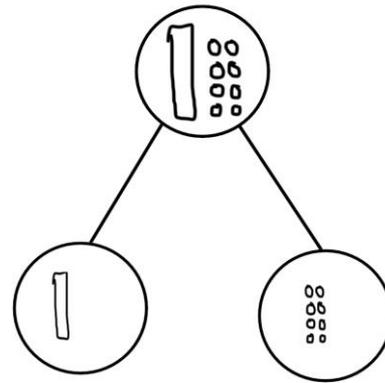
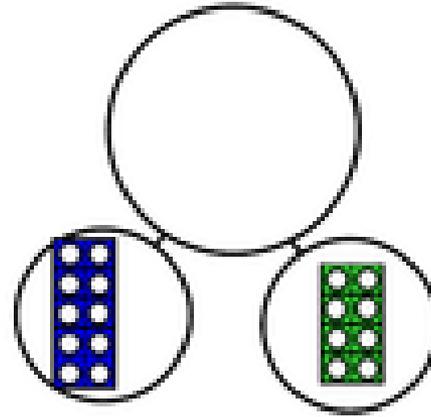
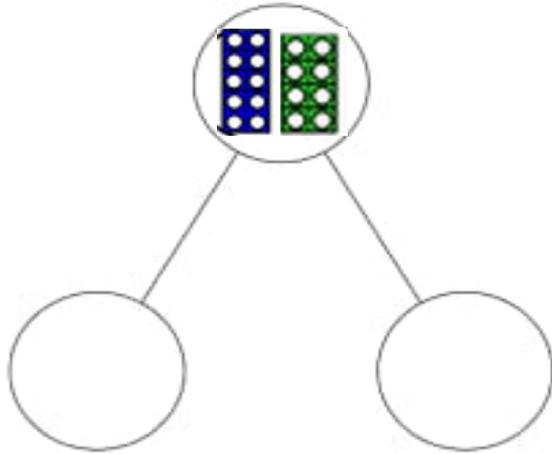
- One relationship shown by this part-whole model is $15 + 5 = 20$. Can you write all associated number sentences in the fact family?



- Look at the bar model below. Can you write all of the number sentences in the fact family?



Concrete, Pictorial, Abstract



$$10+8= 18$$

$$8+10=18$$

$$18-8=10$$

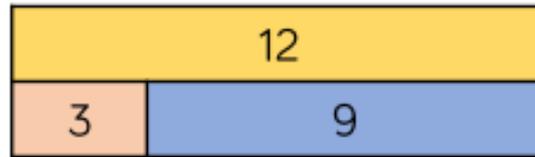
$$18-10=8$$

$$18=10+8$$

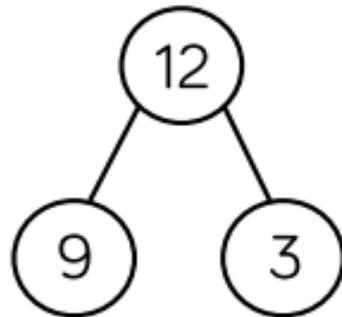
$$18= 8+10$$

Reasoning and Problem Solving

Which of the representations are equivalent to the bar model?



$$12 = 9 + 3$$



There are 9 cars in a car park, 3 cars leave.

$$9 - 3 = 12$$



Multiplication and Division

The Multiplication Symbol

Notes and Guidance

Children are introduced to the multiplication symbol for the first time. They should link repeated addition and multiplication together, using stem sentences to support their understanding.

They should also be able to interpret mathematical stories and create their own involving multiplication.

The use of concrete resources and pictorial representations is still vital for understanding.

Mathematical Talk

What does the 3 represent? What does the 6 represent?

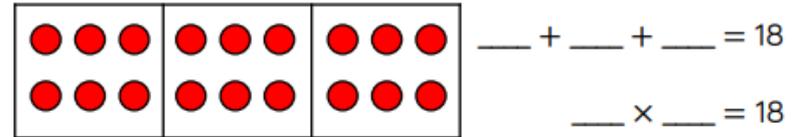
What does 'lots of' mean?

Does $18 = 3 \times 6$ mean the same?

How is $6 + 6 + 6$ the same as 3×6 ? How is it different?

Varied Fluency

Complete the sentences to describe the equal groups.



There are ___ equal groups with ___ in each group.

There are three ___.

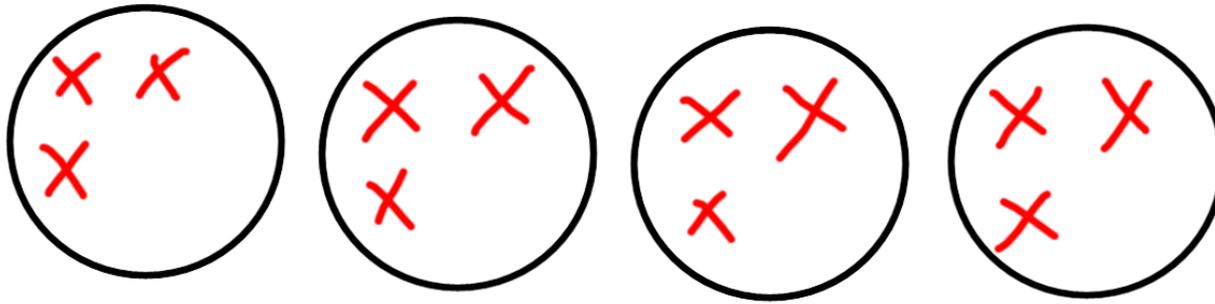
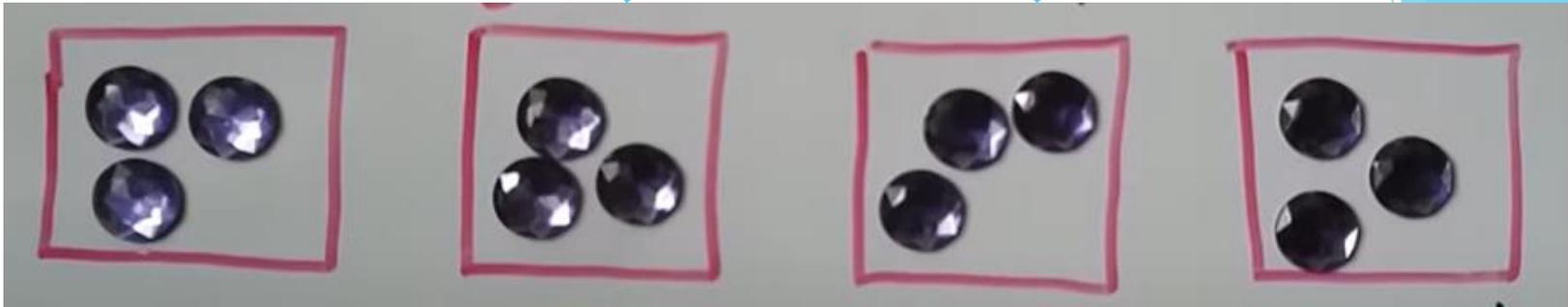
Complete:

Three 2s	Draw It	Addition	Multiplication
There are 3 equal groups with 2 in each group.			

Complete:

Addition	Multiplication	Story
$10 + 10 + 10$		
	6×5	

Concrete, Pictorial, Abstract



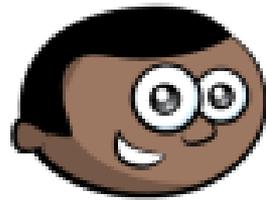
$$3+3+3+3=12$$

4 lots of 3 equal 12

4 groups of 3 equal 12

$$4 \times 3 = 12$$

Reasoning and Problem Solving



$$3 + 3 + 3 = 3 \times 3$$

Is Mo correct? Explain why.

Draw an image to help you.

Fractions

Find Three Quarters

Notes and Guidance

Children use their understanding of quarters to find three quarters of a quantity.

They work concretely and pictorially to make connections to the abstract.

Children should be encouraged to spot patterns and relationships between quarters of amounts.

Mathematical Talk

How many quarters make a whole?

Can you represent this in a bar model?

How many equal parts is $\frac{3}{4}$?

Can you spot any patterns?

What has stayed the same? What has changed? What do you notice?

Varied Fluency

- Amir shares 12 beanbags into 4 equal groups. Use the image to complete the sentences.



One quarter of 12 is equal to ____

Two quarters of 12 is equal to ____

Three quarters of 12 is equal to ____

Four quarters of 12 is equal to ____

- Use counters and a bar model to help you find $\frac{3}{4}$ of 8 and $\frac{3}{4}$ of 16. What do you notice?



- Use counters, cubes, or bar models to help you fill in the blanks:

$$\frac{1}{4} \text{ of } 24 = \square$$

$$\frac{2}{4} \text{ of } 24 = \square$$

$$\frac{3}{4} \text{ of } 24 = \square$$

$$\frac{4}{4} \text{ of } 24 = \square$$

$$\frac{1}{4} \text{ of } 4 = \square$$

$$\frac{3}{4} \text{ of } 4 = \square$$

$$\frac{1}{4} \text{ of } 8 = \square$$

$$\frac{3}{4} \text{ of } 8 = \square$$

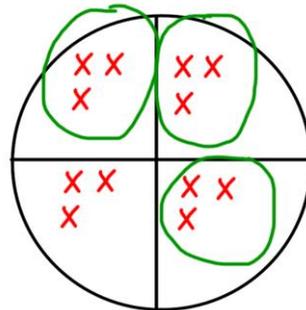
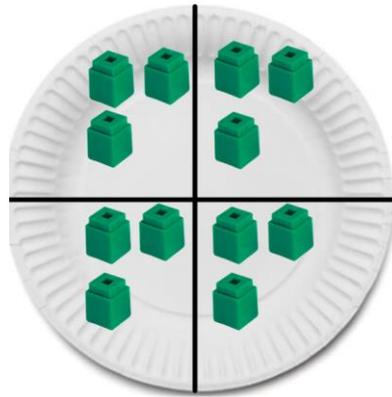
$$\frac{1}{4} \text{ of } \square = 5$$

$$\frac{3}{4} \text{ of } \square = 15$$

$$\frac{1}{4} \text{ of } \square = 2$$

$$\square \text{ of } 8 = 6$$

Concrete, Pictorial, Abstract



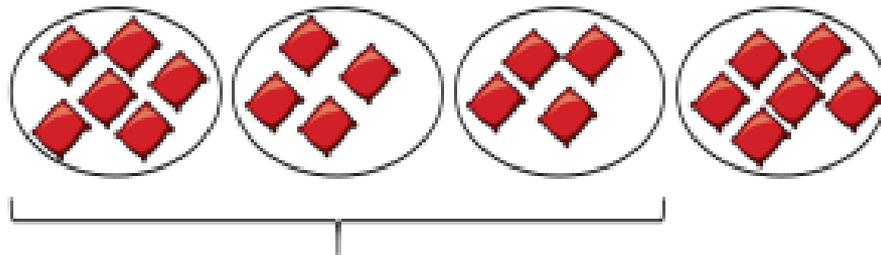
Three quarters of 12 is 9

$$\frac{3}{4} \text{ of } 12 = 9$$

Reasoning and Problem Solving

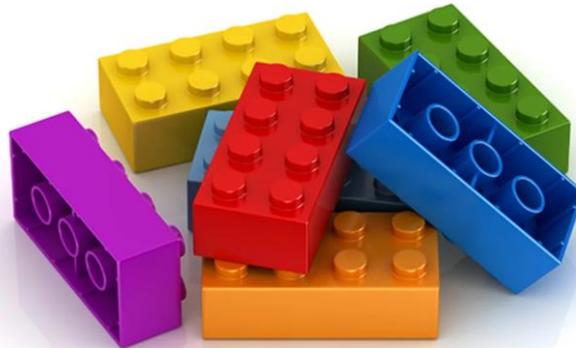
Amir is using beanbags and hoops to find three quarters of 20

Can you spot his mistake?



$$\frac{3}{4} \text{ of } 20 = 14$$

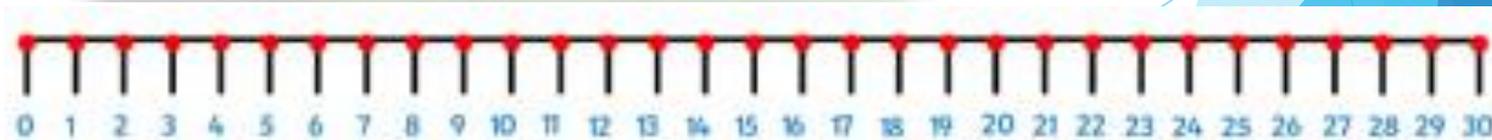
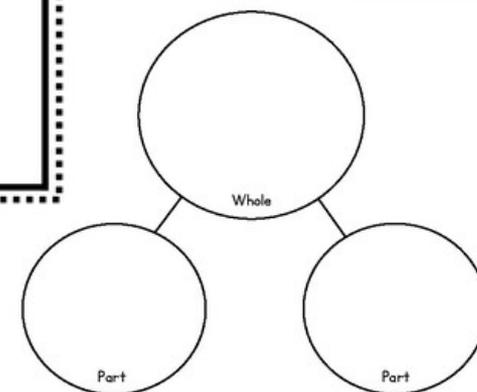
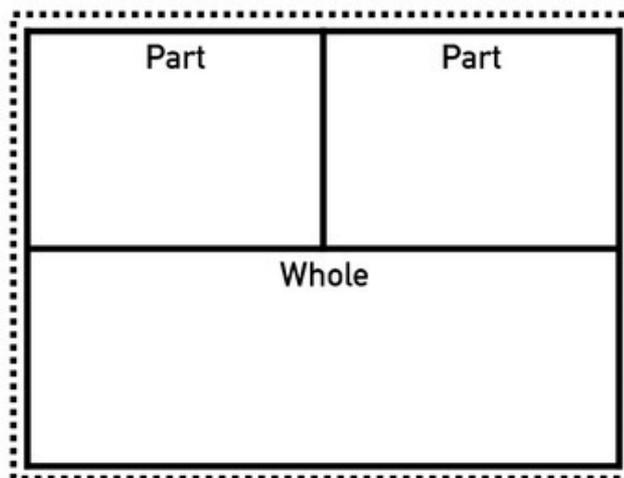
Objects to count





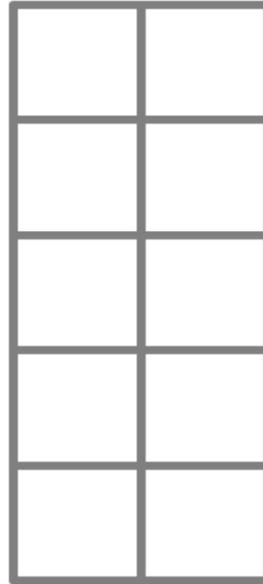
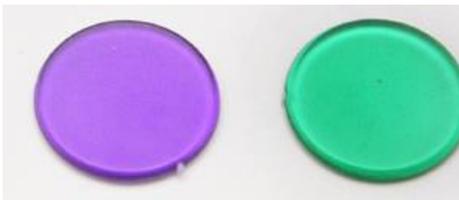
Maths Pack Resources to use at home

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



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

Snakes and Ladders Game



3D Shapes

square-based pyramid triangular prism cone cuboid

pyramid cube cylinder sphere

2D Shape Word Mat

circle rectangle triangle oval

octagon square heptagon

rhombus pentagon hexagon kite





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<p>ONLY</p> <p>£2.50</p> <p>£3.99</p> 	<p>ONLY</p> <p>69p</p> <p>£1.29</p> 	<p>100% EXTRA FREE</p> <p>£1</p> 	<p>ONLY</p> <p>£1.50</p> <p>£2.99</p> 	<p>ONLY</p> <p>£1</p> <p>£1.99</p> 
<p>HALF PRICE</p> <p>34p</p> <p>£0.68</p> 	<p>HALF PRICE</p> <p>£1.64</p> <p>£3.28</p> 	<p>ONLY</p> <p>£1</p> <p>£1.99</p> 		



Supporting Maths at Home



Props around the house

Ideas taken from Maths for Mums and Dads Eastaway, R. and Askew, M. (2010)



- **A prominent clock**- digital and analogue is even better. Place it somewhere where you can talk about the time each day.
- **A traditional wall calendar**-Calendars help with counting days, spotting number patterns and
- **Board games that involve dice or spinners**-helps with counting and the idea of chance
- **A pack of playing cards**- Card games can be adapted in many ways to learn about number bonds, chance, adding and subtracting
- **A calculator**- A basic calculator will help with maths homework when required, there are also many calculator games you can play, too.
- **Measuring Jug**-Your child will use them in school, but seeing them used in real life is invaluable. Also useful for discussing converting from metric to imperial
- **Dried beans, Macaroni or Smarties**- for counting and estimating
- **A tape measure and a ruler**- Let your child help when measuring up for furniture, curtains etc
- **A large bar of chocolate (one divided into chunks)**- a great motivator for fractions work
- **Fridge magnets with numbers on**- can be used for a little practice of written methods
- **Indoor/outdoor Thermometer**- especially useful in winter for teaching negative numbers when the temperature drops below freezing
- **Unusual dice**- not all dice have faces 1-6, hexagonal dice, coloured dice, dice from board games all make talking about chance a little more interesting
- **A dartboard with velcro darts**- Helps with doubling, trebling, adding and subtracting.

▶ www.mymaths.co.uk

▶ www.ictgames.com

▶ www.topmarks.co.uk



▶ Questions?