

TELFORD INFANT SCHOOL LOVING LEARNING

Every child to be an inquisitive, resilient and successful learner who is eager for their next challenge.

Maths in Year 2

November 2019



Aims of this session

- To provide an insight into our mastery approach to mathematics and how it works in school.
- To give ideas for supporting maths at home and keeping it fun.



What does it mean to master something?



What does it mean to master something?

- I know how to do it.
- It becomes automatic and I don't need to think about it (like riding a bike).
- I'm really good at doing it.
- I can show someone else how to do it.

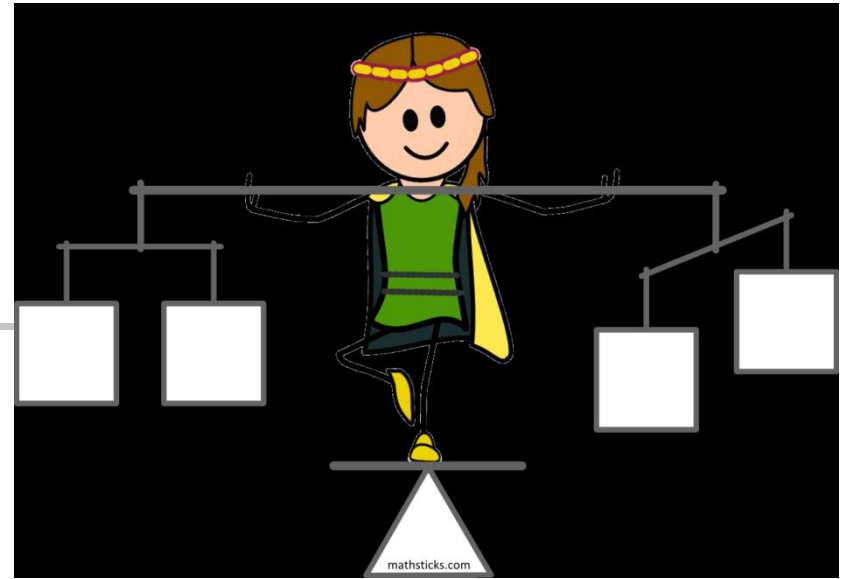


Mastering maths also means...

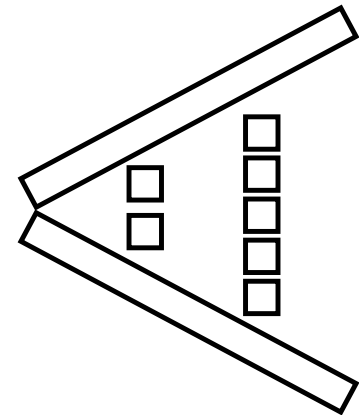
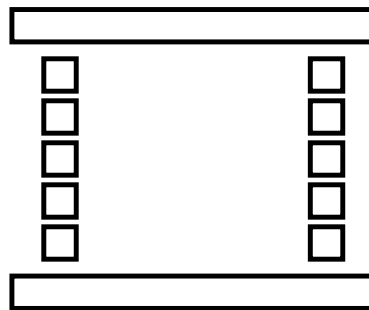
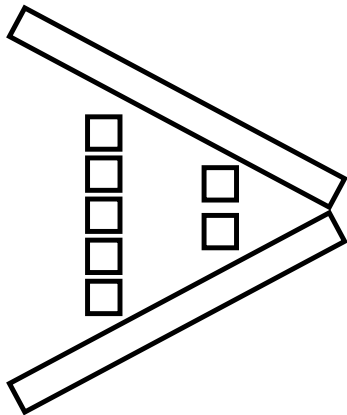
- It is achievable for all
- Learning is deep and sustainable
- This builds a firm foundation for new learning
- Children can reason about a concept and make connections
- Children are fluent – with concepts and different methods

These slides will be put in context of NC objectives . Emphasise fluency, reasoning and problem-solving for each concept.

Key concepts



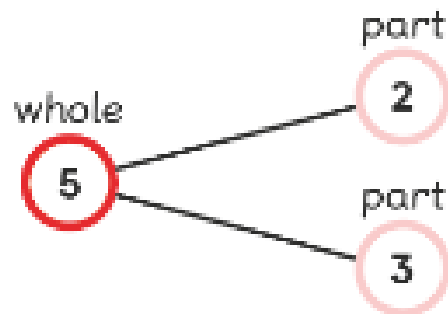
■ Size and order of numbers



Key concepts

- Structure of numbers

Put 5 cupcakes on two plates.



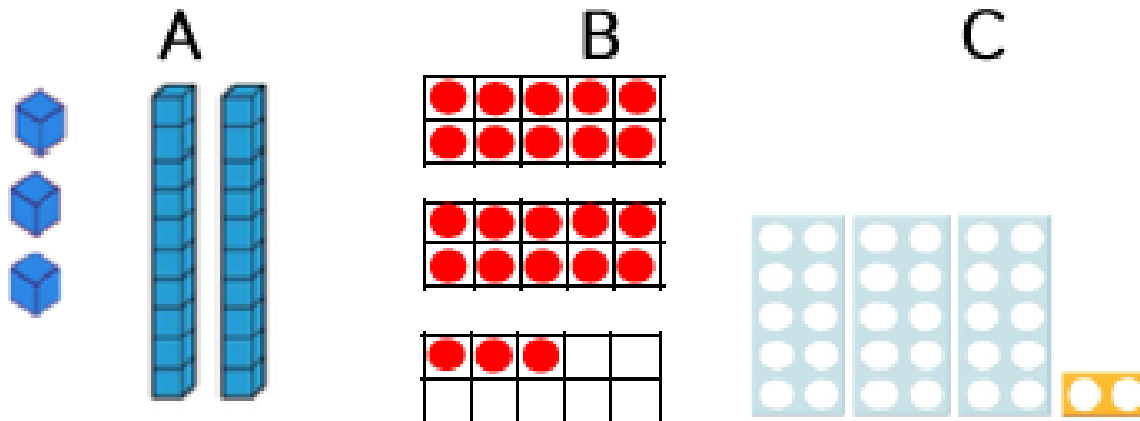
2 and 3
make 5.

This is a number bond.

Key concepts

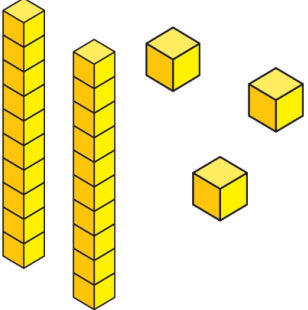
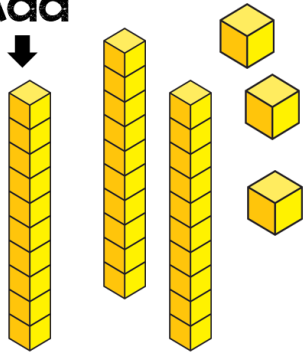
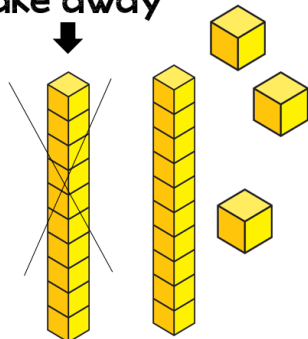
- Place value

One of these images does not show 23.
Can you explain the mistake?



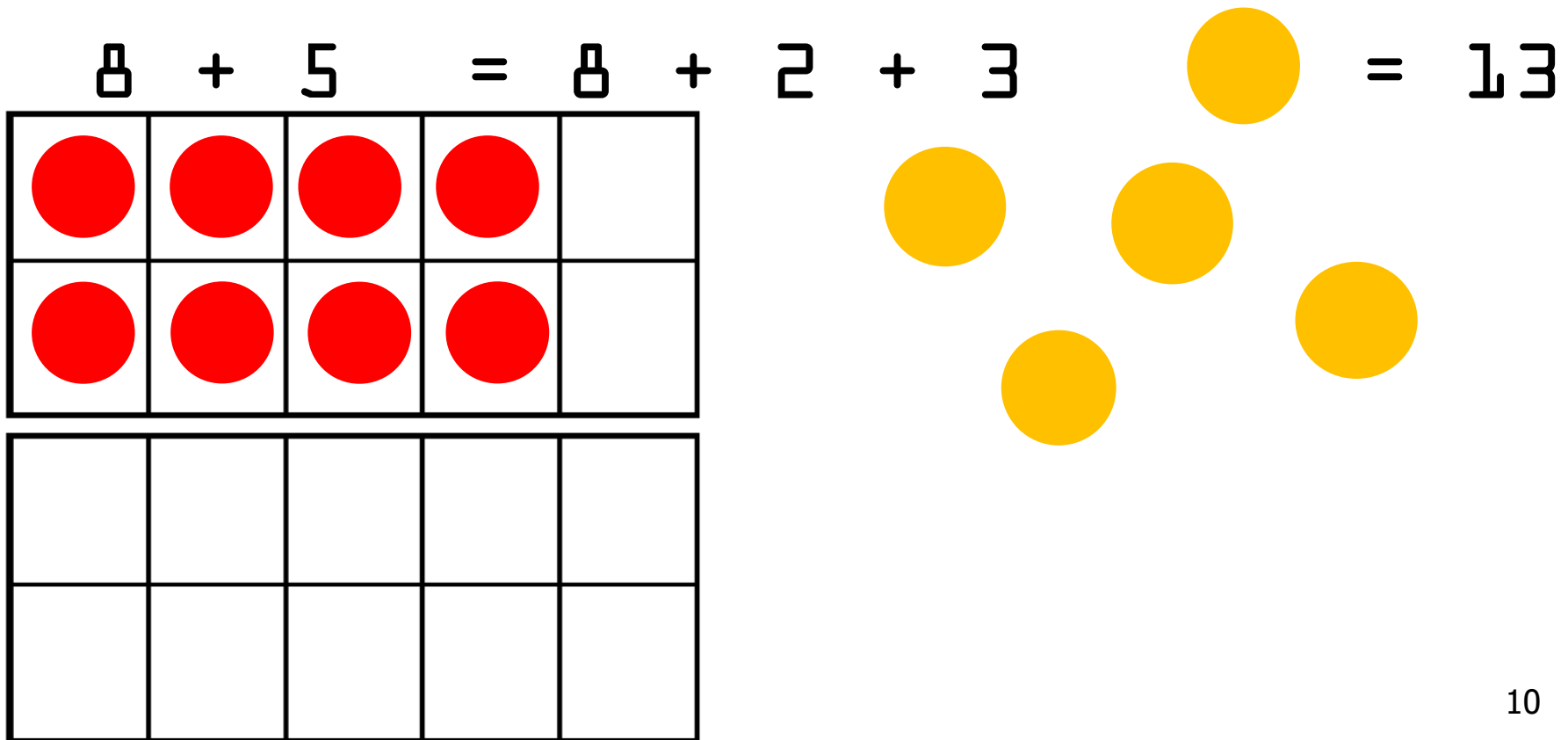
Key concepts

- Place value

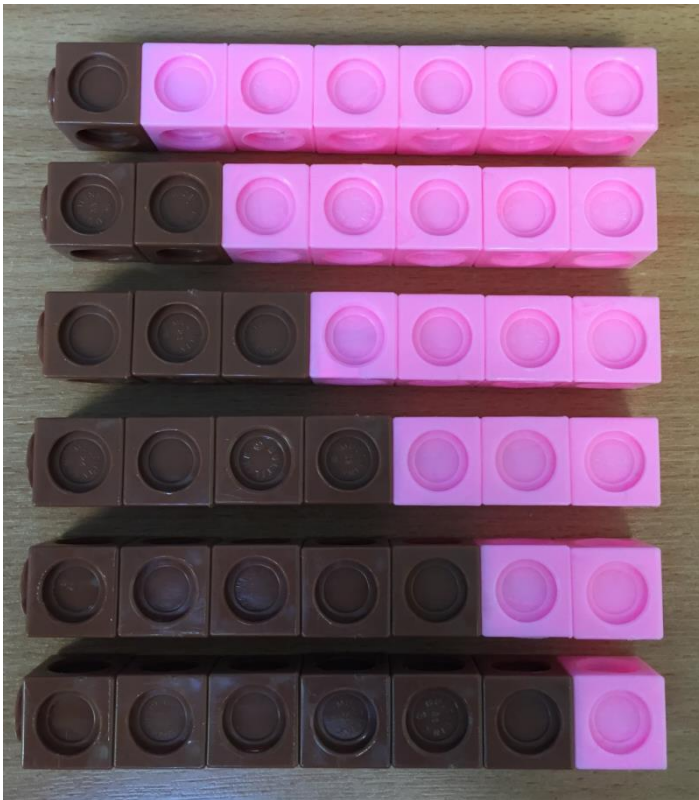
<p>Make the number 23</p>  <p>23</p>	<p>“What is 10 more than 23?”</p> <p>Add</p>  <p>23 33</p>	<p>“What is 10 less than 23?”</p> <p>Take away</p>  <p>13 23 33</p>
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Key concepts

- Number structure and place value

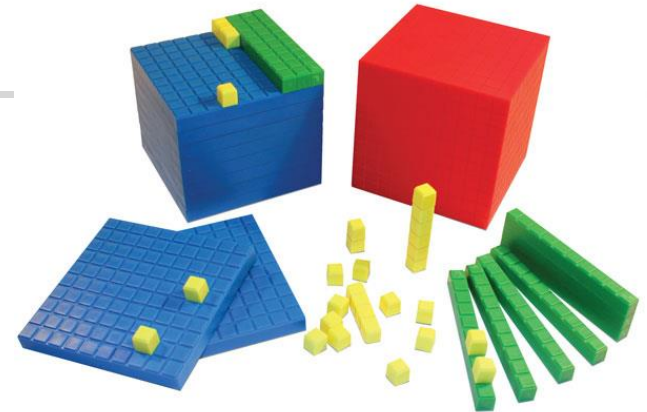


Representations

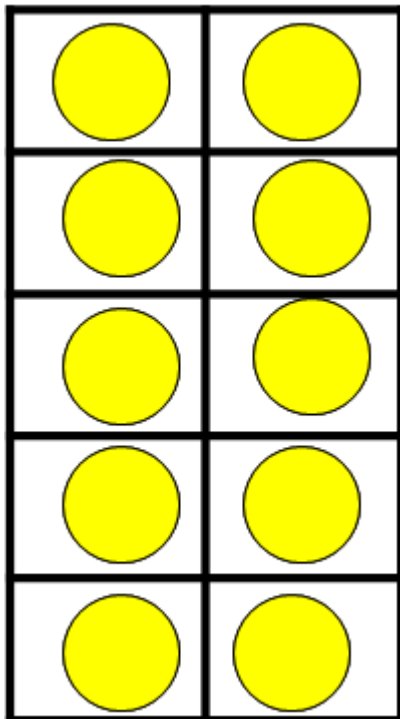


Representations

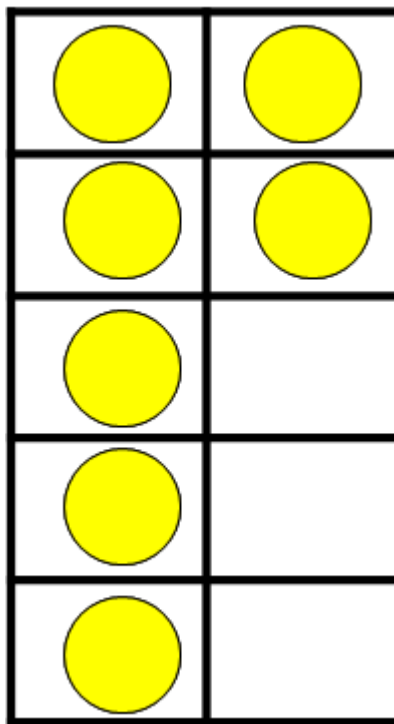
1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100



Representations



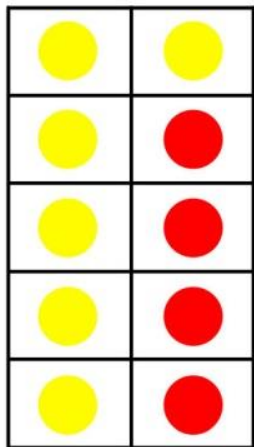
Ten frame



Seeing pattern and structure is important in a mastery curriculum

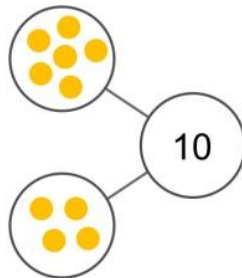
$$\begin{array}{r} 6 + 1 = 7 \\ 5 + 2 = 7 \\ 4 + 3 = 7 \\ 3 + 4 = 7 \\ 2 + 5 = 7 \\ 1 + 6 = 7 \\ 0 + 7 = 7 \end{array}$$

Representations



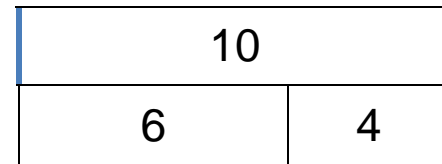
$$\begin{aligned}6 + 4 &= 10 \\4 + 6 &= 10 \\10 - 4 &= 6 \\10 - 6 &= 4\end{aligned}$$

Tens Frame



$$\begin{aligned}6 + 4 &= 10 \\4 + 6 &= 10 \\10 - 4 &= 6 \\10 - 6 &= 4\end{aligned}$$

Part Whole Model

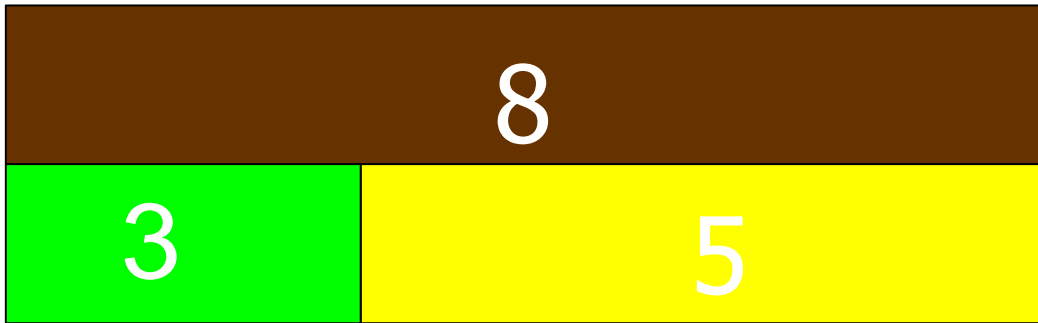


$$\begin{aligned}6 + 4 &= 10 \\4 + 6 &= 10 \\10 - 4 &= 6 \\10 - 6 &= 4\end{aligned}$$

Bar Model



Representations



$$\square + \square = \square$$

$$\square + \square = \square$$

$$\square - \square = \square$$

$$\square - \square = \square$$

Identification of relationships and making connections supports deep and sustainable learning and paves the way for later learning.



Paving the way for later learning

10	
6	4

$$6 + 4 = 10$$

$$4 + 6 = 10$$

$$10 - 6 = 4$$

$$10 - 4 = 6$$

62	
34	28

$$34 + 28 = 62$$

$$28 + 34 = 62$$

$$62 - 34 = 28$$

$$62 - 28 = 34$$

6.2	
3.4	2.8

$$3.4 + 2.8 = 6.2$$

$$2.8 + 3.4 = 6.2$$

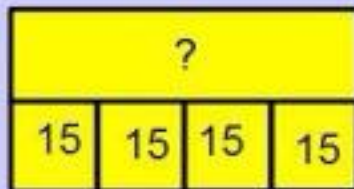
$$6.2 - 3.4 = 2.8$$

$$6.2 - 2.8 = 3.4$$



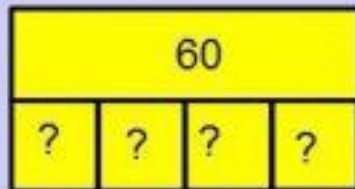
A versatile way of representing problems

Whole unknown...



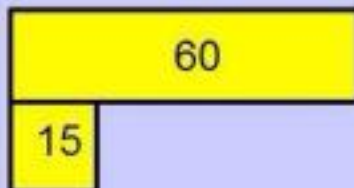
4 children go to the cinema. They each pay £15. How much do they spend altogether?

Size of groups unknown...



4 children go to the cinema. They each pay £60 altogether. How much do they spend each?

Number of groups unknown...



Tickets to the cinema are £15. Some children buy tickets that cost £60. How many children bought tickets?



Teaching for mastery

- High expectations for every child.
- Fewer topics covered in greater depth.
- Number sense and place value come first.
- Problem solving is central.
- Challenge is provided through deep and rich problems, rather than accelerating on to new content or higher numbers.



How we challenge

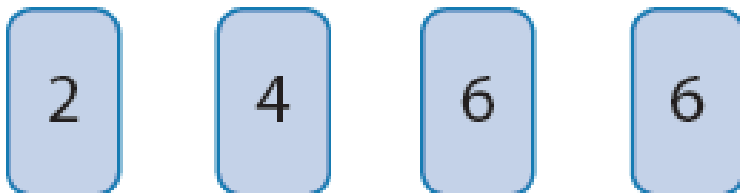
All children will be able to...

Put a circle around the larger number.

- 1) 50 48 2) 77 81 3) 78 87

Some children will explore the concept in greater depth...

Write all the 2-digit numbers greater than 40 using these digits.



How do you know you have them all? Prove it.



How we challenge

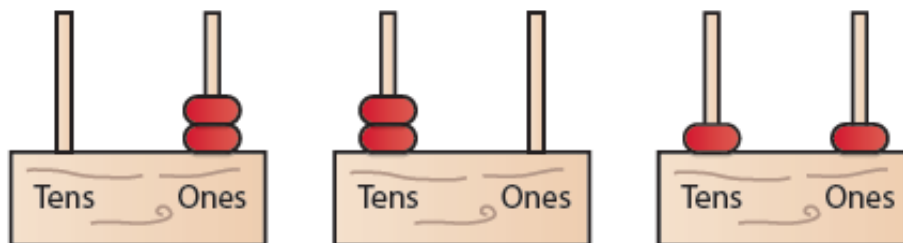
All children will be able to...

Write the missing numbers in the boxes.

- 1) In the number 47, there are groups of 10 and ones.
- 2) The number that is ten groups of 10 is .
- 3) The number 75 shows in the tens place, and in the ones place.

Some children will explore the concept in greater depth...

If you put 2 beads onto a tens/ones abacus you can make the numbers 2, 20 and 11.



Do the same with 3 beads. How many different numbers can you make?



How we challenge

All children will be able to...

Katie has 12 marbles.

Jim has 13 marbles more than Katie.

How many marbles does Jim have?

Some children will explore the concept in greater depth...

What digits could go in the boxes?

$$\square 2 + \square 5 = 87$$



Questioning

- _____ thinks that, _____. Do you agree? Explain your answer.
- Is it always true, sometimes true or never true that _____?
- Can you spot the mistake? Explain why they are wrong.
- What is the same and what is different?

Children answer in full sentences and use stem sentences to develop their understanding.

Maths talk

- * Full sentences instead of one-word answers.
- * I say, you say, you say, you say, we all say.
- * Sentence stems:

There are 12 stars. $\frac{1}{3}$ of the stars is equal to 4 stars



Children use the same sentence stem to express other relationships. For example:

There are 12 stars. $\frac{1}{4}$ of the stars is equal to 3 stars

There are 12 stars. $\frac{1}{2}$ of the stars is equal to 6 stars



How you can support at home

Maths is all around us. Look for maths problems you can solve together, making connections between what your child has been learning at school and the world around them.

- **Find numbers in the environment**
- **Follow a recipe**
- **Talk about the weather forecast**
- **Go shopping**
- **Plan an outing**
- **Use *Education City*!**



Education City

- Demo and log in details...