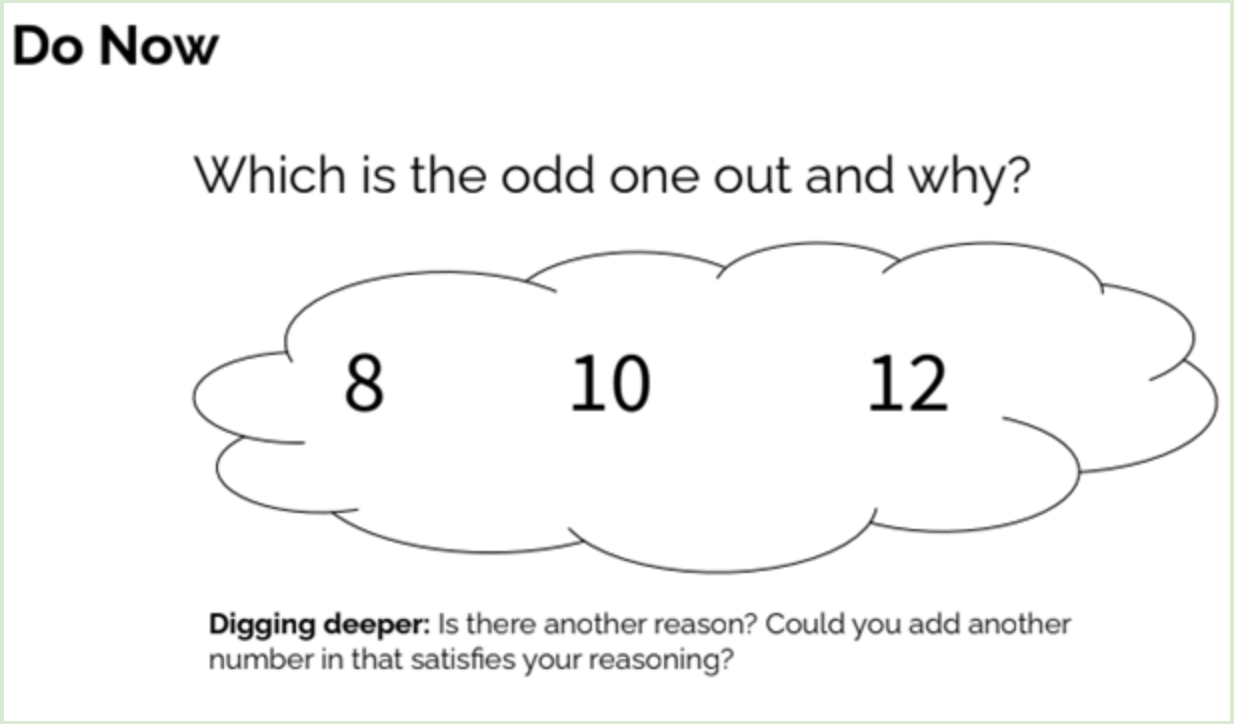
How do we teach Maths in KS1, Camp Primary ?

Camp Primary and Nursery School St Alban

PARENTS WORKSHOP

January 2024



- *If you have questions please write them down.*
- *At the end of session if I have not answered your questions please ask.*

In today's workshop, we will:

- Discuss the 3 main areas of the National Curriculum for Maths
- Talk about the mastery approach
- Look closer at Year 1 and 2 Maths curriculum at Camp Primary
- Share some resources that we use in school
- Share some resources that you can use at home
- Share some useful websites
- Share some useful games/activities that you can try out at home

Why do we learn Maths?

- Always draw out real life links to Maths around your home
- Talk about how you use Maths in your job!
- Point out that their dream job involves Maths!
- Be positive about Maths!

Fixed vs Growth Mindset - Carol Dweck

We believe that **everyone** can get better at maths...when they put in the **effort** and work at it.

Do not praise children for being clever when they succeed at something, but instead praise them for **working hard.**

Children learn to associate **achievement with effort** (which is something they can influence themselves – by working hard), not 'cleverness' (a trait perceived as absolute and that they cannot change).

The mastery approach at Camp Primary:

- Have a growth mindset about maths – developing a 'can do'/'have a go' approach. To enjoy maths and see its relevance in 'the real world'.
- Secure knowledge of number facts and a good understanding of the four operations.
- Use this knowledge to carry out calculations mentally.
- Have an efficient, reliable, written method of calculation for each operation.
- We explain Maths concepts using visuals and equipment breaking down concepts into 'small steps' with lots of short tasks.
- Make use of diagrams and jottings to help record the steps to solving a problem.
- We provide the children with 'stem sentences.' We ask them to repeat phrases 'I say, you say'
- We constantly assess the children in every lesson and fill any gaps before or after the lesson using small group interventions.
- We want to develop mathematical thinking and reasoning – being able to chose efficient methods for a range of mathematical problems. We want learners to problem solve with confidence.

There are 3 main strands in the Maths National Curriculum

- Fluency
- Reasoning
- Problem solving

- Our lessons aim to involve all 3 skills every single lesson.
- Maths is so much more than providing the correct answer!

Our Maths Curriculum

- We follow the Hearts for Learning Maths Scheme of work.

- We use 'White Rose' to help us to sequence and plan our lessons.

What will my child be learning?

The link below will take you to the programmes of study for each year group. This shows you what your child will be learning when at school and what a child of that age is expected to achieve by the end of the year (Age Related Expectations).

National Curriculum Programmes of Study for Key Stage 1 and Key Stage 2

Each year group will also re-visit teaching from previous year groups to ensure knowledge is consolidated and secure.

Year 1 programme of study (statutory requirements)

Number and place value	Addition and subtraction	Multiplication and division
Pupils should be taught to: • 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; count in multiples of twos, fives and tens • given a number, identify one more and one less • identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least • read and write numbers from 1 to 20 in numerals and words	Pupils should be taught to: • read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs • represent and use number bonds and related subtraction facts within 20 • add and subtract one-digit and two-digit numbers to 20, including zero • solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = □ - 9	Pupils should be taught to: • solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher

Year 2 programme of study (statutory requirements)

Number and place value	Addition and subtraction	Multiplication and division
Pupils should be taught to: • count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward • recognise the place value of each digit in a two-digit number (tens, ones) • identify, represent and estimate numbers using different representations, including the number line • compare and order numbers from 0 up to 100; use <, > and = signs • read and write numbers to at least 100 in numerals and in words • use place value and number facts to solve problems	Pupils should be taught to: • solve problems with addition and subtraction: - using concrete objects and pictorial representations, including those involving numbers, quantities and measures - applying their increasing knowledge of mental and written methods • recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100 • add and subtract numbers using concrete objects, pictorial representations, and mentally, including: - a two-digit number and ones - a two-digit number and tens - two two-digit numbers - adding three one-digit numbers • show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot • recognise and use the inverse relationship between addition and subtraction and use this to check calculations and missing number problems	Pupils should be taught to: • recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers • calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs • show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot • solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts

Milestones

Year 1	Can count from one number to another number up to 100 e.g. can count from 13 to 18 or 37 to 43	Can identify the value of numbers to 20 and reason about their position on the empty number line using comparative language (more than, less than, fewer, least, most), symbols (= < >,) and benchmarks (0, 5, 10, 15 and 20)	Knows that 10 ones is equal to 1 ten and can identify equality in teen numbers e.g. 15 ones = 1 ten and 5 ones	Can identify and describe wholes grouped into different parts including using symbols (+ - =)	Can use resources to model what is happening in a joining or separation problem and match representations showing these problems	Can regroup numbers within 10 and use these efficiently to make 10 and some more when adding e.g. 7+8 = 7+3+5	Can find how many more/less from one number to another without having to count all (counting on/back or using number combinations)	Can recognise equal and unequal groups and can adjust groups to make them equal	Counts in 2s, 5s and 10s and knows that every time a number is said another group of 2, 5 or 10 has been added.	When exploring part, whole relationship can identify that there are two equal parts when the whole is halved.	Can find congruent shapes in new locations using their **properties** and recognising that some shapes have the same properties but look different.	Is developing spatial thinking and spatial language linked to position, direction and movement including turns
Year 2	Can count on and back in tens and describe the relationship of the number to the nearest multiples of 10	Can identify the value of numbers to 100 and reason about their position on the empty number line using comparative language (more than, less than, fewer, least, most), symbols (= < >,) and benchmarks	Can recognise the place value of each digit in 2-digit numbers and can regroup these flexibly knowing that 10 ones is equal to 1 ten e.g. 34 = 30 + 4 or 20+14 or 10+24...	Can identify and describe wholes grouped into equal parts including using symbols (+ - x ÷ =) and linking to fraction notation for halves and quarters.	Can identify what is known and unknown within a problem and match representations showing 1 step additive problem solving	Can recall and use additive facts within 20 and use think 10 to add and subtract within 100 including using complements to reorder calculations	Can select effectively from a range of mental calculation strategies depending on the numbers involved and explain the method verbally, in pictures or using apparatus	Can describe multiplication (x2, x5 and x10) using language, arrays, repeated addition and multiplication symbol.	Can recall multiplication and division facts for 2, 5 and 10 and use them to solve simple problems including application to value of coins, demonstrating understanding of commutativity as necessary	Can recognise two structures of division – grouping and sharing - and can identify which structure is represented.	Can identify and describe the properties of 2D and 3D shapes using precise vocabulary including identifying 2D shapes within the faces of 3D shapes	Can order, arrange and describe positions of objects both in relation to other objects and within a pattern or sequence

ITAFS Year 2 (Teacher assessment framework for Maths)

Mathematics

Using the mathematics framework

- The three standards in this framework contain a number of 'pupil can' statements. To judge that a pupil is working at a standard in mathematics, teachers need to have evidence which demonstrates that the pupil meets **all** of the statements within that standard.

- The evidence informing a teacher's judgement must include the statutory end-of-key stage 1 mathematics test, which does not focus solely on the key aspects in this framework but will provide evidence to support the judgement overall and assess the broader curriculum. A pupil's answers to specific questions in the test, or any other test, may also provide evidence that pupils have met certain statements.

Working towards the expected standard
The pupil can: • read and write numbers in numerals up to 100 • partition a two-digit number into tens and ones to demonstrate an understanding of place value, though they may use structured resources[1] to support them • add and subtract two-digit numbers and ones, and two-digit numbers and tens, where no regrouping is required, explaining their method verbally, in pictures or using apparatus (e.g. 23 + 5; 46 + 20; 16 – 5; 88 – 30) • recall at least four of the six[2] number bonds for 10 and reason about associated facts (e.g. 6 + 4 = 10 , therefore 4 + 6 = 10 and 10 – 6 = 4) • count in twos, fives and tens from 0 and use this to solve problems • know the value of different coins • name some common 2-D and 3-D shapes from a group of shapes or from pictures of the shapes and describe some of their properties (e.g. triangles, rectangles, squares, circles, cuboids, cubes, pyramids and spheres).

Working at the expected standard

The pupil can:

- read scales* in divisions of ones, twos, fives and tens
- partition any two-digit number into different combinations of tens and ones, explaining their thinking verbally, in pictures or using apparatus
- add and subtract any 2 two-digit numbers using an efficient strategy, explaining their method verbally, in pictures or using apparatus (e.g. 48 + 35; 72 – 17)
- recall all number bonds to and within 10 and use these to reason with and calculate bonds to and within 20, recognising other associated additive relationships (e.g. If 7 + 3 = 10, then 17 + 3 = 20; if 7 – 3 = 4, then 17 – 3 = 14; leading to if 14 + 3 = 17, then 3 + 14 = 17, 17 – 14 = 3 and 17 – 3 = 14)
- recall multiplication and division facts for 2, 5 and 10 and use them to solve simple problems, demonstrating an understanding of commutativity as necessary
- identify $\frac{1}{4}$, $\frac{1}{3}$, $\frac{1}{2}$, $\frac{2}{4}$, $\frac{3}{4}$ of a number or shape, and know that all parts must be equal parts of the whole
- use different coins to make the same amount
- read the time on a clock to the nearest 15 minutes
- name and describe properties of 2-D and 3-D shapes, including number of sides, vertices, edges, faces and lines of symmetry.

Working at greater depth

The pupil can:

- read scales* where not all numbers on the scale are given and estimate points in between
- recall and use multiplication and division facts for 2, 5 and 10 and make deductions outside known multiplication facts
- use reasoning about numbers and relationships to solve more complex problems and explain their thinking (e.g. 29 + 17 = 15 + 4 + □; 'together Jack and Sam have £14. Jack has £2 more than Sam. How much money does Sam have?' etc.)
- solve unfamiliar word problems that involve more than one step (e.g. 'which has the most biscuits, 4 packets of biscuits with 5 in each packet or 3 packets of biscuits with 10 in each packet?')
- read the time on a clock to the nearest 5 minutes
- describe similarities and differences of 2-D and 3-D shapes, using their properties (e.g. that two different 2-D shapes both have only one line of symmetry; that a cube and a cuboid have the same number of edges, faces and vertices, but different dimensions).

National Curriculum

• Key stage 1 - years 1 and 2

• 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 4 operations, including with practical resources [for example, concrete objects and measuring tools].

• At this stage, pupils should **develop their ability to recognise, describe, draw, compare and sort different shapes and use the related vocabulary.** Teaching should also involve using a range of measures to describe and compare different quantities such as length, mass, capacity/volume, time and money.

• **By the end of year 2, pupils should know the number bonds to 20** and be precise in using and understanding place value. **An emphasis on practice** at this early stage will aid fluency.

• Pupils should read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at key stage 1.

SATS

- Tests are given to Year 2 and Year 6 students in May/June.
- Children are given arithmetic and reasoning papers.
- In the exam – children will not be allowed to use any counting resources. **However they need to use them in class first of all to support their understanding.**

Number

- Number is key to all other aspects of maths.
- It includes:

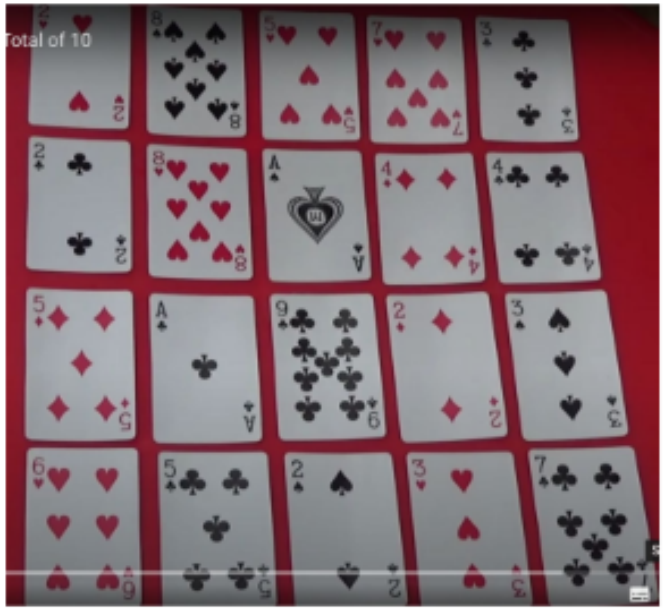
- Counting
- Understanding number (Place value)
- Knowing and using number facts
- Calculating

You can make a difference to your child's learning by playing simple maths games little and often. With just a few minutes each day, children's confidence and self-esteem can soar.

Number game: total of 10 (playing cards)

Shuffle the cards and lay out face up into 4 rows of 5 cards.

The aim of the game is to remove all the cards from the table in sets of 2 or more cards which add up to 10. E.g. an 8 and a 2 could be removed and a 3, 5 and 2 could also be removed.



The game can be played individually, with players trying to clear as much of the table as they can.

If played with other players, take it in turns to remove cards. The winner is the person to have removed the most cards by the end of the game.

The game can also be played using number bonds to 20, by finding cards which add up to 20.

Calculation Methods

- The maths work that your child is doing in school may look different to the kind of 'sums' you remember.

- Many parents express concerns about helping at home and showing 'wrong' methods to their children.

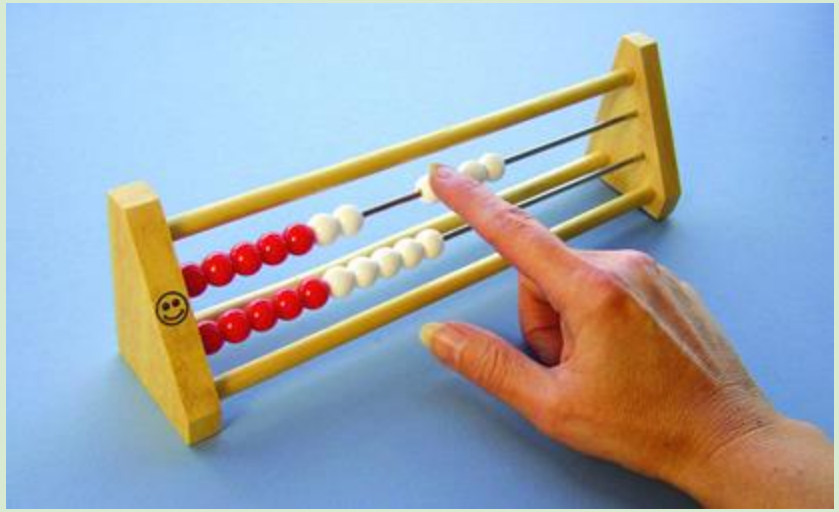
- Our Calculation Policy outlines how maths is taught from Reception through to Year 6 (on our website)

What do we teach in KS1 Maths?

- Number bonds from 10 and 20 (ie 7+3=10, 18+2= 20)
- **Basic multiplication (2,3,5, 10)** **(Not sure if we will have enough time, but will do in another session if not)**
- Basic division (2)
- Fractions (1/2 , 1/4, 1/3)
- **Addition and subtraction to 100**
- **Place value (units, tens and hundreds)**
- Time (o'clock, half past, quarter to, quarter past)
- Measurement (weight, length, capacity)
- Money (everyday money- calculating change)
- Problem solving
- Handling data (graphs, tables, sorting data)
- Shape and space

Year 1 and Year 2
Mastering Number

Children have short 10-15 minute activities/ Fluency slides as part of 'Mastering Number' added to their Maths lessons throughout the week to develop fluency skills.



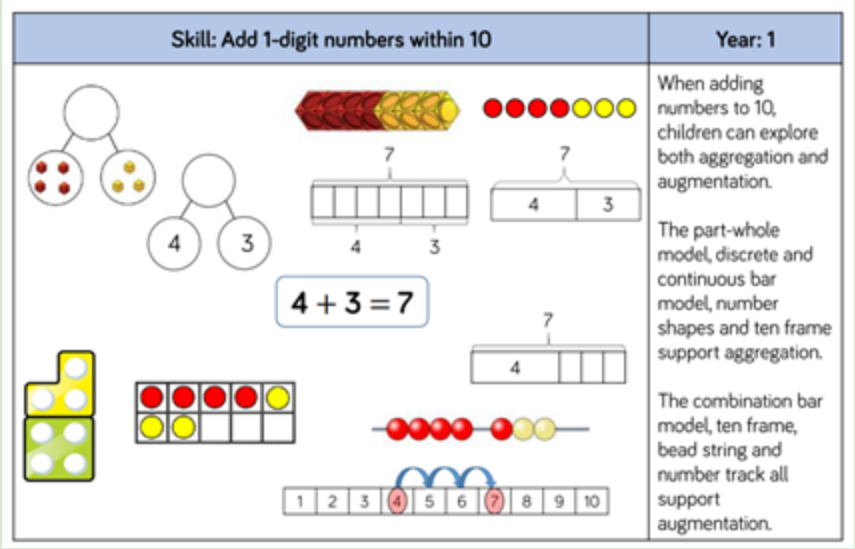
What does Maths look like in Year 1?

Count within 100, forwards and backwards, starting with any number.

Count forwards and backwards in multiples of 2, 5 and 10.

To double numbers to 10.

Read, write and interpret equations containing +, - and = symbols.



Compose numbers to 10 from 2 parts, and partition numbers to 10 into parts, including recognising odd and even numbers.

Number bonds to 10 and within 10.

Recognise common 2D and 3D shapes presented in different orientations, and know that rectangles, triangles, cuboids and pyramids are not always similar to one another.

To read time to O'clock and Half Past.

What does Maths look like in Year 2?

Add and subtract within 100 by applying one-digit addition and subtraction facts.

To add and subtract any 2 two-digit numbers.

Practical learning using a variety of resources.

Recognise the place value of each digit in two-digit numbers.

To read the time to the nearest five minutes

Secure fluency in addition and subtraction facts within 10.

To describe the properties of 2D and 3D shapes and compare shapes by their properties

Recognise the subtraction structure of 'difference' and answer questions such as "How many more…?".

How would you solve these calculations?

2 + 5 =

2 + 8 =

7 + 7 =

6 + 7 =

15 + 11 =

24 + 9 =

32 + 21 =

45 + 36 =

120 + 11 =

Which method did you use?

What skills were you using?

Does that method work for all of these calculations?

How would you solve these calculations?

2 + 5 = *(start with the larger number & count on)*

2 + 8 = *(number bonds to 10)*

7 + 7 = *(doubling)*

6 + 7 = *(near doubles; double 6, then add 1 more)*

15 + 11 = *(add 10, add 1)*

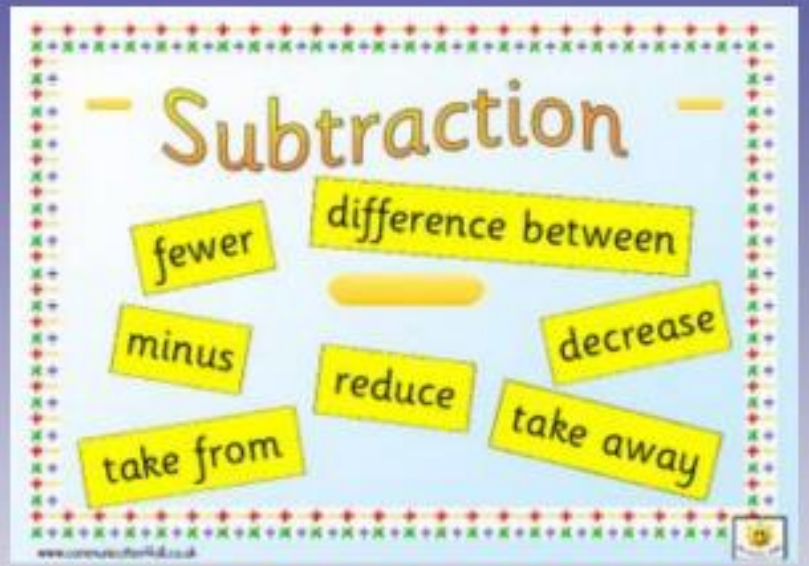
24 + 9 = *(add 10, subtract 1)*

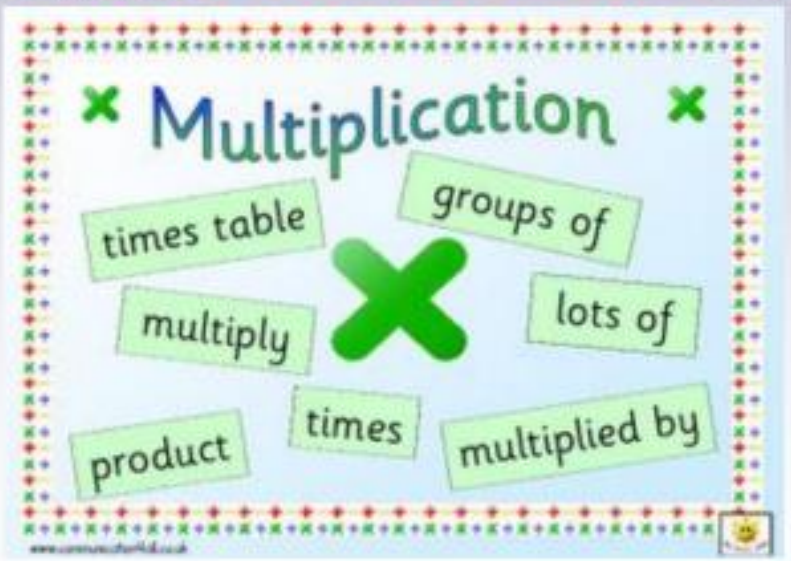
32 + 21 = *(could add 20, add 1 or add tens, add units and then total)*

45 + 36 = *(adding by partitioning)*

120 + 11 = *(add 10, add 1)*

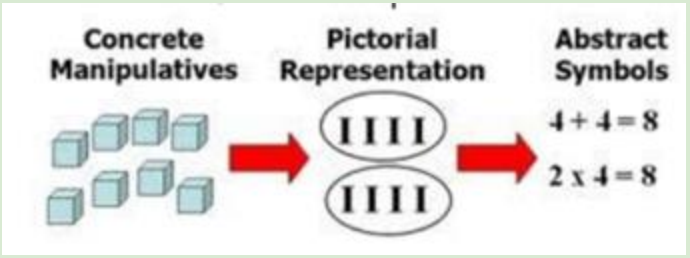
Children should know the different terminology for the same word

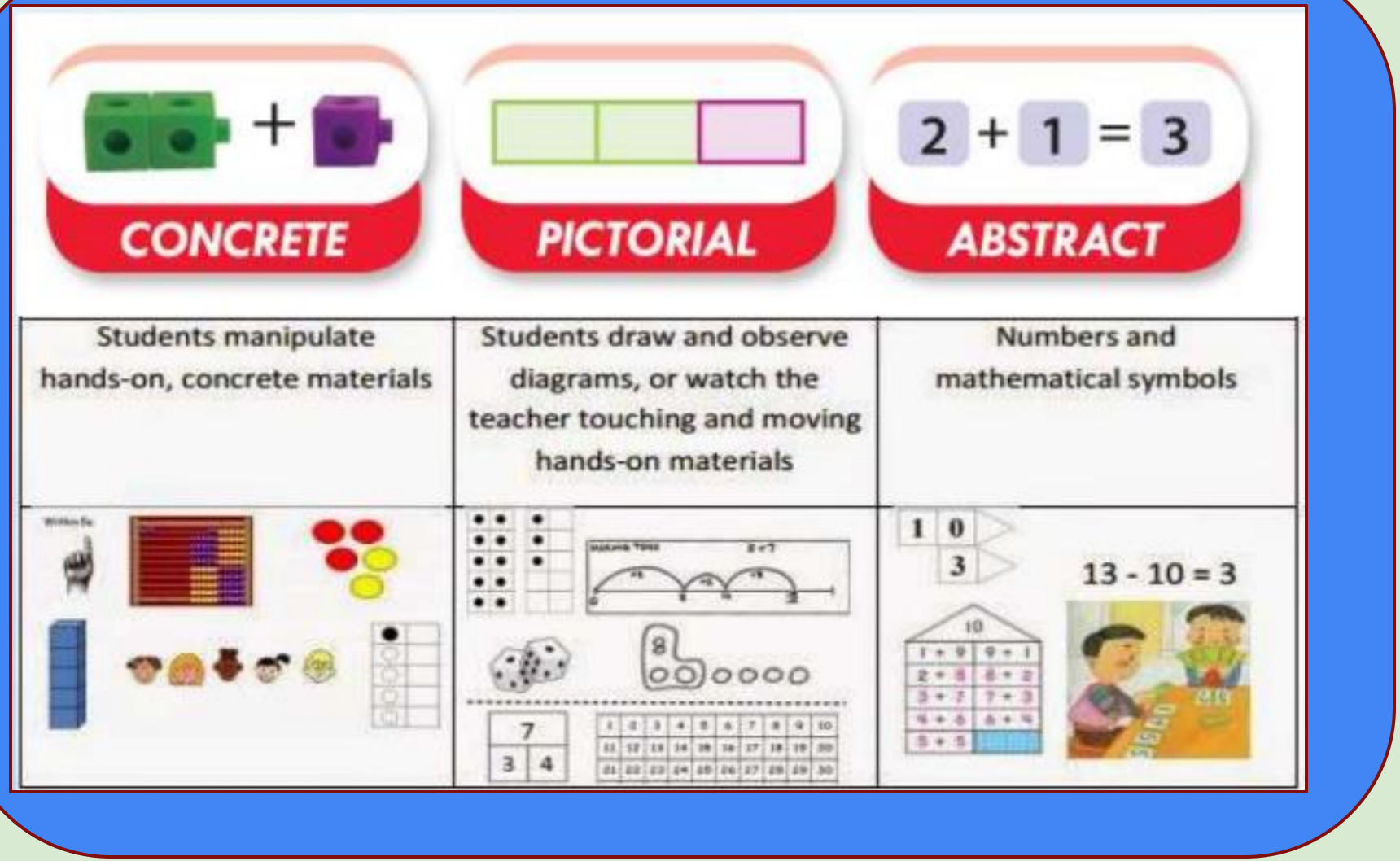




Across the school, we use manipulatives to model, encourage jottings and then move onto the abstract after this.

Concrete
Pictorial
Abstract

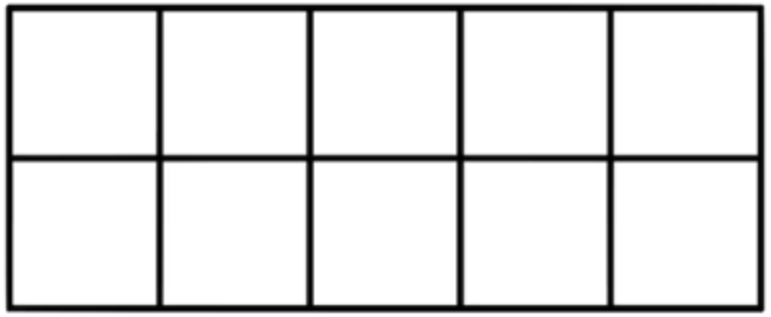




Manipulatives we use at our school…

Counters

Tens frames



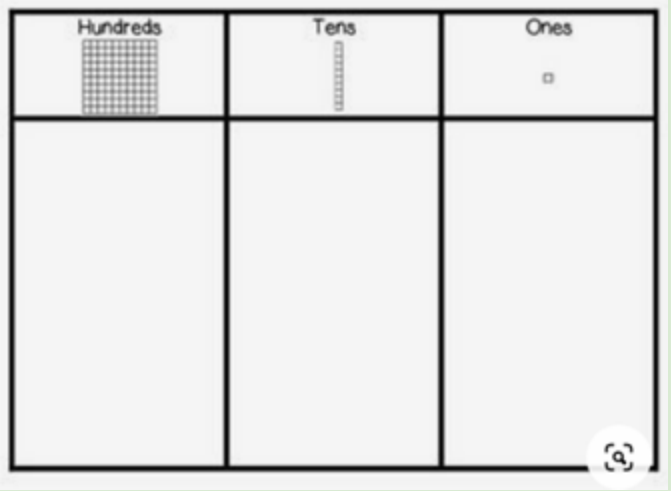
Bead strings

Hundred square grid

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

Numberline

Dienes /Base ten



Place Value Grid

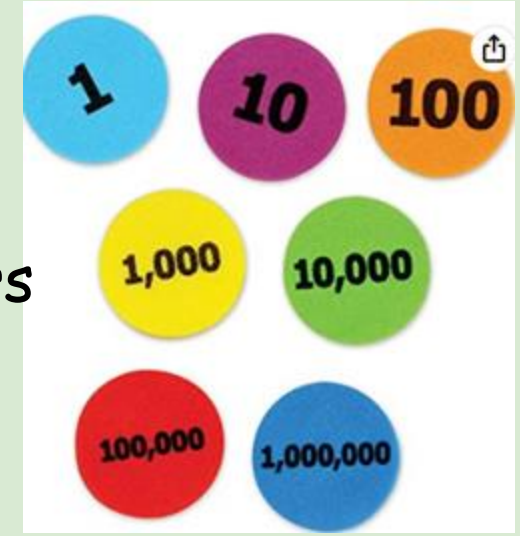
X	1	2	3	4	5	6	7	8	9	10	11	12
1	1	2	3	4	5	6	7	8	9	10	11	12
2	2	4	6	8	10	12	14	16	18	20	22	24
3	3	6	9	12	15	18	21	24	27	30	33	36
4	4	8	12	16	20	24	28	32	36	40	44	48
5	5	10	15	20	25	30	35	40	45	50	55	60
6	6	12	18	24	30	36	42	48	54	60	66	72
7	7	14	21	28	35	42	49	56	63	70	77	84
8	8	16	24	32	40	48	56	64	72	80	88	96
9	9	18	27	36	45	54	63	72	81	90	99	108
10	10	20	30	40	50	60	70	80	90	100	110	120
11	11	22	33	44	55	66	77	88	99	110	121	132
12	12	24	36	48	60	72	84	96	108	120	132	144

Times tables grid

Numicon

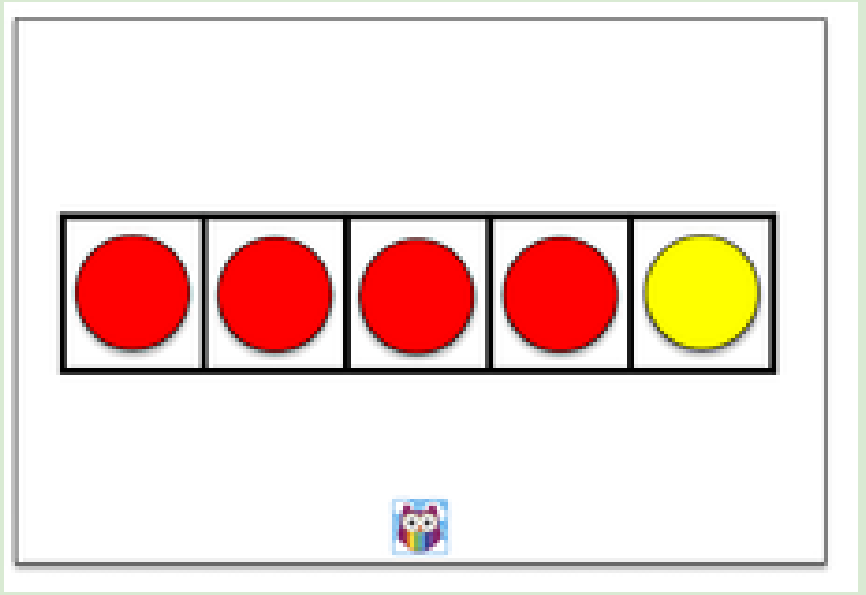
Multilink

Place value counters

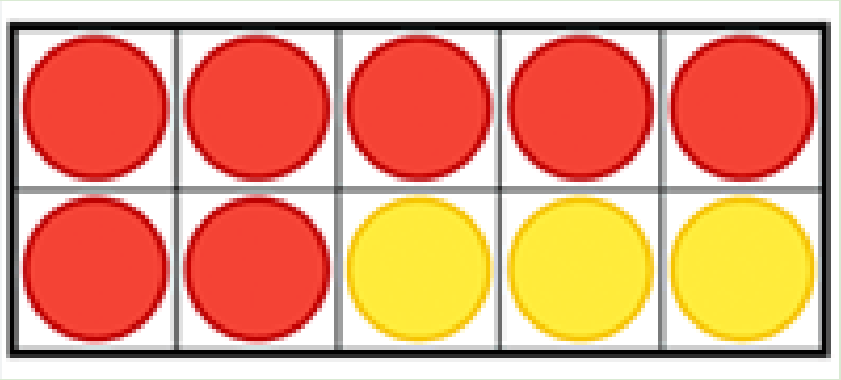


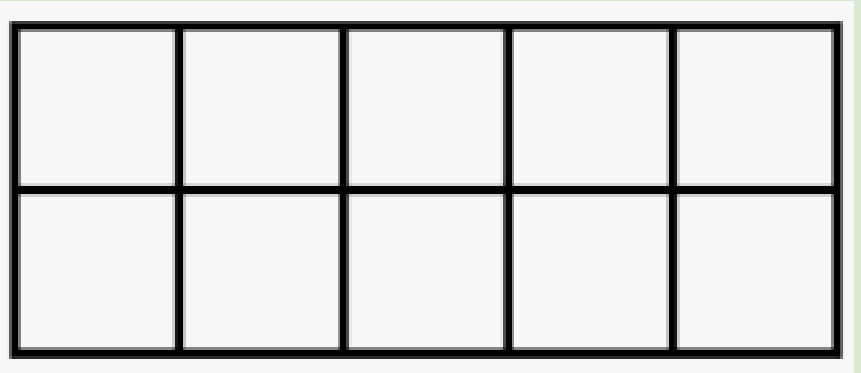
Visuals:

Fives frames

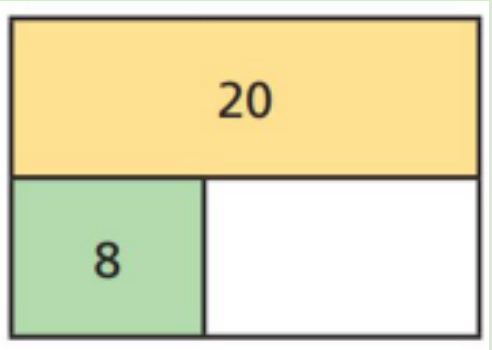


Tens frames

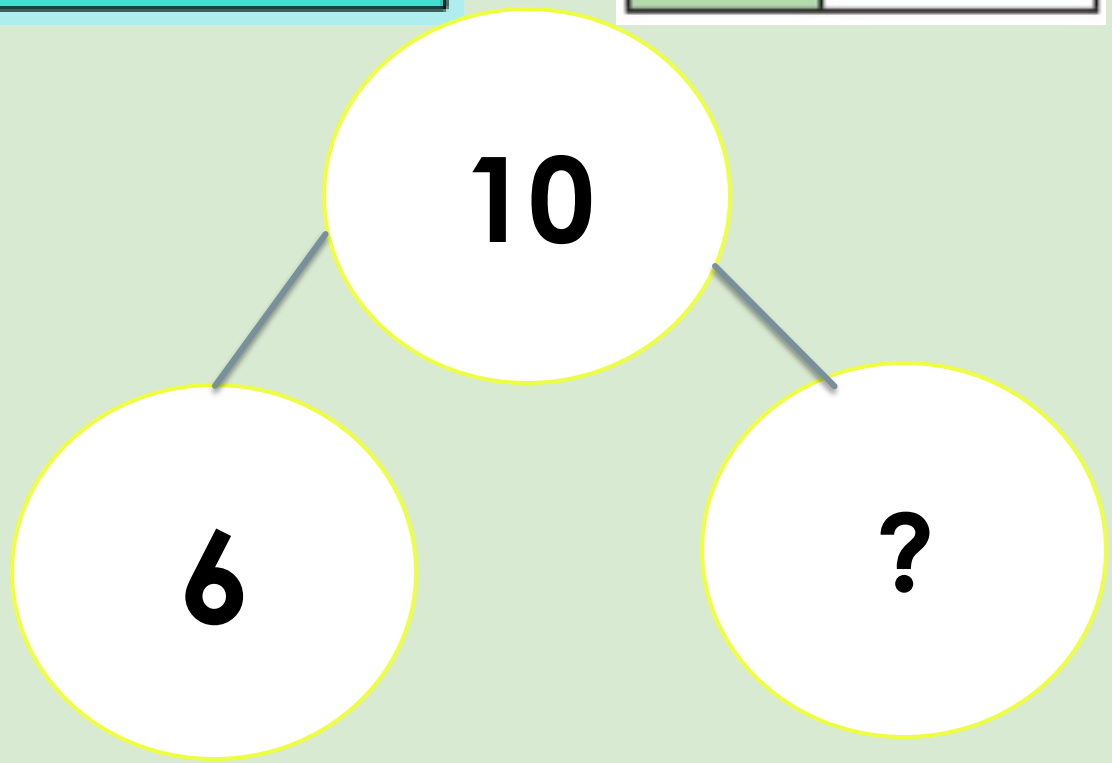




Bar models



Part/ whole models



EYFS

• Maths is one of the seven areas of learning and development in The Early Years Framework.

• Mathematics involves providing children with opportunities to develop and improve their skills in counting, understanding and using numbers, calculating simple addition and subtraction problems; and to describe shapes, spaces, and measure

How does it progress?

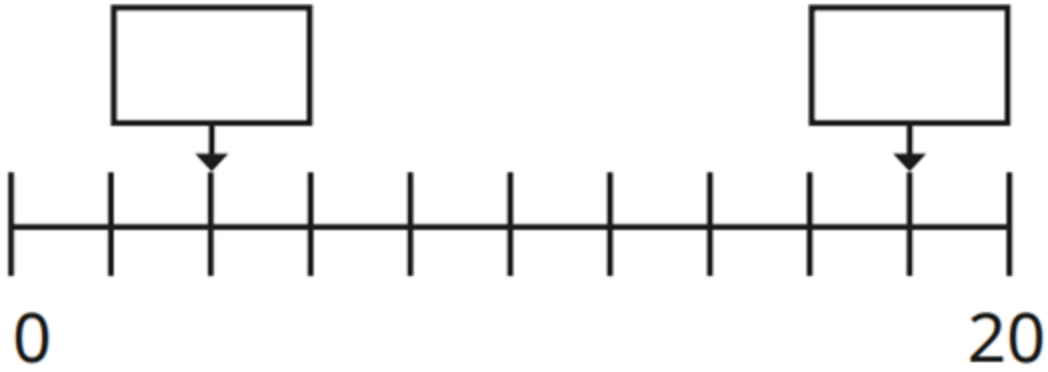
Add and subtract single-digit numbers	Addition built on experience of counting two groups. Opportunities provided for comparing quantities, using language more/less. Combining quantities in 10-frames and using Numicon encourage non-counting-in-ones strategies. Arrangement of sets counted also encourage counting on and calculation strategies. *Representation of 4+3 encourages counting on from 4* *Representation of 4+3 to help visualise 3+3+1*

Lets have some fun!

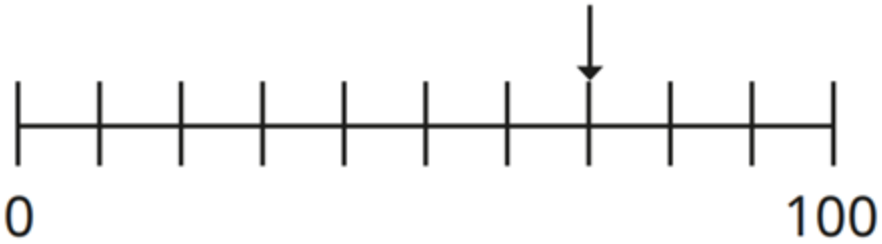
- Use the Numicon, diennes, counters and bead strings on your table to find number bonds to 10 using your tens frames
- Draw your own cherry models
- Fill in the bar models
- Write the number sentence
- Look at a maths problem and apply any of the tools above to help you solve it.

Place value: HTO

What numbers are the arrows pointing to?



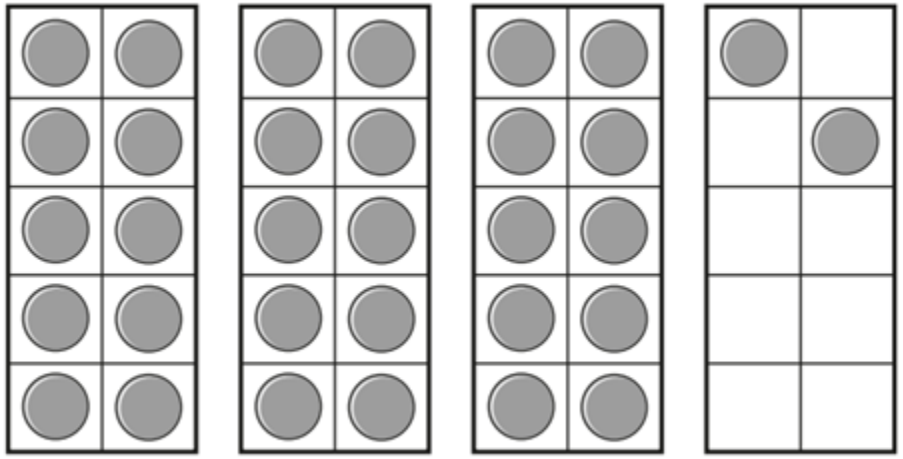
Here is a number line.



What number is the arrow pointing to?

Draw an arrow to estimate the position of 5 on the number line.

Ben has made a number.



What number has Ben made?

2.

What number is the arrow pointing to?

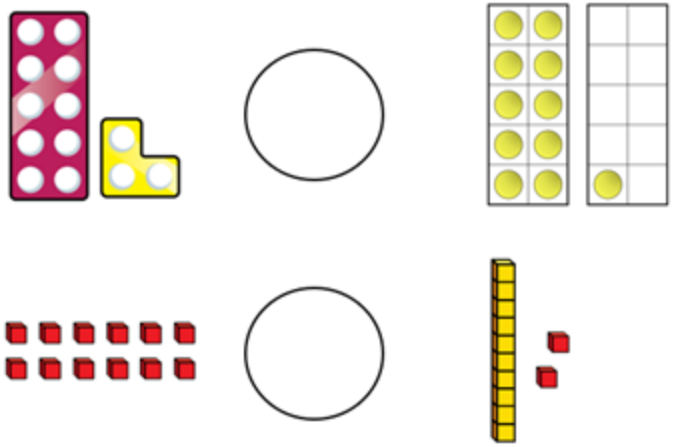
Mo says,

My number is less than 19 but greater than 16.

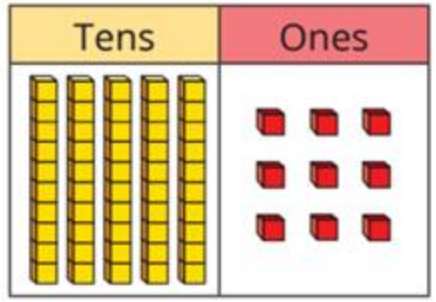
What could Mo's number be?
Write 2 answers.

_____ or _____

Use >, < or = to complete.



3 Complete the sentences.



There are _____ tens

There are _____ ones

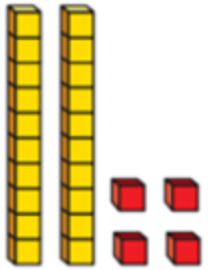
The number is _____

4 Match the numerals to the correct word.

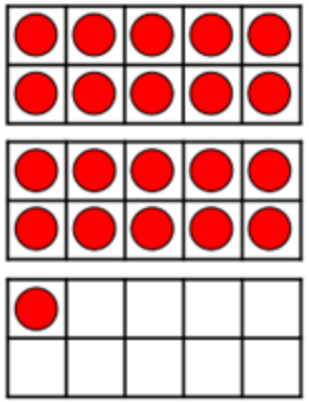
13	Thirty
30	Thirty-three
33	Thirteen

8 Draw more counters on the ten frame so that Eva's number and Jack's number are equal.

Eva's number



Jack's number



9 Which word completes the sentence correctly?

more **less**

3 tens is _____ than 2 tens and 12 ones.

36= 3 tens and 6 ones

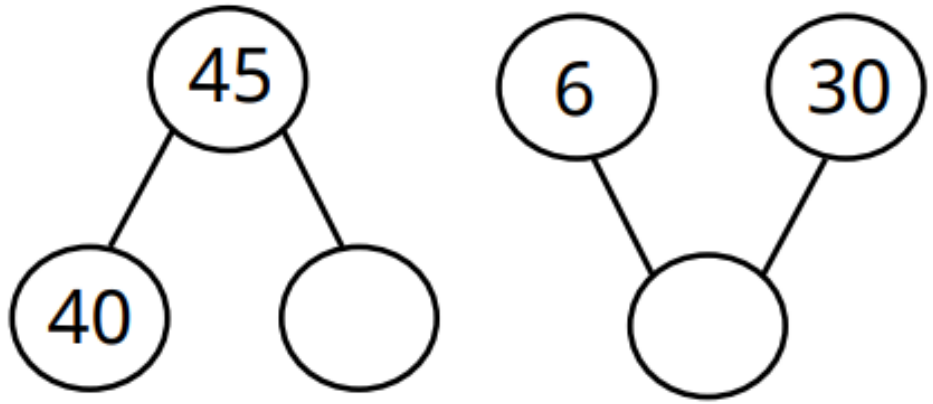
36= 2 tens and 16 ones

36= 1 ten and 26 ones

What number has 14 ones and 2 tens?

_____

5 Complete the part-whole models.



6 Circle the **greatest** number.

18 27 33 19 23

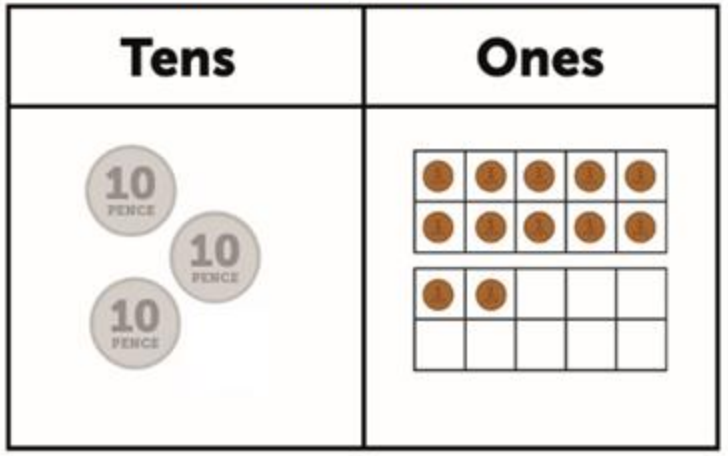
1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Play make 10

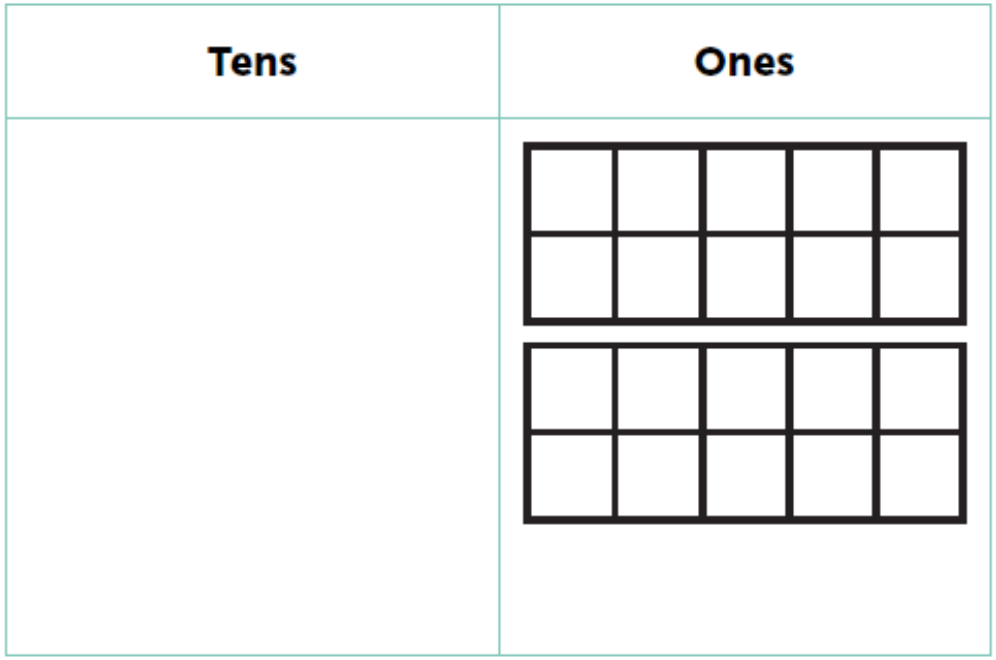
When pupils are playing the 'Make £1', challenge them to always place the lowest number of coins possible in the tens column. Encourage pupils to make use of 20p and 50p coins.

For example, they could have made 76p with 7 ten pence coins and 6 pennies. So they could swap the 7 ten pence coins for a fifty pence and twenty pence.

Ask pupils to remake what is shown below with the least number of coins.

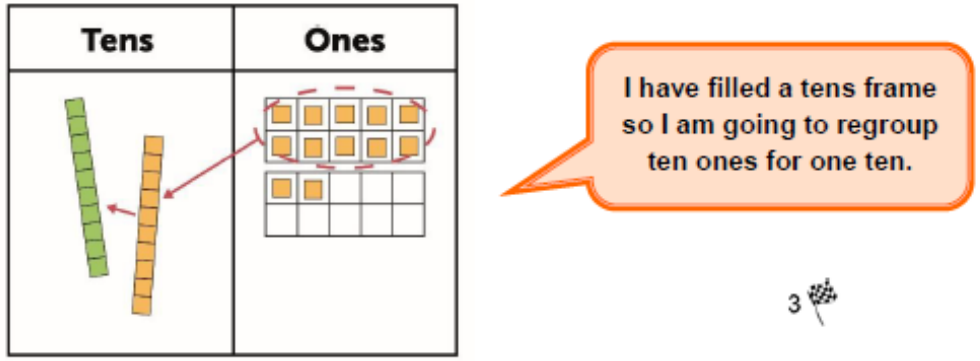


Step 1 Place Value Chart with Embedded Tens Frame



Pupils play 'Make 100'

- Use handout_2LS2_step1_place_value_chart_with embedded_tensframe, base-10 equipment ar ten-sided dice.
- Roll the dice and make the total on the place value chart in the tens frame, filling the top row first left to right, with the base-10 ones cubes.
- Roll the dice again and add the new amount rolled into the tens frame.
- Once one tens frame is full, pupils regroup ten ones for a ten rod. They use this to prove that ten ones is the same as one ten.
- Continue to roll the dice until 100 is made.



How can you help your child with Maths at home?

- Take away their fear.
- Reassure and praise whenever possible. Positive mindset…
- Let them see you using Maths in your everyday routines – portioning meals between the family, chopping vegetables into halves and quarters etc.
- Play with numbers and shapes through games.
- Seeing mistakes as an opportunity to learn and using them as a discussion point.
- Recognising the **importance** and value of maths in our everyday lives e.g. managing money and telling the time.

A quick guide to everyday Maths opportunities for your child

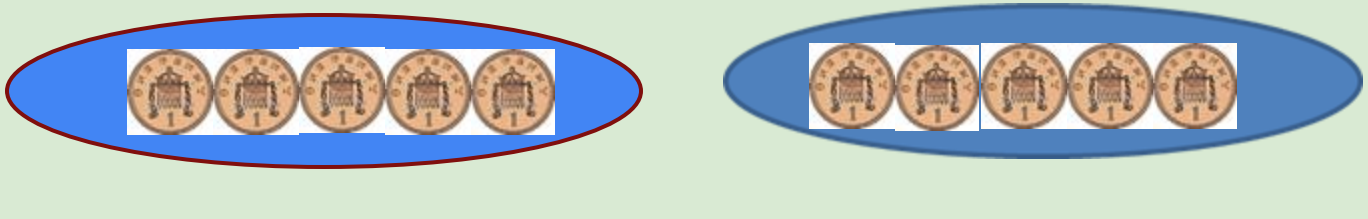
- Practise spotting and recognising numbers in the environment. Add/multiply/subtract/divide door numbers, numbers on car registration plates, road signs and at the shop.
- Flicking through the TV guide? Ask your child to calculate the length of their favourite programmes. How long is it until the next programme?
- Use food packaging to discuss 2D and 3D shapes. What are the properties of these shapes e.g. how many faces, sides, vertices? Flatten the packaging out to find the net of the 3D shape too.
- Measuring up for new furniture? Want to make sure the Christmas tree will fit in your living room? These are really good opportunities to encourage your child to see the value of careful measuring skills in everyday life.
- Practise telling the time with your child. Can they read both the digital and analogue clock? Can they readily convert between the two and use the 24 hour clock? Can they also recognise Roman Numeral representations of the time too?
- Board Games supply endless opportunities for Maths – Snakes and Ladders, Monopoly, Bingo, Connect Four, Battle Ships etc

Resources that you can use at home to support your children:

- Lego can be used as multilink.

- Group everyday items into sets to understand division, remainders, multiplication etc.

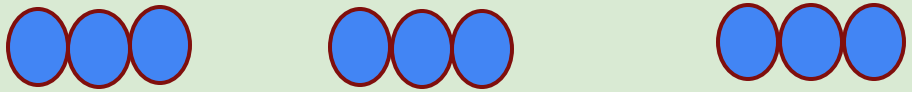
14 divided by 2= 5r4



Encourage your child to **draw** the problem.

1/3 of 9 =

- Also, encourage them to use their fingers!



Other everyday resources that can help your child's Maths skills at home

- Board games and card games encourage your children to **reason**

- Find an analogue watch and refer to the time

Using money:

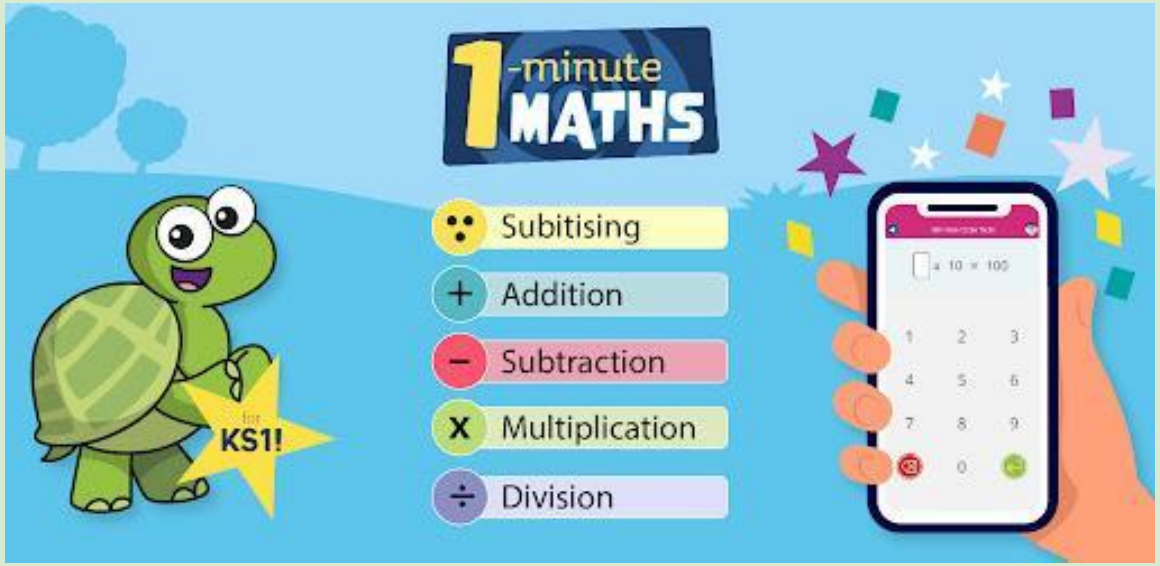
- Allow your children to use real coins.
- Can they work out which coins they will need to buy something?
- Can they use the smallest

number of coins?

- Can they calculate their change?

Useful websites you can use at home:

- Mathletics (always use a pencil and paper to make jottings) or use real life objects to help
- CBeebies
- 1 Minute Maths app
- Toy Theater (online manipulatives)
- Mathsbot (online manipulatives)
- Topmarks (different topics)
- Nrich (challenging tasks)
- Numbots
- TT Rockstars
- Hit the button
- BBC Bitesize



Numbots can be played online on a laptop or you can download it as an app (it's free!). Passwords and usernames have been given to children.

We would like pupils to be accessing their Numbots accounts on ***at least a weekly basis***.

Times Table Rock Stars

Having a secure understanding of the times tables facts and related division calculations up to 12x12 aids children in their mathematical learning within a wide range of different concepts.

Times Table Rock Stars is an exciting game which helps children to learn and practise their times tables. Through a "little and often" approach, children secure their times table knowledge whilst having fun! We recommend approximately 5 minutes practice a day, 4 or 5 times a week. You can download the app from the app store or play on the Times Table Rock Stars game on their website.