Chatsworth Infant School

Maths Parent Workshop

4/2/2025

Mr Harry Webb

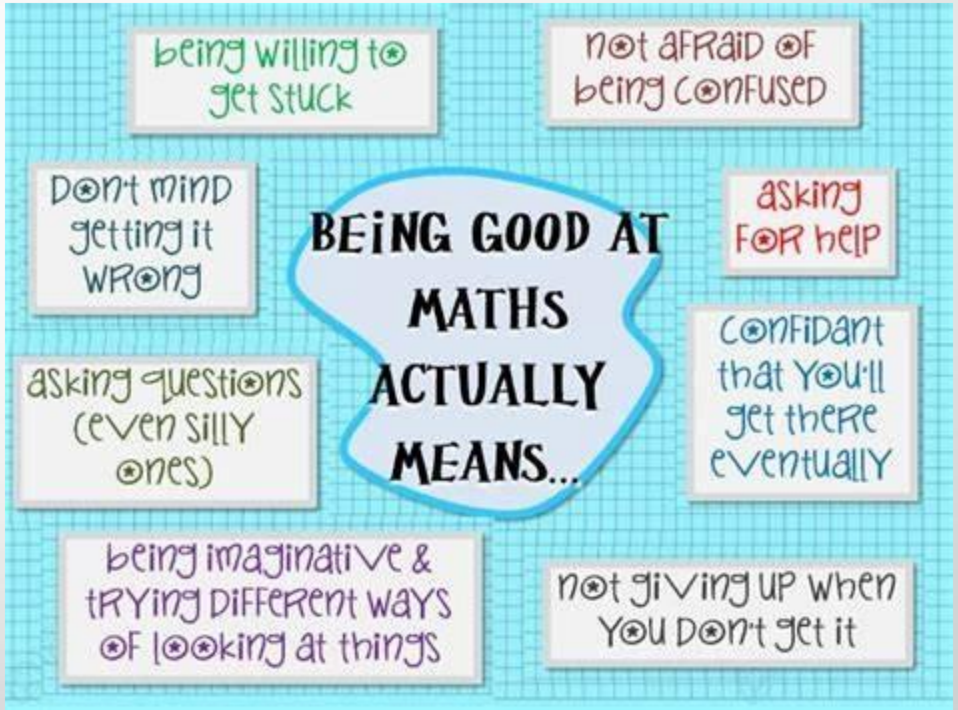
Let's get this out of the way … Math Anxiety

Some resent research shows that 47% of parents dread helping their children with Maths the most.

Research shows that it is not parent's math knowledge that can have an impact on children's abilities but their attitude to it.

Please do not say "I'm not good at Math" or "Maths is too hard" as this can pass onto your children.

Trust me … I was one of these children.



What scheme of learning do we follow?

We use the White Rose Maths 'schemes of learning' for each year group from Reception to Year 2. This continues if your child goes to BOJ and is the same in all TPA Trust schools.

This is a mastery approach to maths teaching that matches the National Curriculum.

It is a clear, time-linked plan for learning throughout the whole school year.

What do you mean?

What does it mean in practice? In summary, a mastery approach...

Puts numbers first: Our schemes have number at their heart, because we believe confidence with numbers is the first step to competency in the curriculum as a whole.

Puts depth before breadth: we reinforce knowledge again and again.

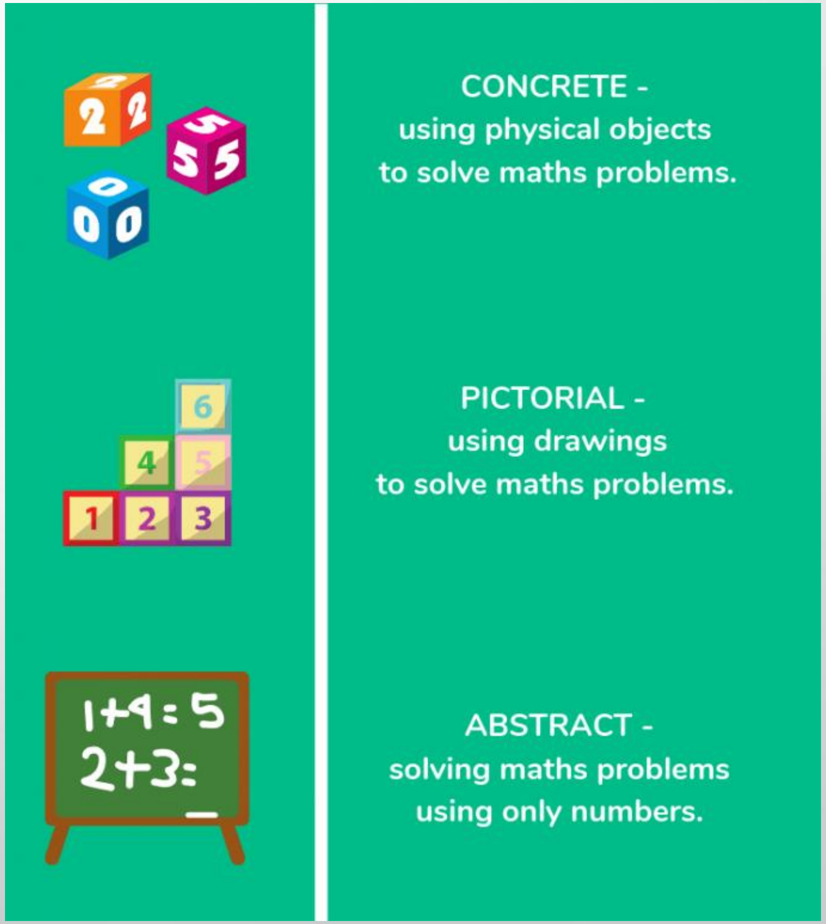
Encourages collaboration: children can progress through the schemes as a group, supporting each other as they learn.

Focuses on fluency, reasoning and problem solving: it gives children the skills they need to become competent mathematicians.

What is the CPA approach?

<u>Concrete Pictorial Abstract</u>

At the heart of the White Rose Maths mastery approach is the Concrete Pictorial Abstract (CPA) approach. Research shows that when children are introduced to a new concept, working with concrete physical resources and pictorial representations leads to a better understanding of abstract concepts.



We will do some of these later today ...

Year R

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn term	Getting to know you		Match, sort and compare FREE TRIAL VIEW		Talk about measure and patterns VIEW		It's me 1, 2, 3 VIEW		Circles and triangles VIEW	1, 2, 3, 4, 5 VIEW		Shapes with 4 sides VIEW
Spring term	Alive in 5 VIEW		Mass and capacity VIEW	Growing 6, 7, 8 VIEW		Length, height and time VIEW		Building 9 and 10 VIEW			Explore 3-D shapes VIEW	
Summer term	To 20 and beyond VIEW		How many now? VIEW	Manipulate, compose and decompose VIEW		Sharing and grouping VIEW		Visualise, build and map VIEW			Make connections VIEW	Consolidation

Year R

Find 1, 2 and 3

White Rose MATHS

Notes and guidance

In this small step, children will explore different representations of 1, 2 and 3. The focus is on finding the representations rather than making them at this point. Start by ensuring children can confidently say the number names 'one', 'two' and 'three' out loud. Once they can do this, they will match the verbal number names to numerals and quantities. Encourage children to count to three using objects in different arrangements by touching each object as they count. They should recognise that the final number they say is the quantity in that set.

Share stories and pictures which represent 1, 2 and 3 and point out the groups. Encourage children to find objects in provision and notice 1, 2 and 3 in the environment.

Rhymes

- *Three Blind Mice*

Books

- *Anno's Counting Book* by Mitsumasa Anno

Key questions

- How many altogether?
- How many did you count?
- How many ways can you find 1/2/3?
- Where can you see 1/2/3?

Possible sentence stems

- I counted ______
- There is 1 ______ .
- There are 2/3 ______ .
- There are ______ altogether.
- I can see…

Links to the curriculum

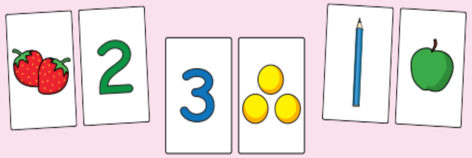
- *Development Matters* – Reception – Count objects, actions and sounds. Link the number symbol (numeral) with its cardinal number value.
- *Birth to 5 Matters* – Range 5 – Links numerals with amounts up to 5 and maybe beyond.

Find 1, 2 and 3

White Rose MATHS

Adult-led learning

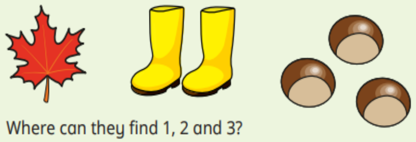
Give children a range of picture cards showing different representations of 1, 2 and 3



Ask the children to match and sort the cards.

Can children identify the cards which do or do not show each number?

Take children on a number hunt.



Where can they find 1, 2 and 3?

Do they count to find how many?

Allow time to sort the different objects into different groups based on their quantity.

Encourage children to create their own collections of 1, 2 and 3

Show children the illustrations from pages 1, 2 and 3 of the story *Anno's Counting Book* by Mitsumasa Anno.

Encourage them to look at the pictures and identify where they can see the different representations of 1, 2 and 3

Where do they see each representation?

How do they see it?

Give children a set of number cards.

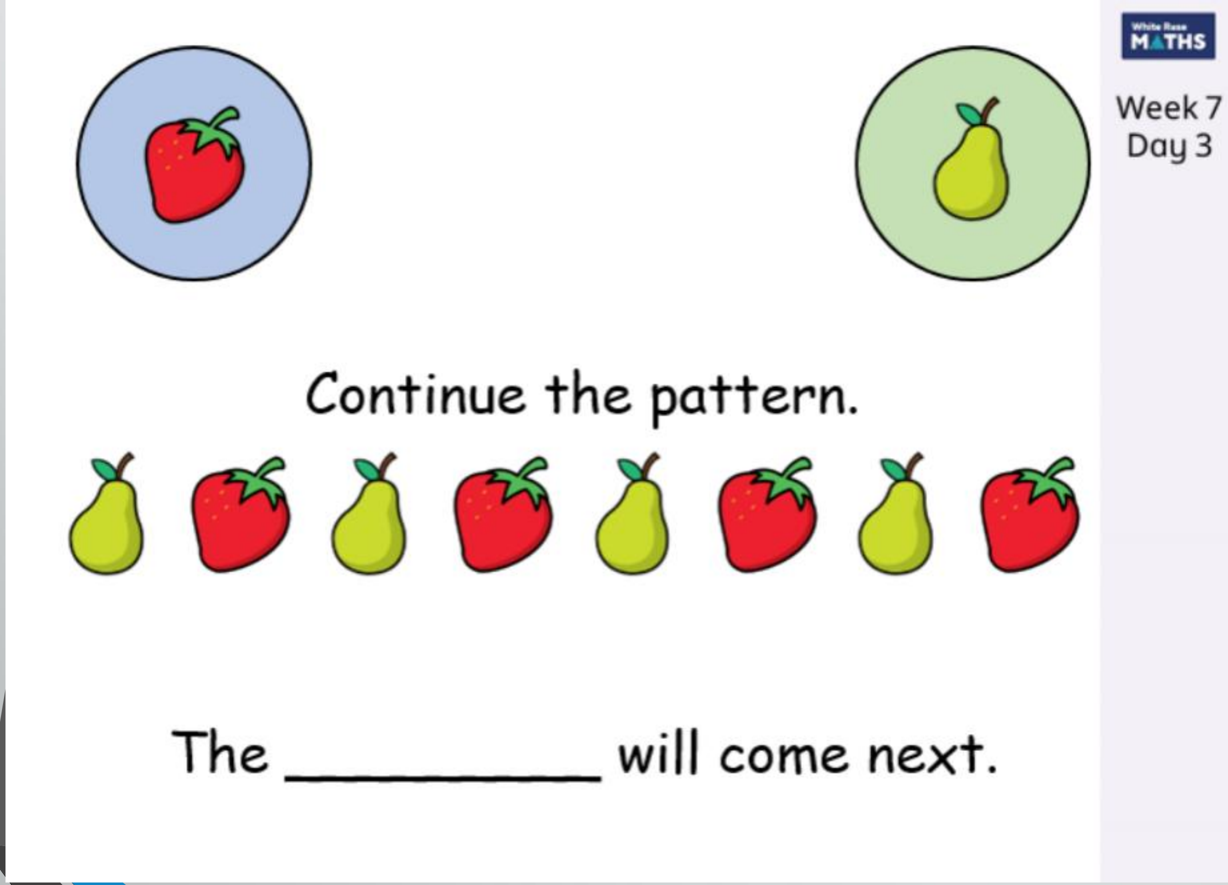
Some cards should show 1, 2 and 3 as numerals.

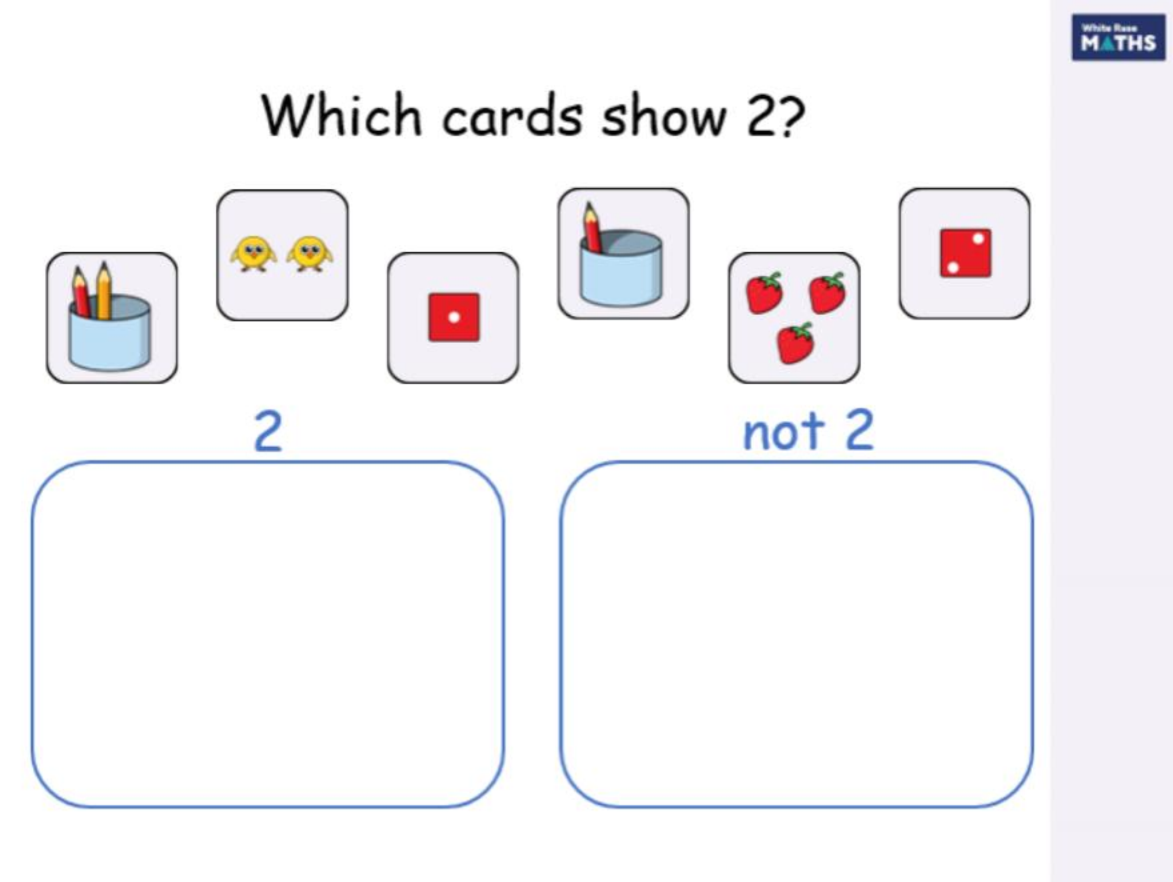
The other cards should show different representations of 1, 2 and 3

Ask children to find each number.

Get them to check each other's answers.

Year R


MATHS
Week 7
Day 3
Continue the pattern.
The __________ will come next.


MATHS
Which cards show 2?
2
not 2

Year 1

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn term	Number **Place value** (within 10) FREE TRIAL VIEW					Number **Addition and subtraction** (within 10) VIEW					Geometry **Shape** VIEW	Consolidation
Spring term	Number **Place value** (within 20) VIEW			Number **Addition and subtraction** (within 20) VIEW			Number **Place value** (within 50) VIEW		Measurement **Length and height** VIEW		Measurement **Mass and volume** VIEW	
Summer term	Number **Multiplication and division** VIEW			Number **Fractions** VIEW		Geometry **Position and direction** VIEW	Number **Place value** (within 100) VIEW		Measurement **Money** VIEW	Measurement **Time** VIEW		Consolidation

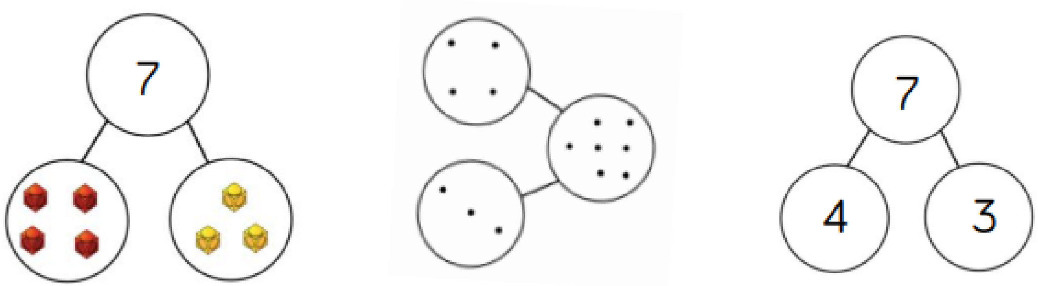
Year 2

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn term	Number: **Place value** FREE TRIAL VIEW				Number: **Addition and subtraction** VIEW					Geometry: **Shape** VIEW		
Spring term	Measurement: **Money** VIEW		Number: **Multiplication and division** VIEW					Measurement: **Length and height** VIEW		Measurement: **Mass, capacity and temperature** VIEW		
Summer term	Number: **Fractions** VIEW			Measurement: **Time** VIEW			**Statistics** VIEW		Geometry: **Position and direction** VIEW		Consolidation	

New Methods / Names For Things

For this next section I am going to need you to put your thinking caps on. I will be throwing lots of information at you but I promise I will keep it simple.

Part-Whole Model

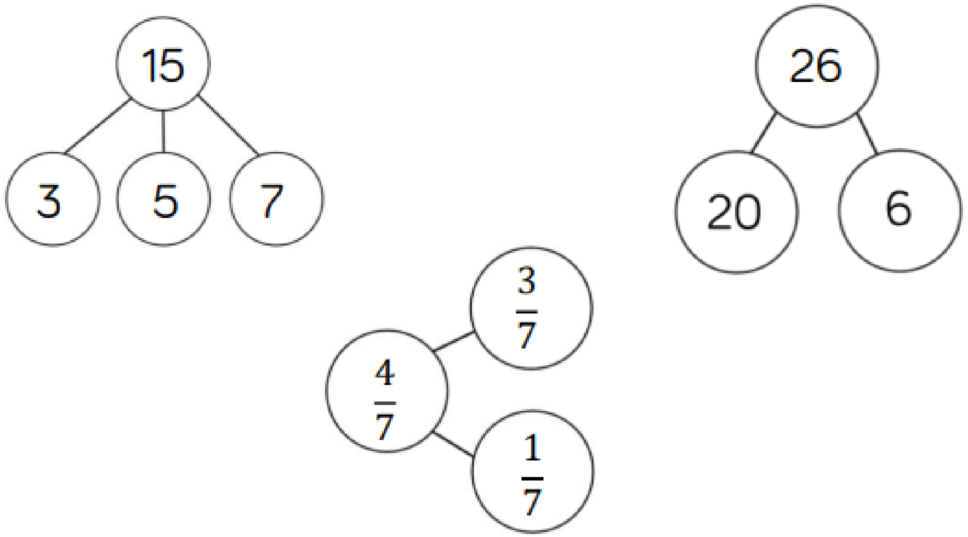


$7 = 4 + 3$

$7 = 3 + 4$

$7 - 3 = 4$

$7 - 4 = 3$



Benefits

This part-whole model supports children in their understanding of aggregation and partitioning. Due to its shape, it can be referred to as a cherry part-whole model.

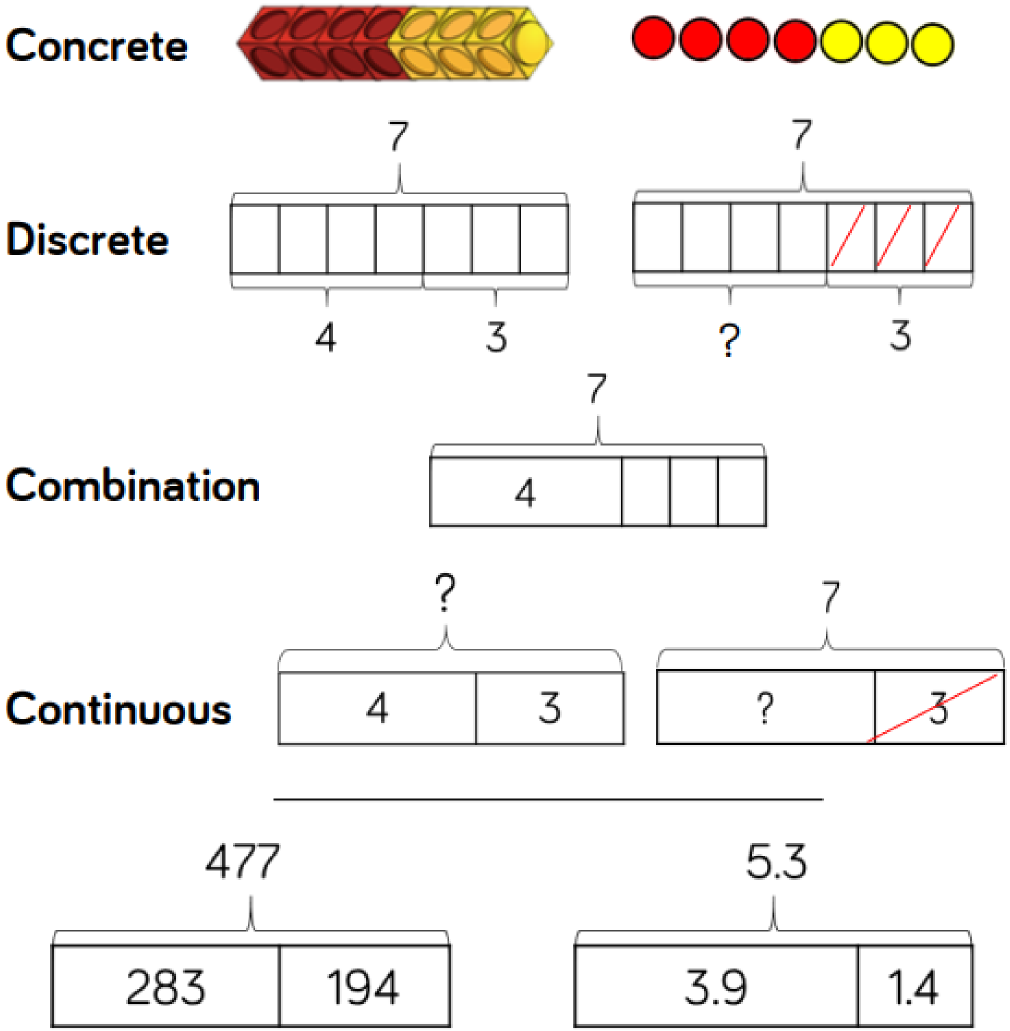
When the parts are complete and the whole is empty, children use aggregation to add the parts together to find the total.

When the whole is complete and at least one of the parts is empty, children use partitioning (a form of subtraction) to find the missing part.

Part-whole models can be used to partition a number into two or more parts, or to help children to partition a number into tens and ones or other place value columns.

In KS2, children can apply their understanding of the part-whole model to add and subtract fractions, decimals and percentages.

Bar Model (single)



Benefits

The single bar model is another type of a part-whole model that can support children in representing calculations to help them unpick the structure.

Cubes and counters can be used in a line as a concrete representation of the bar model.

Discrete bar models are a good starting point with smaller numbers. Each box represents one whole.

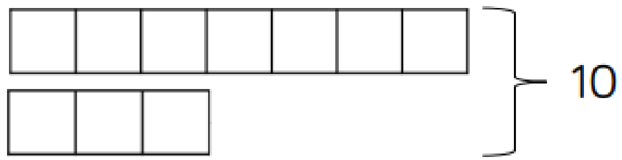
The combination bar model can support children to calculate by counting on from the larger number. It is a good stepping stone towards the continuous bar model.

Continuous bar models are useful for a range of values. Each rectangle represents a number. The question mark indicates the value to be found.

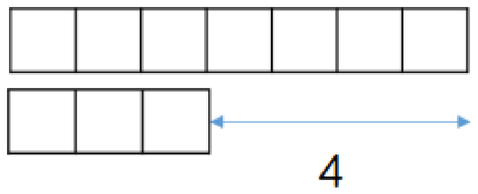
In KS2, children can use bar models to represent larger numbers, decimals and fractions.

Bar Model (multiple)

Discrete

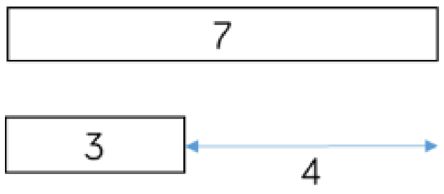


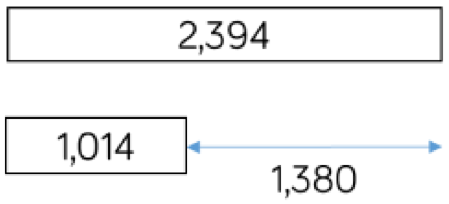
7 + 3 = 10



7 – 3 = 4

Continuous





7 – 3 = 4

2,394 – 1,014 = 1,380

Benefits

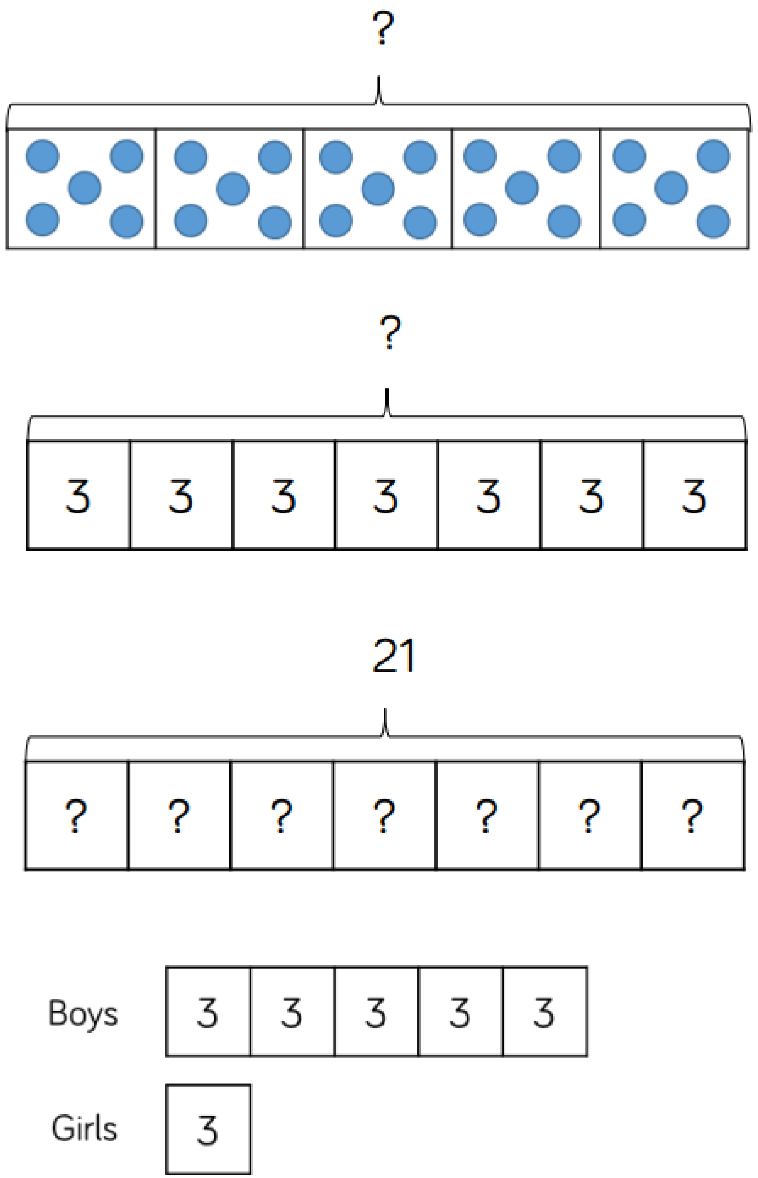
The multiple bar model is a good way to compare quantities whilst still unpicking the structure.

Two or more bars can be drawn, with a bracket labelling the whole positioned on the right hand side of the bars. Smaller numbers can be represented with a discrete bar model whilst continuous bar models are more effective for larger numbers.

Multiple bar models can also be used to represent the difference in subtraction. An arrow can be used to model the difference.

When working with smaller numbers, children can use cubes and a discrete model to find the difference. This supports children to see how counting on can help when finding the difference.

Bar Model



$5 \times 5 = 25$

$3 \times 7 = 21$

$7 \times 3 = 21$

$21 \div 7 = 3$

Benefits

Children can use the single bar model to represent multiplication as repeated addition. They could use counters, cubes or dots within the bar model to support calculation before moving on to placing digits into the bar model to represent the multiplication.

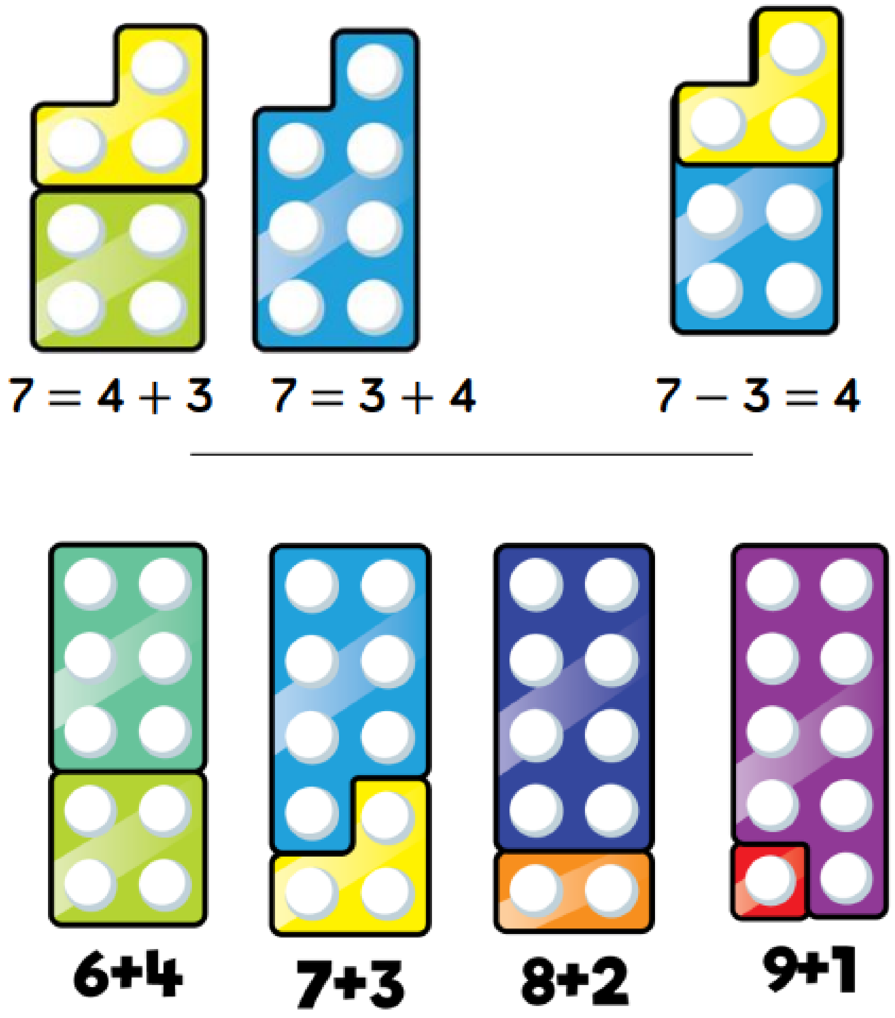
Division can be represented by showing the total of the bar model and then dividing the bar model into equal groups.

It is important when solving word problems that the bar model represents the problem.

Sometimes, children may look at scaling problems. In this case, more than one bar model is useful to represent this type of problem, e.g. There are 3 girls in a group. There are 5 times more boys than girls. How many boys are there?
The multiple bar model provides an opportunity to compare the groups.

Number Shapes

It is Numicon ... they just can't call it that



Benefits

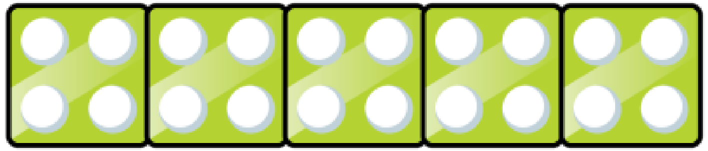
Number shapes can be useful to support children to subitise numbers as well as explore aggregation, partitioning and number bonds.

When adding numbers, children can see how the parts come together making a whole. As children use number shapes more often, they can start to subitise the total due to their familiarity with the shape of each number.

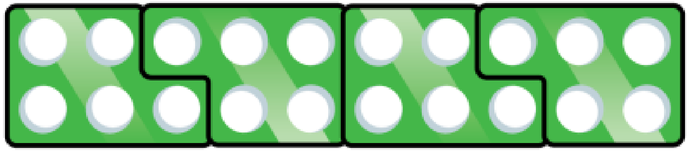
When subtracting numbers, children can start with the whole and then place one of the parts on top of the whole to see what part is missing. Again, children will start to be able to subitise the part that is missing due to their familiarity with the shapes.

Children can also work systematically to find number bonds. As they increase one number by 1, they can see that the other number decreases by 1 to find all the possible number bonds for a number.

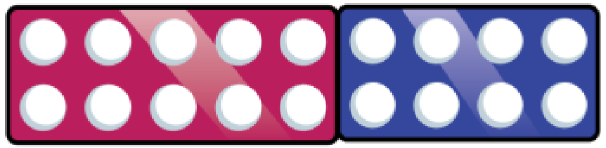
Number Shapes

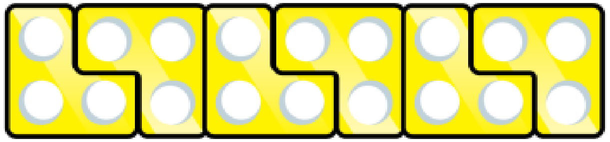


$5 \times 4 = 20$
$4 \times 5 = 20$



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





$18 \div 3 = 6$

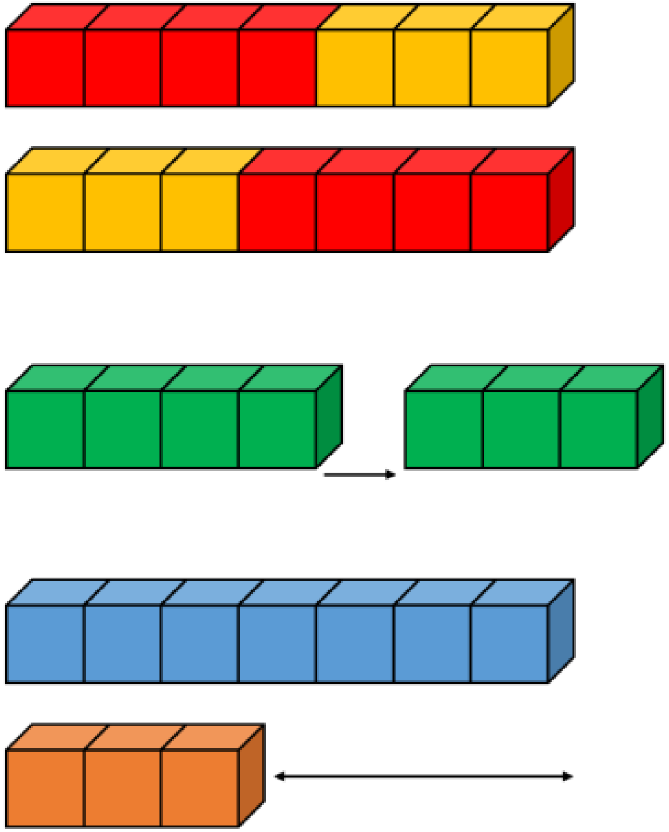
Benefits

Number shapes support children's understanding of multiplication as repeated addition.

Children can build multiplications in a row using the number shapes. When using odd numbers, encourage children to interlock the shapes so there are no gaps in the row. They can then use the tens number shapes along with other necessary shapes over the top of the row to check the total. Using the number shapes in multiplication can support children in discovering patterns of multiplication e.g. odd × odd = even, odd × even = odd, even × even = even.

When dividing, number shapes support children's understanding of division as grouping. Children make the number they are dividing and then place the number shape they are dividing by over the top of the number to find how many groups of the number there are altogether e.g. There are 6 groups of 3 in 18.

Cubes



$7 = 4 + 3$

$7 = 3 + 4$

$7 - 3 = 4$

$7 - 3 = 4$

Benefits

Cubes can be useful to support children with the addition and subtraction of one-digit numbers.

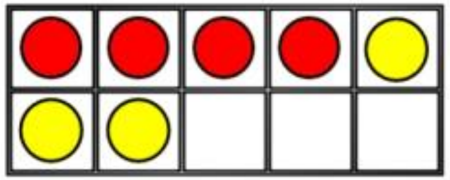
When adding numbers, children can see how the parts come together to make a whole. Children could use two different colours of cubes to represent the numbers before putting them together to create the whole.

When subtracting numbers, children can start with the whole and then remove the number of cubes that they are subtracting in order to find the answer. This model of subtraction is reduction, or take away.

Cubes can also be useful to look at subtraction as difference. Here, both numbers are made and then lined up to find the difference between the numbers.

Cubes are useful when working with smaller numbers but are less efficient with larger numbers as they are difficult to subitise and children may miscount them.

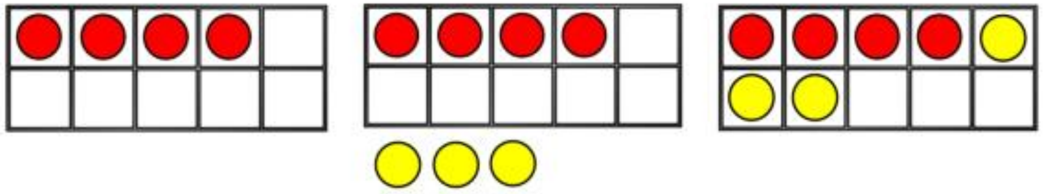
Ten Frames (within 10)



$4 + 3 = 7$
$3 + 4 = 7$
$7 - 3 = 4$
$7 - 4 = 3$

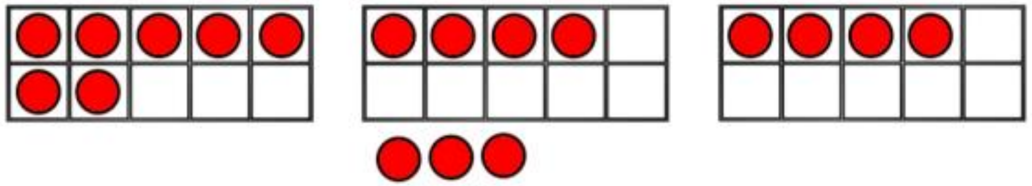
4 is a part.
3 is a part.
7 is the whole.

First | Then | Now



$4 + 3 = 7$

First | Then | Now



$7 - 3 = 4$

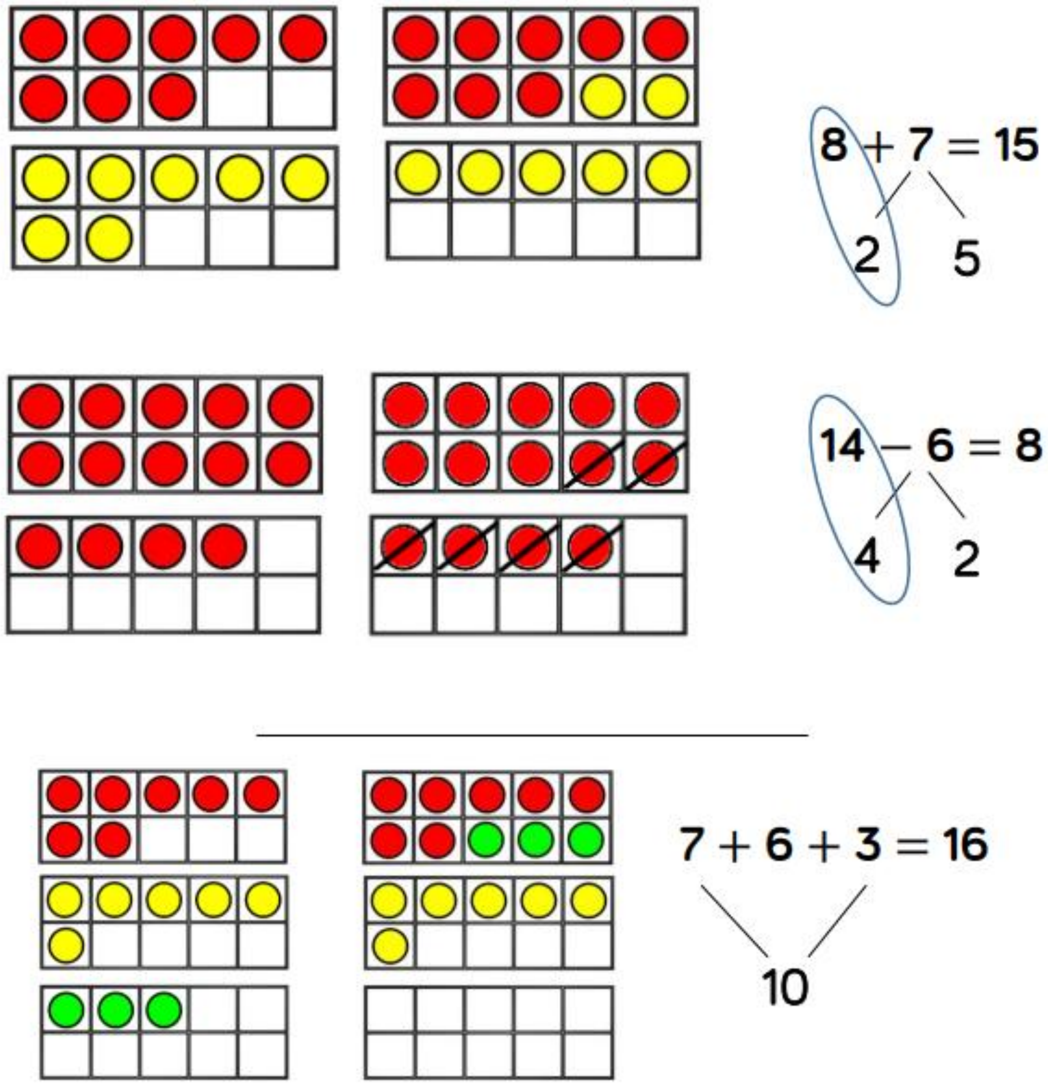
Benefits

When adding and subtracting within 10, the ten frame can support children to understand the different structures of addition and subtraction.

Using the language of parts and wholes represented by objects on the ten frame introduces children to aggregation and partitioning.
Aggregation is a form of addition where parts are combined together to make a whole. Partitioning is a form of subtraction where the whole is split into parts. Using these structures, the ten frame can enable children to find all the number bonds for a number.

Children can also use ten frames to look at augmentation (increasing a number) and take-away (decreasing a number). This can be introduced through a first, then, now structure which shows the change in the number in the 'then' stage. This can be put into a story structure to help children understand the change e.g. First, there were 7 cars. Then, 3 cars left. Now, there are 4 cars.

Ten Frames (within 20)



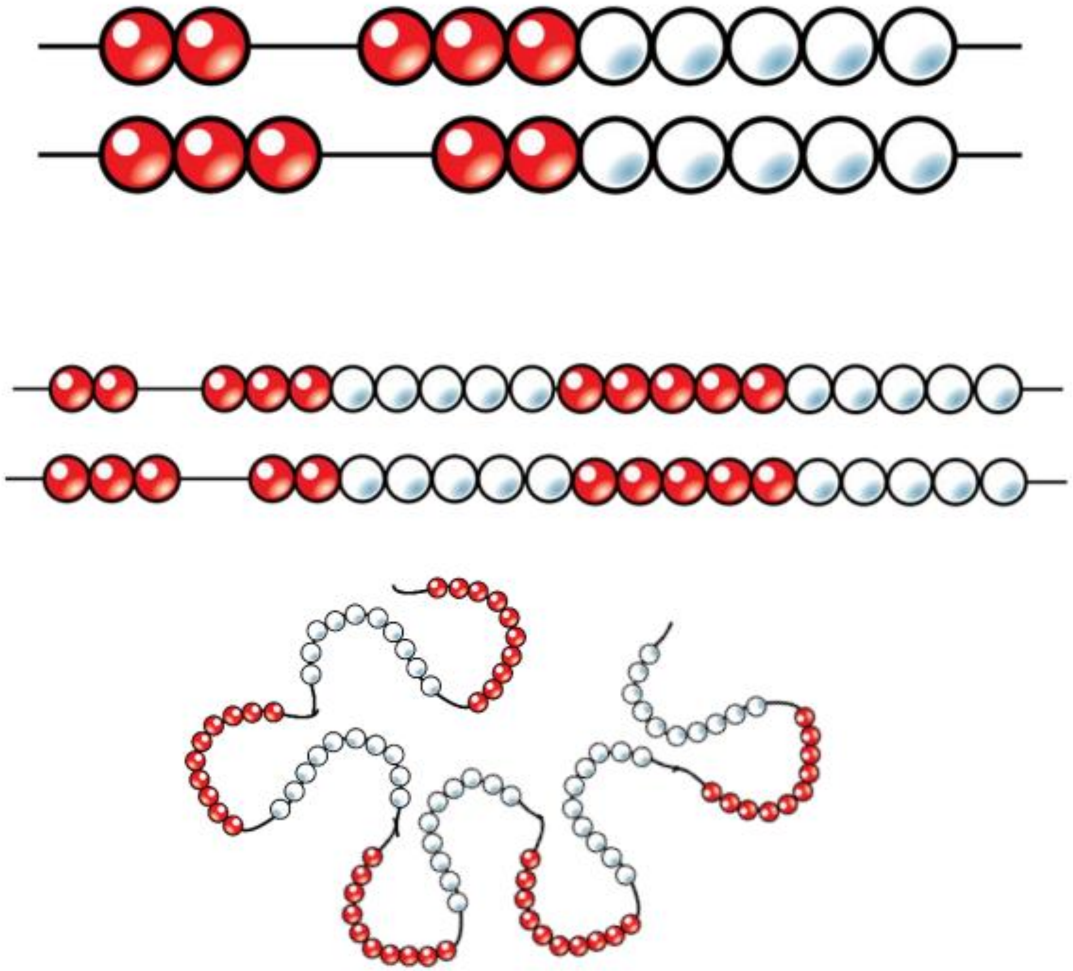
Benefits

When adding two single digits, children can make each number on separate ten frames before moving part of one number to make 10 on one of the ten frames. This supports children to see how they have partitioned one of the numbers to make 10, and makes links to effective mental methods of addition.

When subtracting a one-digit number from a two-digit number, firstly make the larger number on 2 ten frames. Remove the smaller number, thinking carefully about how you have partitioned the number to make 10, this supports mental methods of subtraction.

When adding three single-digit numbers, children can make each number on 3 separate 10 frames before considering which order to add the numbers in. They may be able to find a number bond to 10 which makes the calculation easier. Once again, the ten frames support the link to effective mental methods of addition as well as the importance of commutativity.

Bead Strings



Benefits

Different sizes of bead strings can support children at different stages of addition and subtraction.

Bead strings to 10 are very effective at helping children to investigate number bonds up to 10.
They can help children to systematically find all the number bonds to 10 by moving one bead at a time to see the different numbers they have partitioned the 10 beads into e.g. 2 + 8 = 10, move one bead, 3 + 7 = 10.

Bead strings to 20 work in a similar way but they also group the beads in fives. Children can apply their knowledge of number bonds to 10 and see the links to number bonds to 20.

Bead strings to 100 are grouped in tens and can support children in number bonds to 100 as well as helping when adding by making ten. Bead strings can show a link to adding to the next 10 on number lines which supports a mental method of addition.

Bead Strings

$5 \times 3 = 15$
$3 \times 5 = 15$

$15 \div 3 = 5$

$5 \times 3 = 15$
$3 \times 5 = 15$

$15 \div 5 = 3$

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

$20 \div 4 = 5$

Benefits

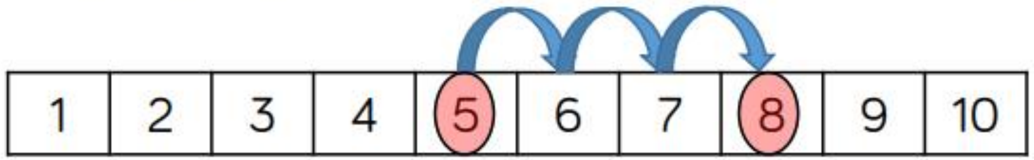
Bead strings to 100 can support children in their understanding of multiplication as repeated addition. Children can build the multiplication using the beads. The colour of beads supports children in seeing how many groups of 10 they have, to calculate the total more efficiently.
Encourage children to count in multiples as they build the number e.g. 4, 8, 12, 16, 20.

Children can also use the bead string to count forwards and backwards in multiples, moving the beads as they count.

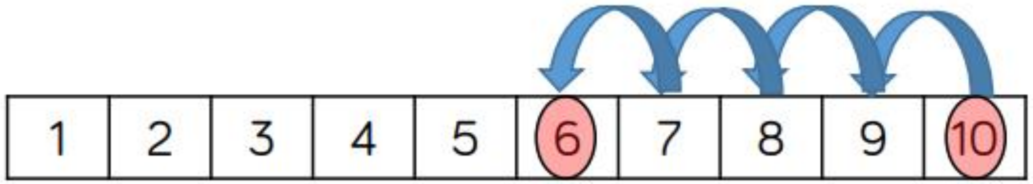
When dividing, children build the number they are dividing and then group the beads into the number they are dividing by e.g. 20 divided by 4 – Make 20 and then group the beads into groups of four. Count how many groups you have made to find the answer.

Number Tracks

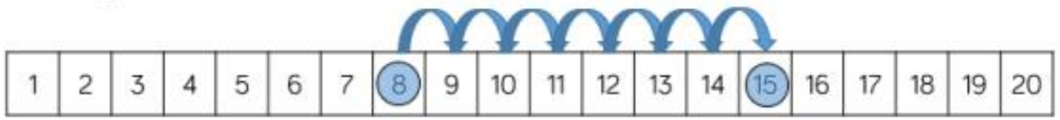
$5 + 3 = 8$



$10 - 4 = 6$



$8 + 7 = 15$



Benefits

Number tracks are useful to support children in their understanding of augmentation and reduction.

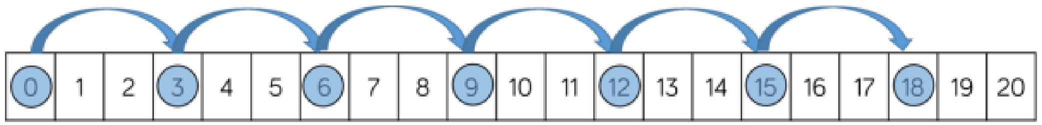
When adding, children count on to find the total of the numbers. On a number track, children can place a counter on the starting number and then count on to find the total.

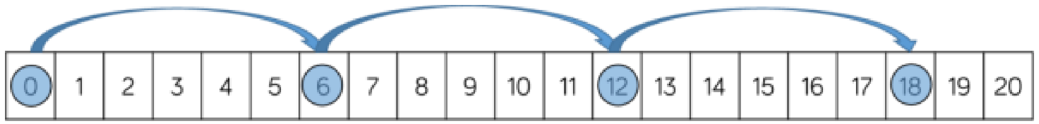
When subtracting, children count back to find their answer. They start at the minuend and then take away the subtrahend to find the difference between the numbers.

Number tracks can work well alongside ten frames and bead strings which can also model counting on or counting back.

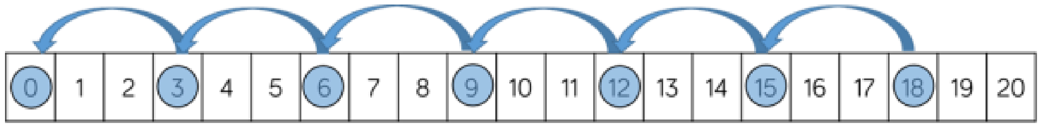
Playing board games can help children to become familiar with the idea of counting on using a number track before they move on to number lines.

Number Tracks





$$6 \times 3 = 18$$
$$3 \times 6 = 18$$



$$18 \div 3 = 6$$

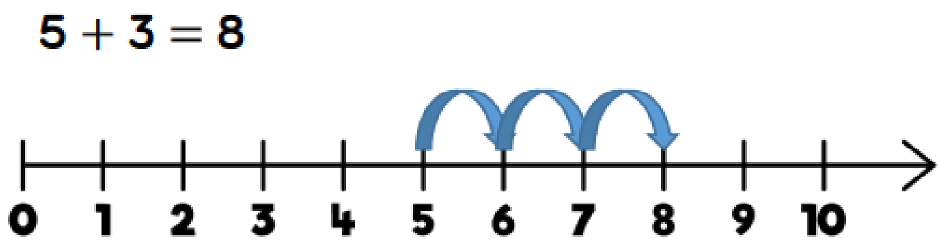
Benefits

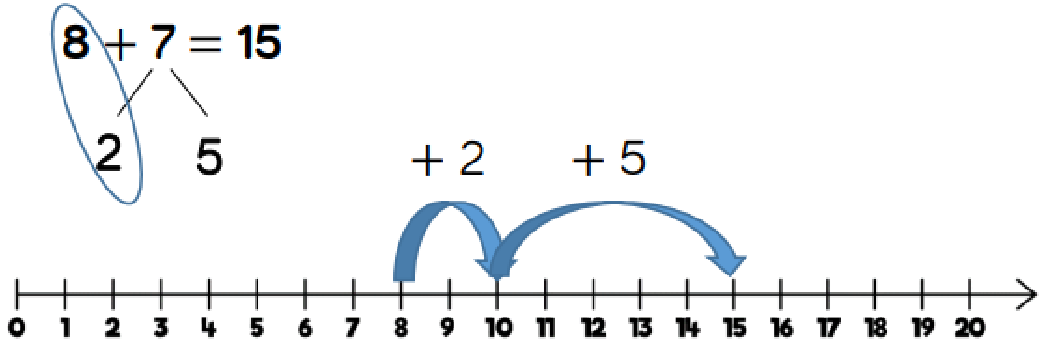
Number tracks are useful to support children to count in multiples, forwards and backwards. Moving counters or cubes along the number track can support children to keep track of their counting. Translucent counters help children to see the number they have landed on whilst counting.

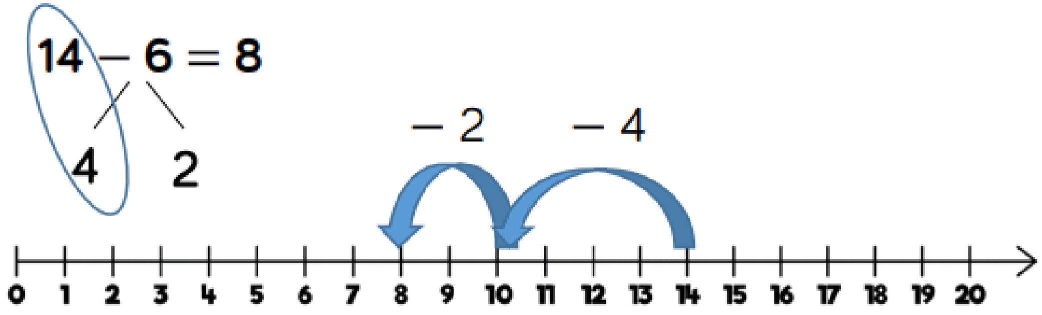
When multiplying, children place their counter on 0 to start and then count on to find the product of the numbers.
When dividing, children place their counter on the number they are dividing and the count back in jumps of the number they are dividing by until they reach 0. Children record how many jumps they have made to find the answer to the division.

Number tracks can be useful with smaller multiples but when reaching larger numbers they can become less efficient.

Number Lines (labelled)







Benefits

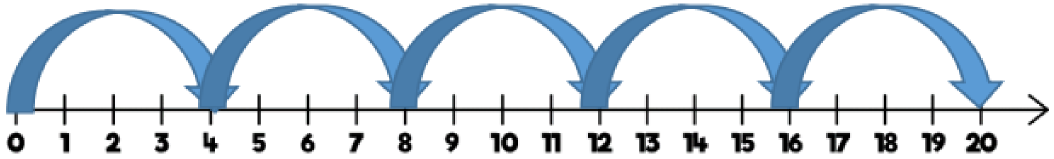
Labelled number lines support children in their understanding of addition and subtraction as augmentation and reduction.

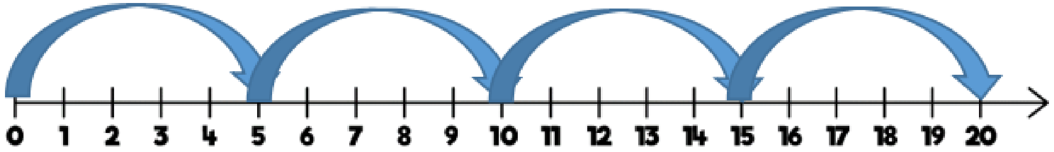
Children can start by counting on or back in ones, up or down the number line. This skill links directly to the use of the number track.

Progressing further, children can add numbers by jumping to the nearest 10 and then jumping to the total. This links to the making 10 method which can also be supported by ten frames. The smaller number is partitioned to support children to make a number bond to 10 and to then add on the remaining part.

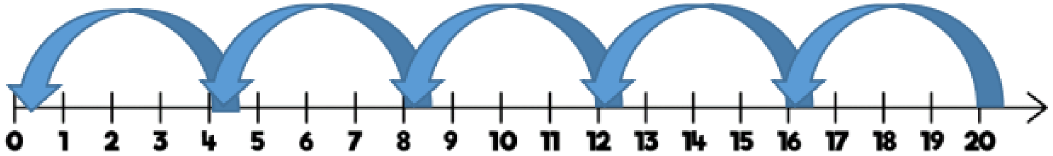
Children can subtract numbers by firstly jumping to the nearest 10. Again, this can be supported by ten frames so children can see how they partition the smaller number into the two separate jumps.

Number Lines (labelled)





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



$20 \div 4 = 5$

Benefits

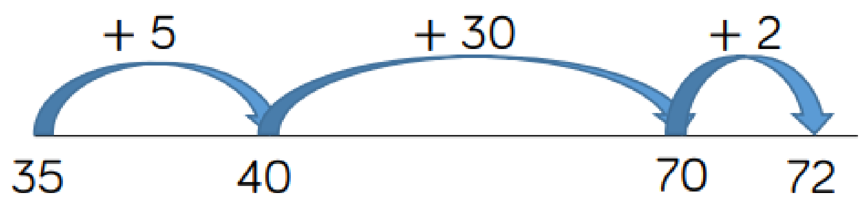
Labelled number lines are useful to support children to count in multiples, forwards and backwards as well as calculating single-digit multiplications.

When multiplying, children start at 0 and then count on to find the product of the numbers.
When dividing, start at the number they are dividing and the count back in jumps of the number they are dividing by until they reach 0.
Children record how many jumps they have made to find the answer to the division.

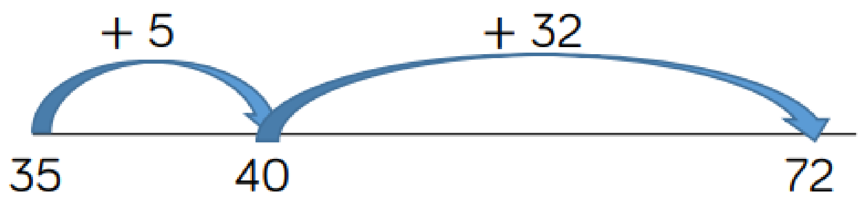
Labelled number lines can be useful with smaller multiples, however they become inefficient as numbers become larger due to the required size of the number line.

Number Lines (blank)

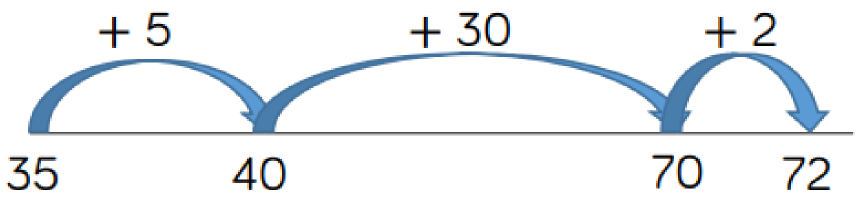
35 + 37 = 72



35 + 37 = 72



72 – 35 = 37



Benefits

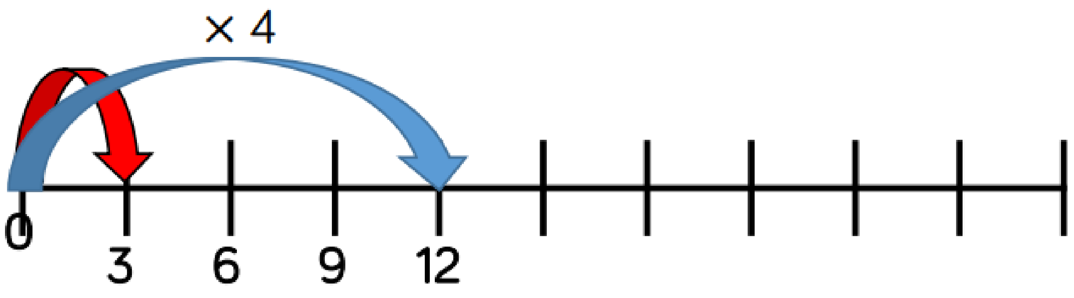
Blank number lines provide children with a structure to add and subtract numbers in smaller parts.

Developing from labelled number lines, children can add by jumping to the nearest 10 and then adding the rest of the number either as a whole or by adding the tens and ones separately.

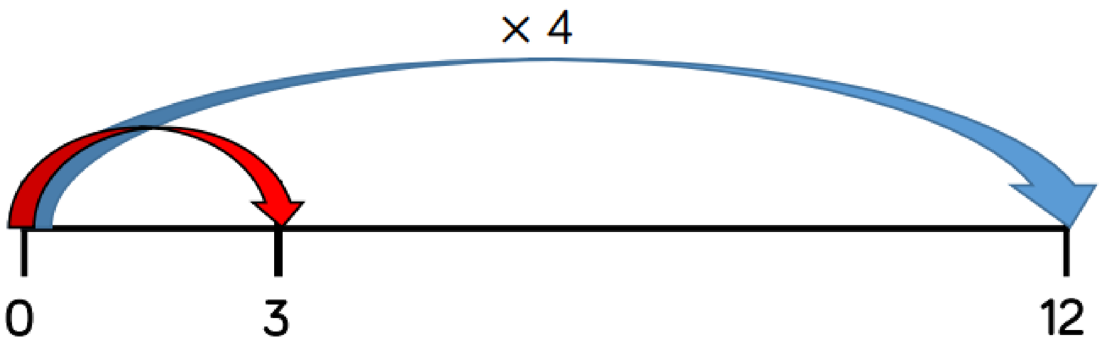
Children may also count back on a number line to subtract, again by jumping to the nearest 10 and then subtracting the rest of the number.

Blank number lines can also be used effectively to help children subtract by finding the difference between numbers. This can be done by starting with the smaller number and then counting on to the larger number. They then add up the parts they have counted on to find the difference between the numbers.

Number Lines (blank)



A red car travels 3 miles.
A blue car 4 times further.
How far does the blue car travel?



A blue car travels 12 miles.
A red car 4 times less.
How far does the red car travel?

Benefits

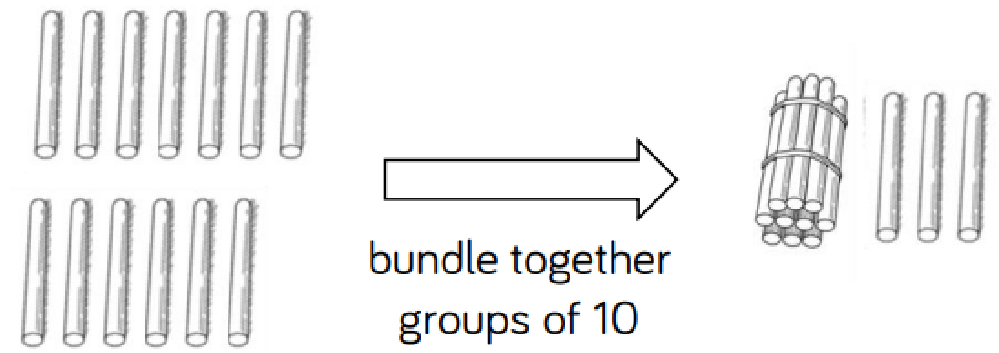
Children can use blank number lines to represent scaling as multiplication or division.

Blank number lines with intervals can support children to represent scaling accurately. Children can label intervals with multiples to calculate scaling problems.

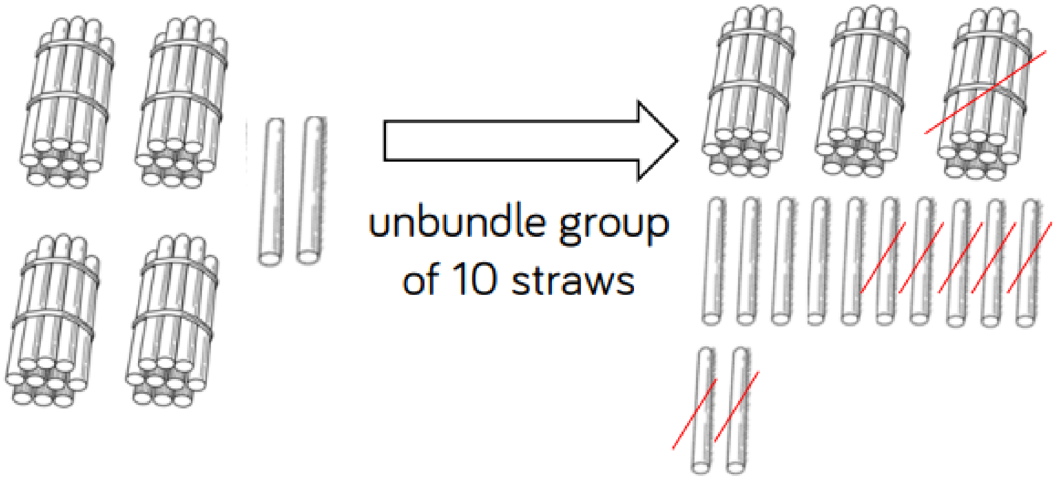
Blank number lines without intervals can also be used for children to represent scaling.

Straws

$7 + 6 = 13$



$42 - 17 = 25$



Benefits

Straws are an effective way to support children in their understanding of exchange when adding and subtracting 2-digit numbers.

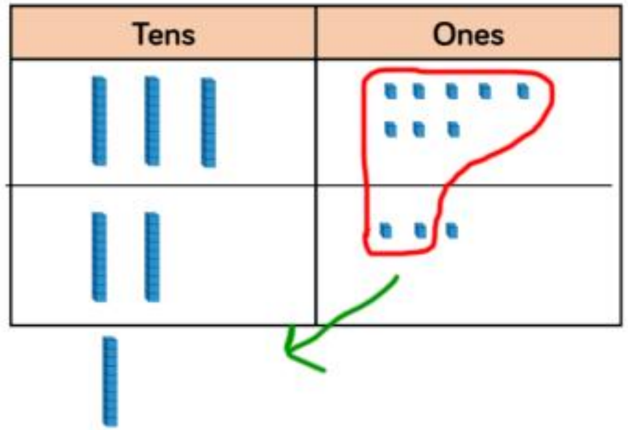
Children can be introduced to the idea of bundling groups of ten when adding smaller numbers and when representing 2-digit numbers. Use elastic bands or other ties to make bundles of ten straws.

When adding numbers, children bundle a group of 10 straws to represent the exchange from 10 ones to 1 ten. They then add the individual straws (ones) and bundles of straws (tens) to find the total.

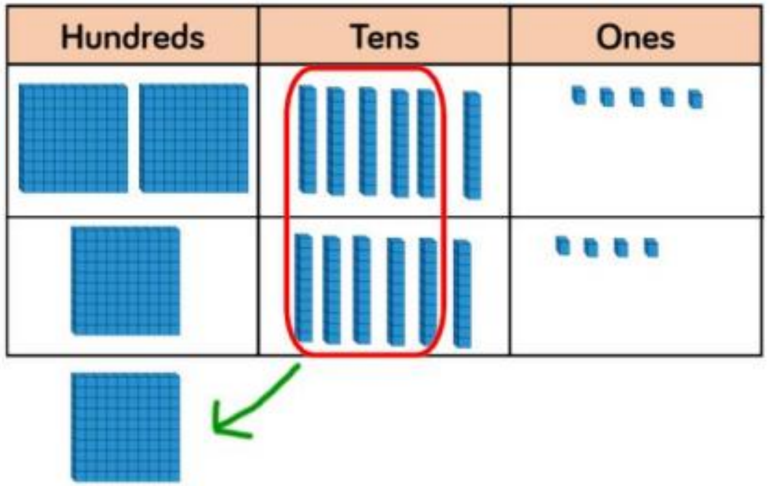
When subtracting numbers, children unbundle a group of 10 straws to represent the exchange from 1 ten to 10 ones.

Straws provide a good stepping stone to adding and subtracting with Base 10/Dienes.

Base 10/Dienes (addition)




```
  38
+ 23
----
  61
----
 1
```




```
  265
+ 164
-----
  429
-----
 1
```

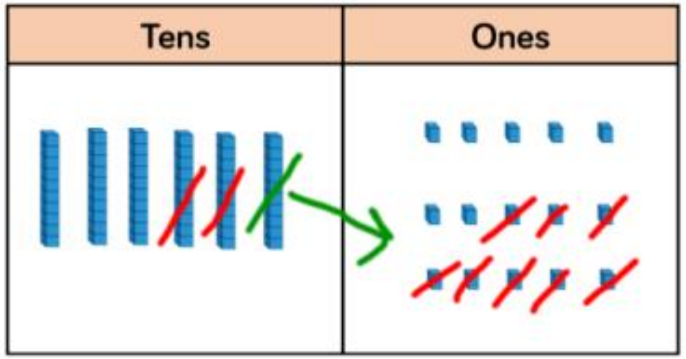
Benefits

Using Base 10 or Dienes is an effective way to support children's understanding of column addition. It is important that children write out their calculations alongside using or drawing Base 10 so they can see the clear links between the written method and the model.

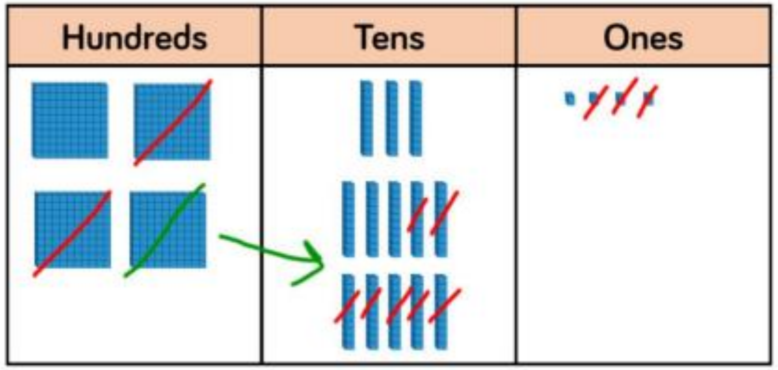
Children should first add without an exchange before moving on to addition with exchange.. The representation becomes less efficient with larger numbers due to the size of Base 10. In this case, place value counters may be the better model to use.

When adding, always start with the smallest place value column. Here are some questions to support children.
How many ones are there altogether?
Can we make an exchange? (Yes or No)
How many do we exchange? (10 ones for 1 ten, show exchanged 10 in tens column by writing 1 in column)
How many ones do we have left? (Write in ones column)
Repeat for each column.

Base 10/Dienes (subtraction)




```
 5 1
  65
– 28
  37
```




```
 3 1
  435
– 273
  162
```

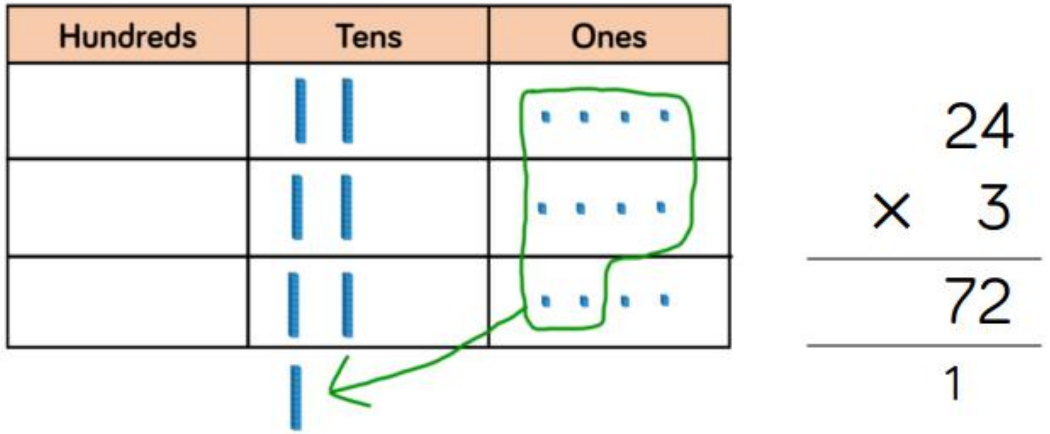
Benefits

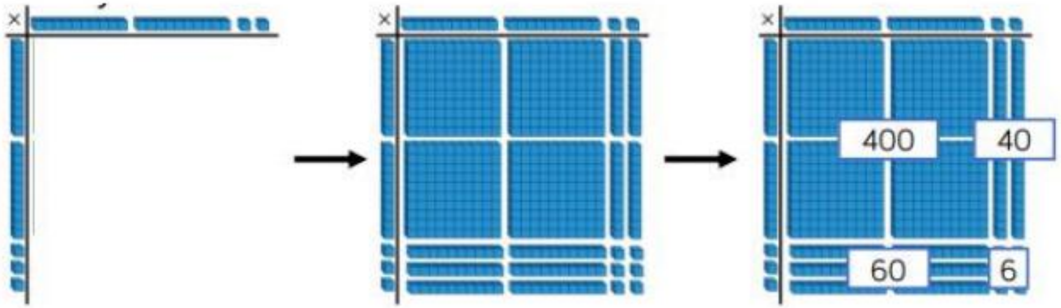
Using Base 10 or Dienes is an effective way to support children's understanding of column subtraction. It is important that children write out their calculations alongside using or drawing Base 10 so they can see the clear links between the written method and the model.

Children should first subtract without an exchange before moving on to subtraction with exchange. When building the model, children should just make the minuend using Base 10, they then subtract the subtrahend. Highlight this difference to addition to avoid errors by making both numbers. Children start with the smallest place value column. When there are not enough ones/tens/hundreds to subtract in a column, children need to move to the column to the left and exchange e.g. exchange 1 ten for 10 ones. They can then subtract efficiently.

This model is efficient with up to 4-digit numbers. Place value counters are more efficient with larger numbers and decimals.

Base 10/Dienes (multiplication)





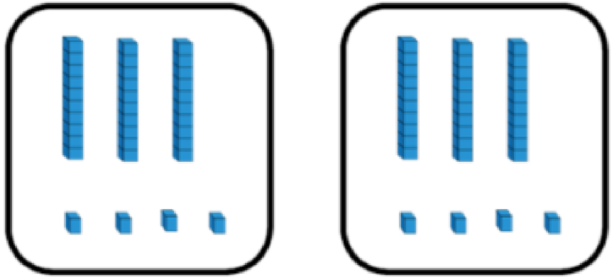
Benefits

Using Base 10 or Dienes is an effective way to support children's understanding of column multiplication. It is important that children write out their calculation alongside the equipment so they can see how the concrete and written representations match.

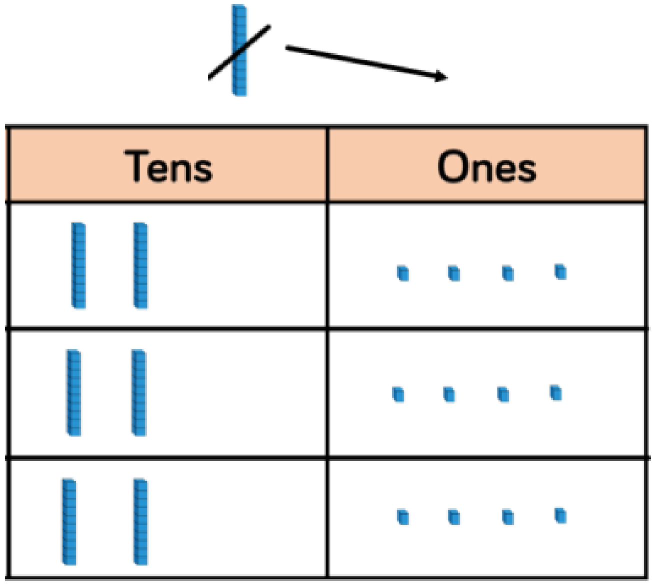
As numbers become larger in multiplication or the amounts of groups becomes higher, Base 10 / Dienes becomes less efficient due to the amount of equipment and number of exchanges needed.

Base 10 also supports the area model of multiplication well. Children use the equipment to build the number in a rectangular shape which they then find the area of by calculating the total value of the pieces This area model can be linked to the grid method or the formal column method of multiplying 2-digits by 2-digits.

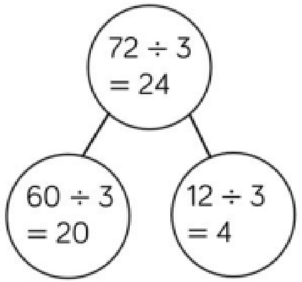
Base 10/Dienes (division)



68 ÷ 2 = 34



72 ÷ 3 = 24



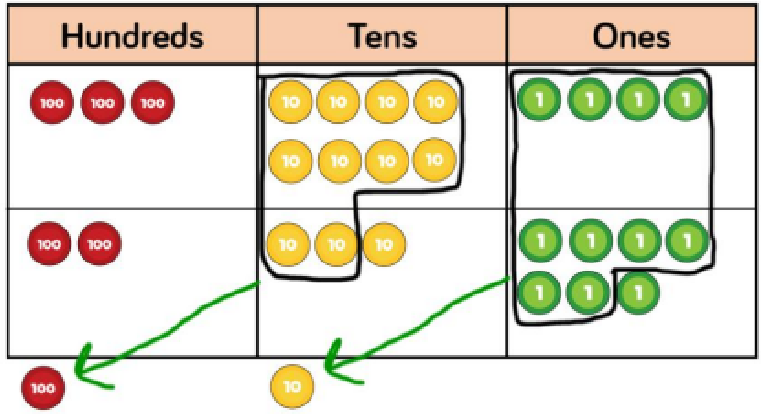
Benefits

Using Base 10 or Dienes is an effective way to support children's understanding of division.

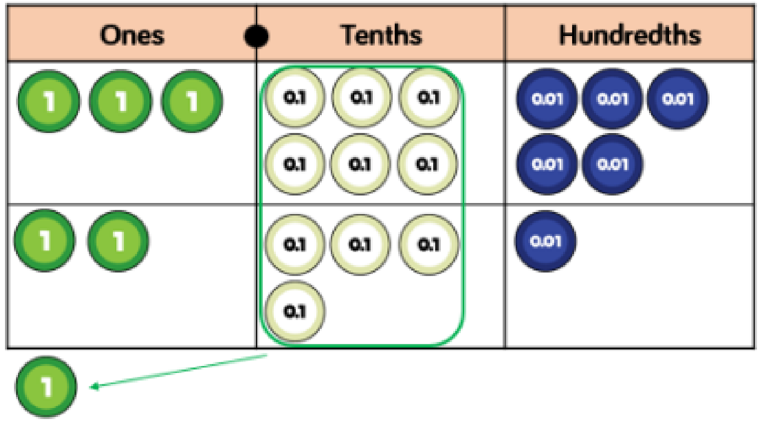
When numbers become larger, it can be an effective way to move children from representing numbers as ones towards representing them as tens and ones in order to divide. Children can then share the Base 10/ Dienes between different groups e.g. by drawing circles or by rows on a place value grid.

When they are sharing, children start with the larger place value and work from left to right. If there are any left in a column, they exchange e.g. one ten for ten ones. When recording, encourage children to use the part-whole model so they can consider how the number has been partitioned in order to divide. This will support them with mental methods.

Place Value Counters (addition)




```
  384
+ 237
-----
  621
-----
 1 1
```




```
  3.65
+ 2.41
------
  6.06
------
 1
```

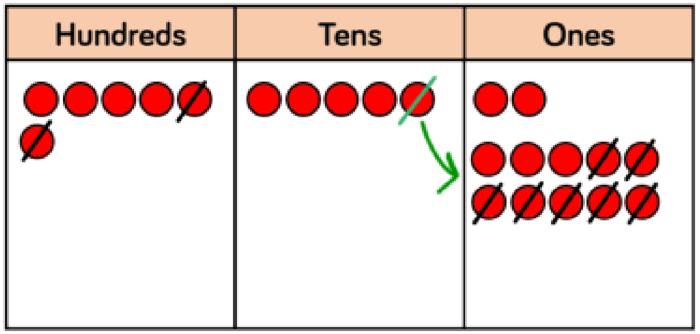
Benefits

Using place value counters is an effective way to support children's understanding of column addition. It is important that children write out their calculations alongside using or drawing counters so they can see the clear links between the written method and the model.

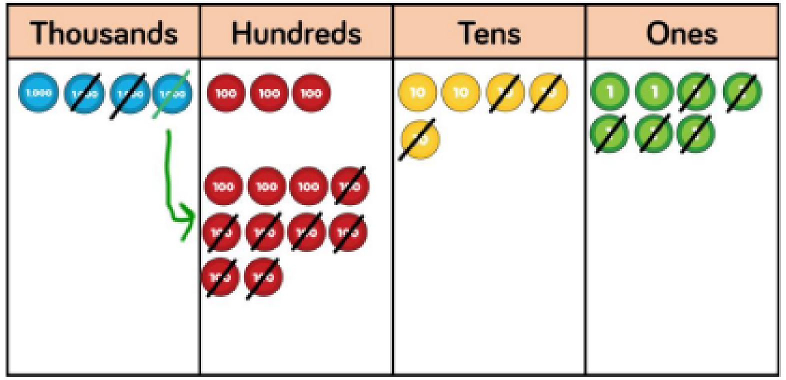
Children should first add without an exchange before moving on to addition with exchange. Different place value counters can be used to represent larger numbers or decimals. If you don't have place value counters, use normal counters on a place value grid to enable children to experience the exchange between columns.

When adding money, children can also use coins to support their understanding. It is important that children consider how the coins link to the written calculation especially when adding decimal amounts.

Place Value Counters (Subtraction)



$$\begin{array}{r} {}^{4}\not{6}\,{}^{1}\not{5}2 \\ -\;207 \\ \hline 445 \\ \hline \end{array}$$



$$\begin{array}{r} {}^{3}\not{4}\,{}^{1}357 \\ -\;2735 \\ \hline 1622 \\ \hline \end{array}$$

Benefits

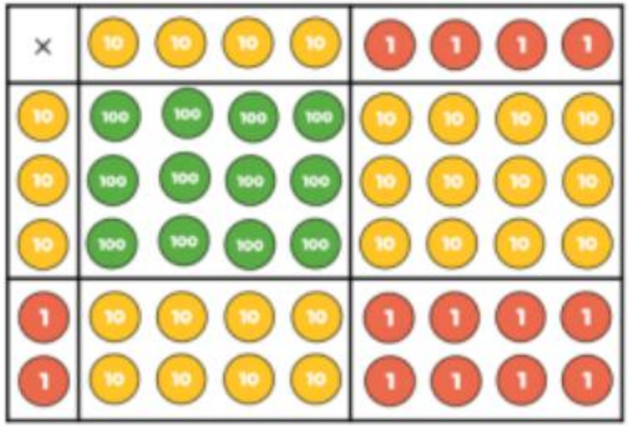
Using place value counters is an effective way to support children's understanding of column subtraction. It is important that children write out their calculations alongside using or drawing counters so they can see the clear links between the written method and the model.

Children should first subtract without an exchange before moving on to subtraction with exchange. If you don't have place value counters, use normal counters on a place value grid to enable children to experience the exchange between columns.

When building the model, children should just make the minuend using counters, they then subtract the subtrahend. Children start with the smallest place value column. When there are not enough ones/tens/hundreds to subtract in a column, children need to move to the column to the left and exchange e.g. exchange 1 ten for 10 ones. They can then subtract efficiently.

Place Value Counters (multiplication)

$$\begin{array}{r} 34 \\ \times \quad 5 \\ \hline 170 \\ \hline {}_{1\ 2} \end{array}$$



$$\begin{array}{r} 44 \\ \times\ 32 \\ \hline 8 \\ 80 \\ 120 \\ +\ 1200 \\ \hline 1408 \\ \hline {}_{1} \end{array}$$

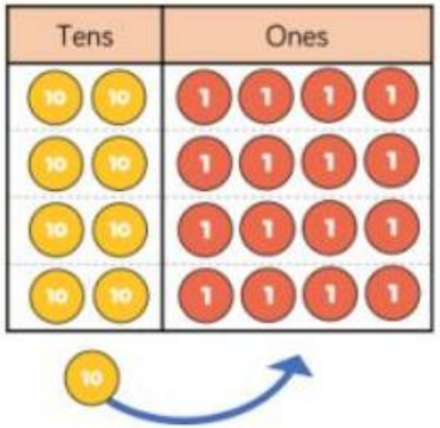
Benefits

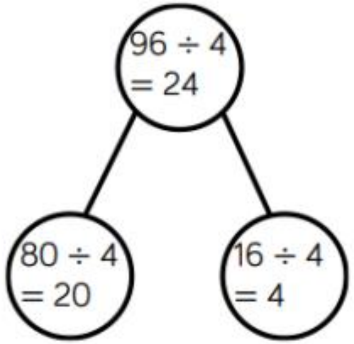
Using place value counters is an effective way to support children's understanding of column multiplication. It is important that children write out their calculation alongside the equipment so they can see how the concrete and written match.

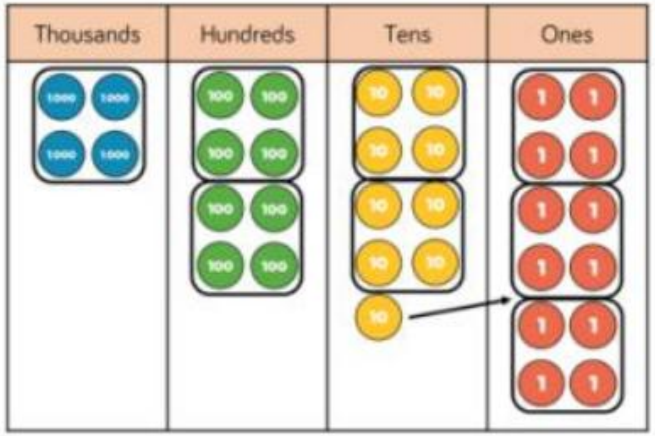
As numbers become larger in multiplication or the amounts of groups becomes higher, Base 10 / Dienes becomes less efficient due to the amount of equipment and number of exchanges needed The counters should be used to support the understanding of the written method rather than support the arithmetic.

Place value counters also support the area model of multiplication well. Children can see how to multiply 2-digit numbers by 2-digit numbers.

Place Value Counters (division)







$$\begin{array}{r|l} & 1223 \\ \hline 4 & 489^{1}2 \end{array}$$

Benefits

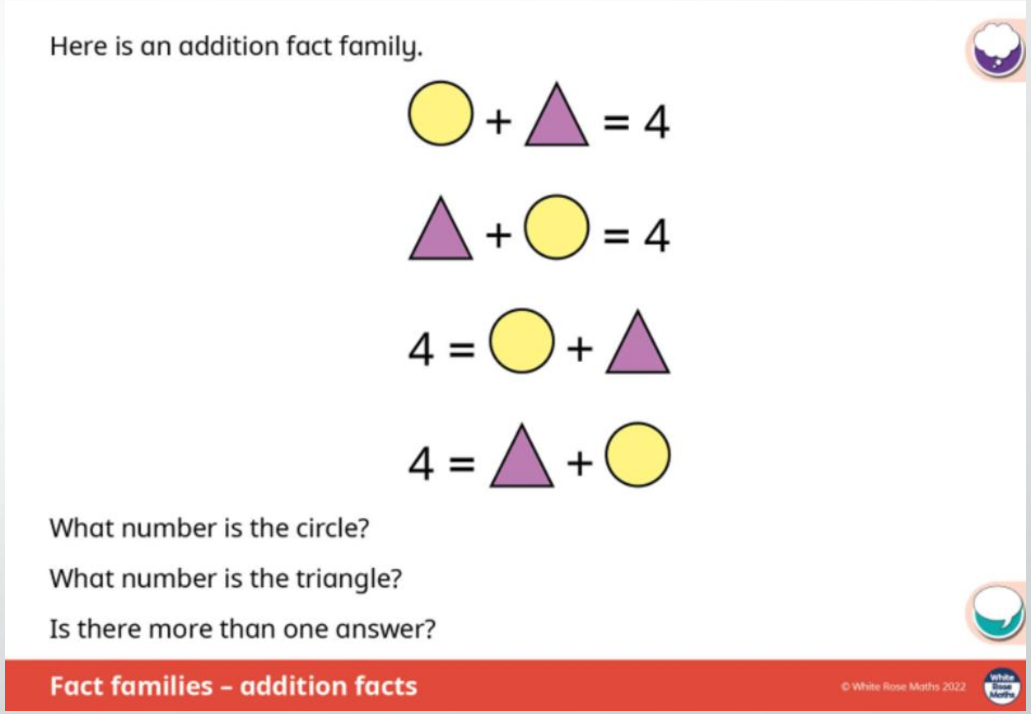
Using place value counters is an effective way to support children's understanding of division.

When working with smaller numbers, children can use place value counters to share between groups. They start by sharing the larger place value column and work from left to right. If there are any counters left over once they have been shared, they exchange the counter e.g. exchange one ten for ten ones. This method can be linked to the part-whole model to support children to show their thinking.

Place value counters also support children's understanding of short division by grouping the counters rather than sharing them. Children work from left to right through the place value columns and group the counters in the number they are dividing by. If there are any counters left over after they have been grouped, they exchange the counter e.g. exchange one hundred for ten tens.

Reasoning and Problem Solving

- WRM has lots of reasoning and problem solving questions. The children enjoy these as they are challenged and have to use lots of their math knowledge to find the answers.

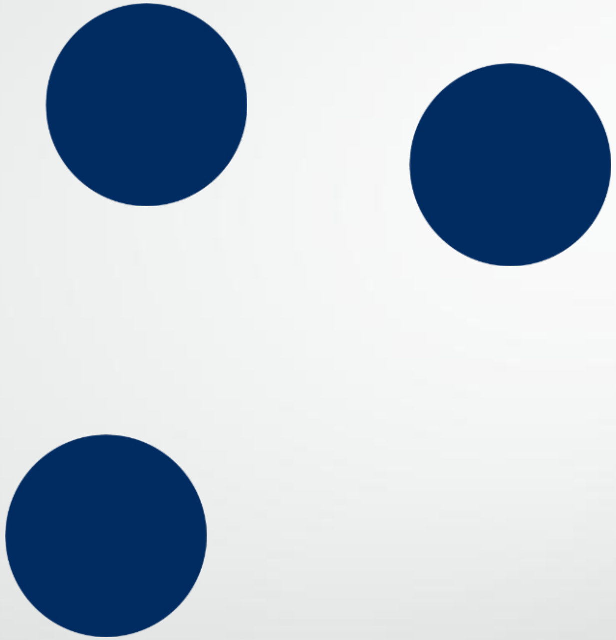


Fluency

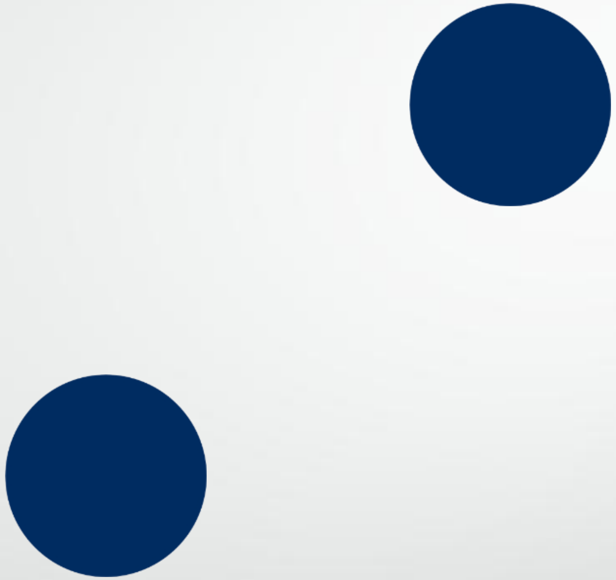
- Fluency is becoming really important in Maths lessons – how well does your child really understand numbers? Let's look at some examples …

How many?

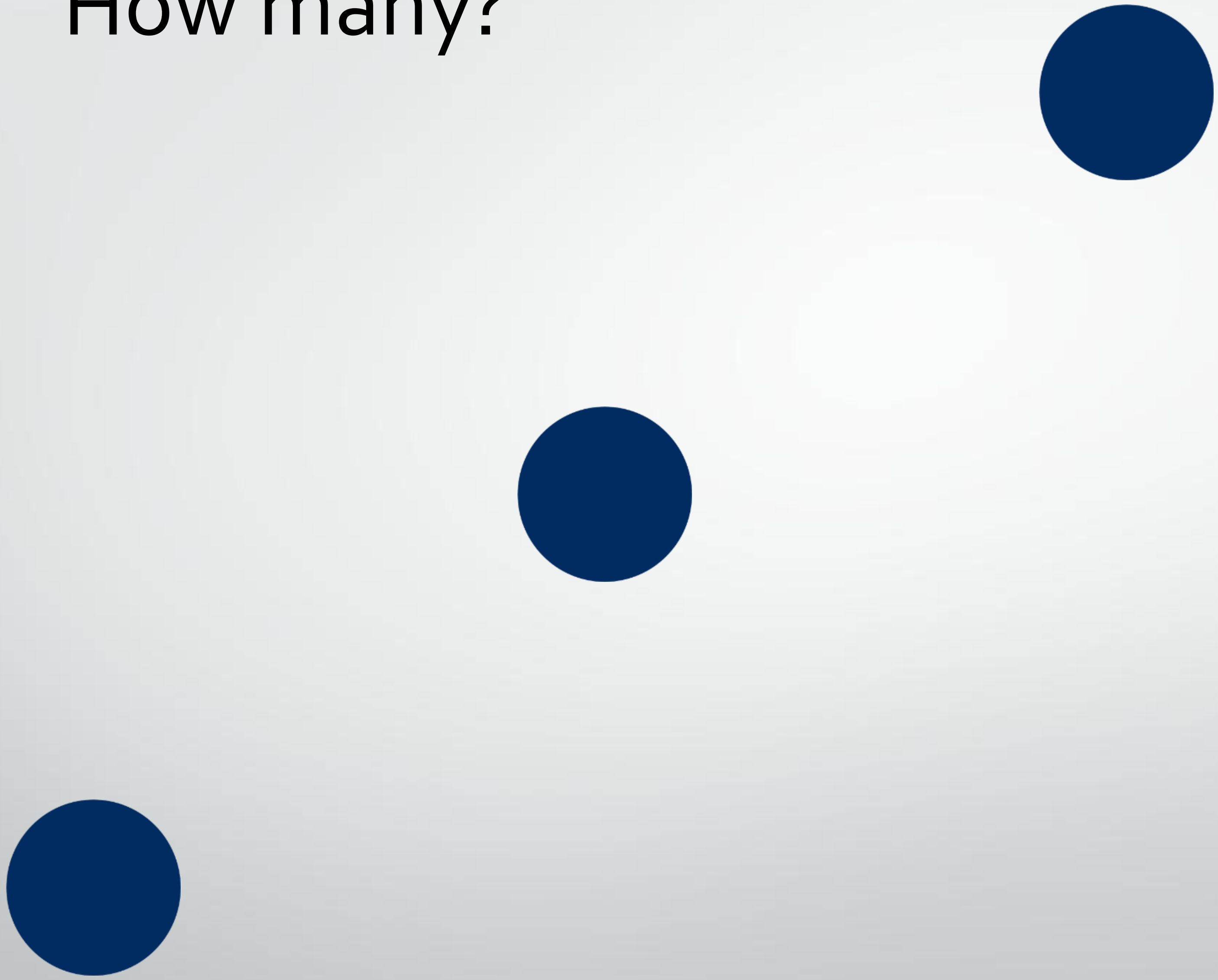
How many?



How many?



How many?



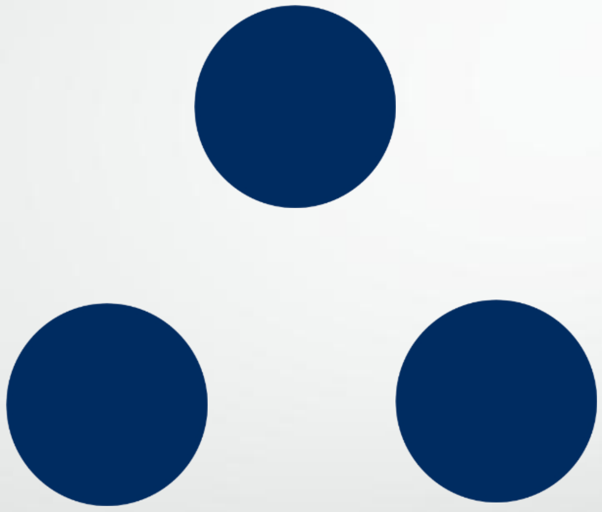
How many?

Show me...

Show me…

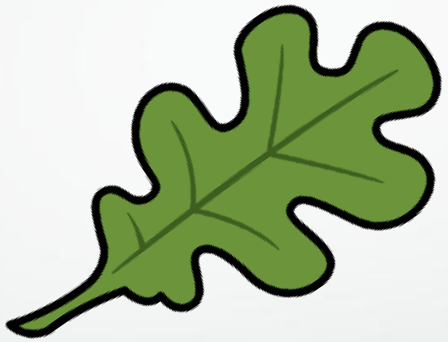
Show me…

Show me…



Show me...

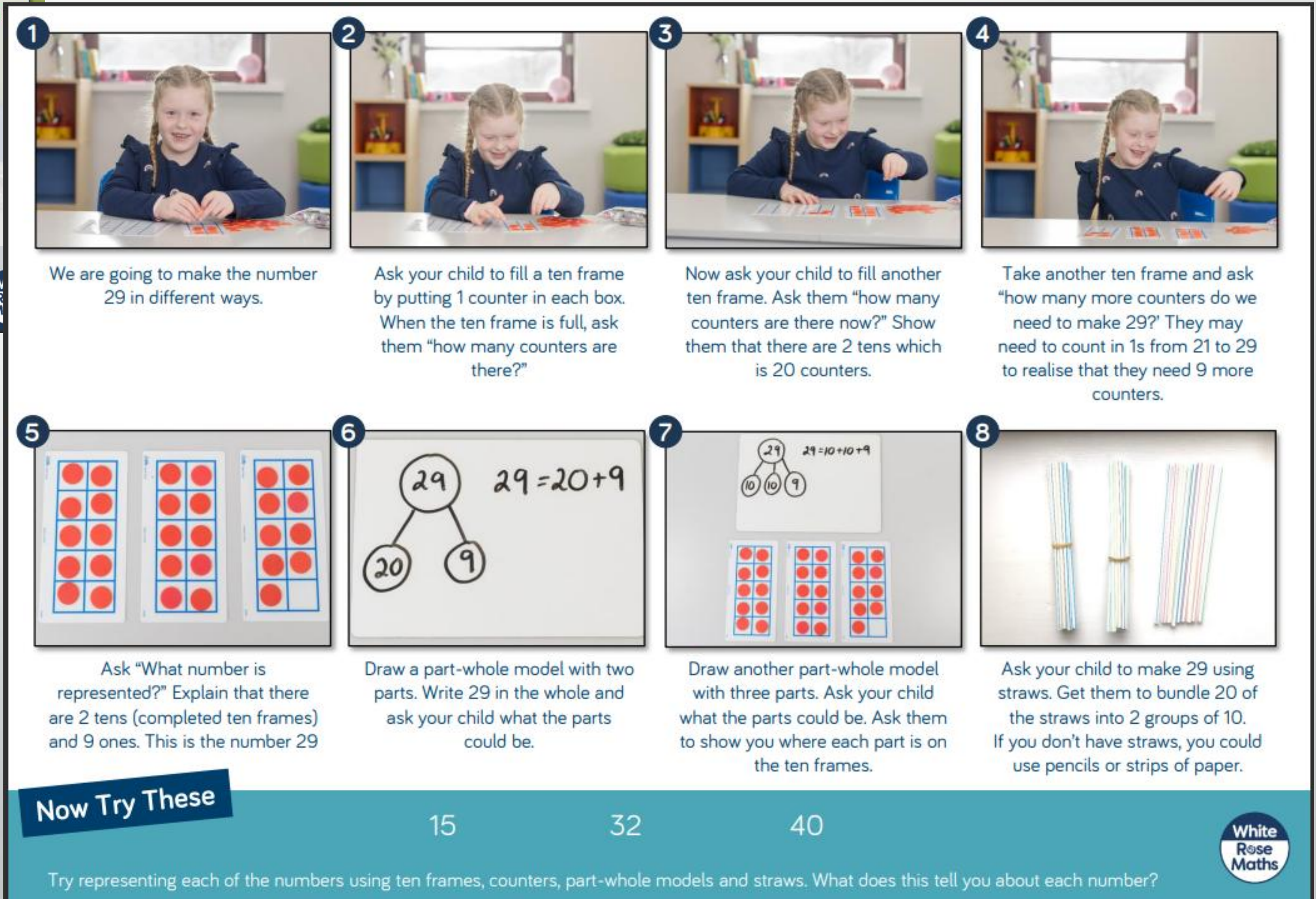
Draw what you see.



Parent Tips / Support (The good stuff)

- Did you know that there is a FREE WRM app that is great for creating fluency?
- There is also 'Maths with Michael' where former kids TV presenter (now teacher) has a series of videos to help support parents on their Maths knowledge on how Maths is taught now. This is on the WRM website under the 'parents & pupils section'. Each video also has some support resources.
- Maths with Michael | Michael Underwood | White Rose Maths (whiteroseeducation.com)

Maths with Michael



1. We are going to make the number 29 in different ways.
2. Ask your child to fill a ten frame by putting 1 counter in each box. When the ten frame is full, ask them "how many counters are there?"
3. Now ask your child to fill another ten frame. Ask them "how many counters are there now?" Show them that there are 2 tens which is 20 counters.
4. Take another ten frame and ask "how many more counters do we need to make 29?' They may need to count in 1s from 21 to 29 to realise that they need 9 more counters.
5. Ask "What number is represented?" Explain that there are 2 tens (completed ten frames) and 9 ones. This is the number 29
6. Draw a part-whole model with two parts. Write 29 in the whole and ask your child what the parts could be.
7. Draw another part-whole model with three parts. Ask your child what the parts could be. Ask them to show you where each part is on the ten frames.
8. Ask your child to make 29 using straws. Get them to bundle 20 of the straws into 2 groups of 10. If you don't have straws, you could use pencils or strips of paper.

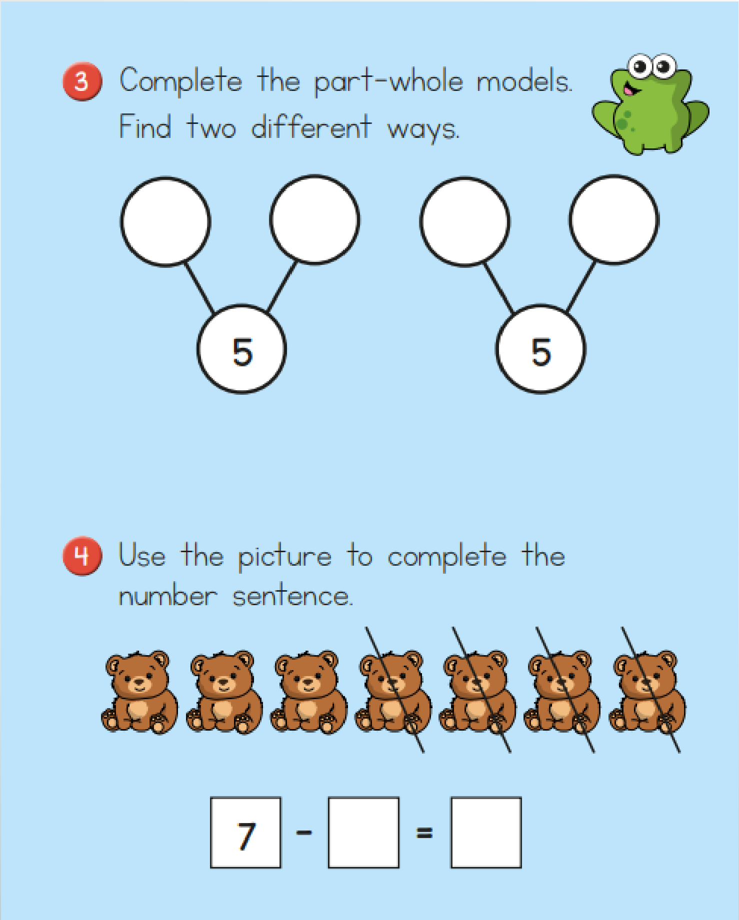
Now Try These

15 32 40

Try representing each of the numbers using ten frames, counters, part-whole models and straws. What does this tell you about each number?

White Rose Maths

Free workbooks – These are on the WRM website on the 'parent & pupils section' and can also be downloaded onto a kindle.

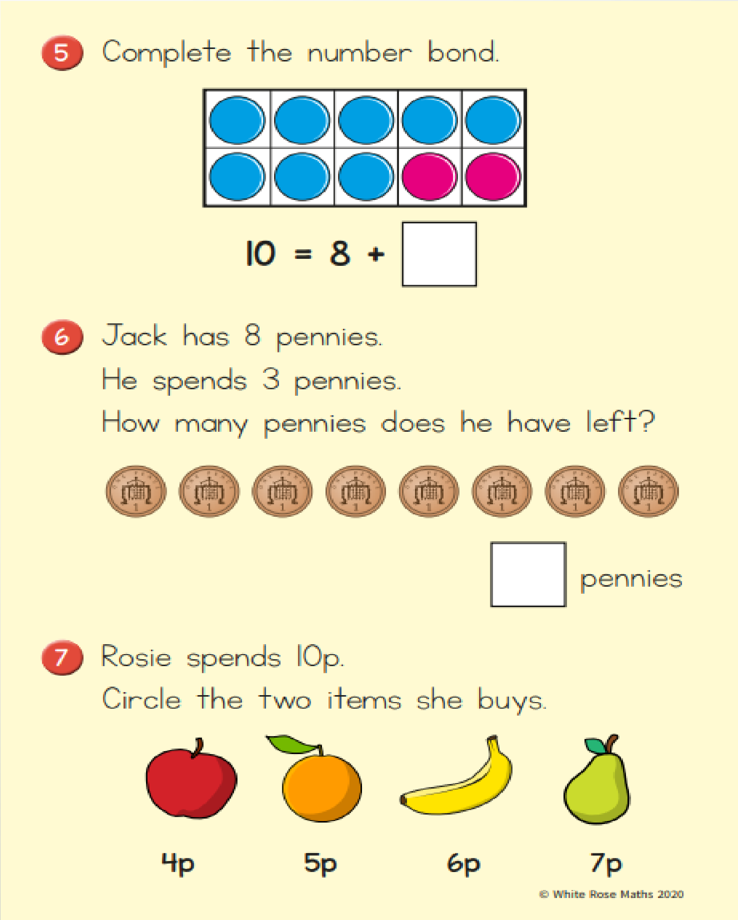


3 Complete the part-whole models.
Find two different ways.

5 5

4 Use the picture to complete the number sentence.

7 - ☐ = ☐



5 Complete the number bond.

10 = 8 + ☐

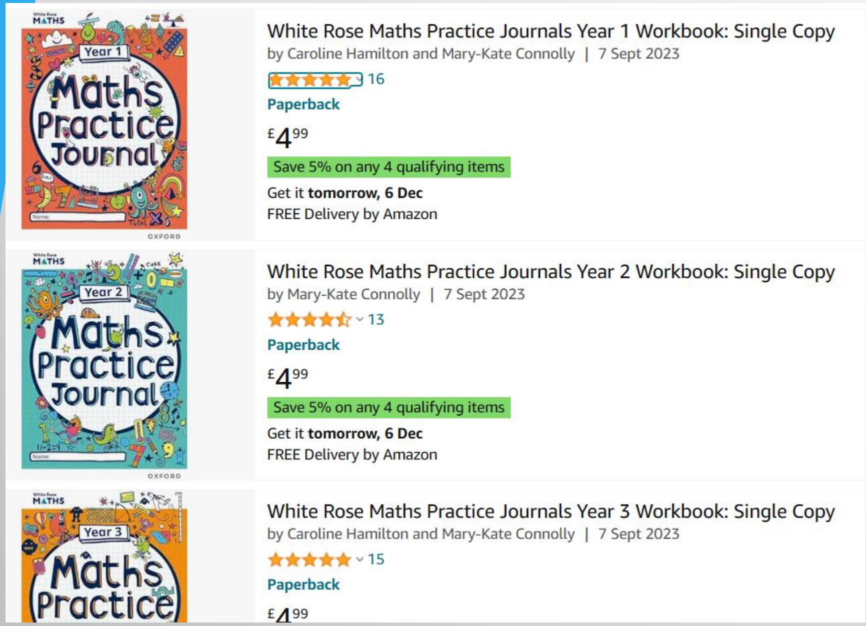
6 Jack has 8 pennies.
He spends 3 pennies.
How many pennies does he have left?

☐ pennies

7 Rosie spends 10p.
Circle the two items she buys.

4p 5p 6p 7p

Not free workbooks - These are on amazon



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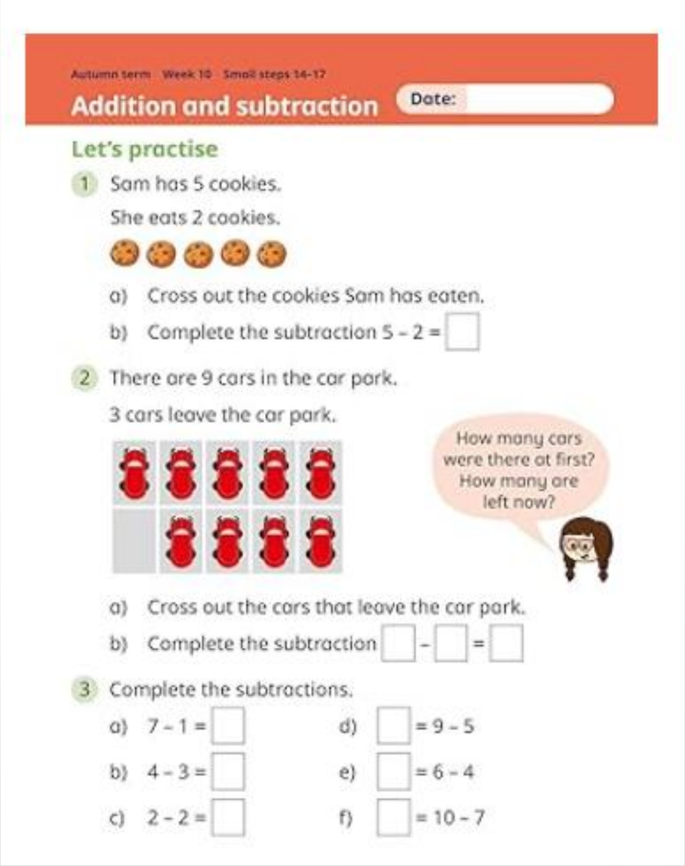


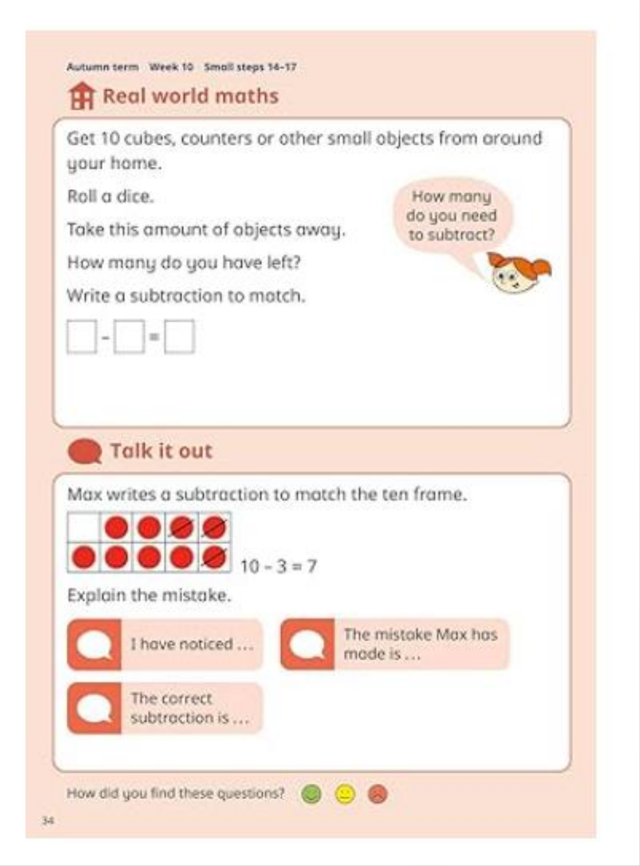
Autumn term Week 10 Small steps 14-17

Addition and subtraction

Date:

Let's practise

1. Sam has 5 cookies.
   She eats 2 cookies.
   a) Cross out the cookies Sam has eaten.
   b) Complete the subtraction 5 - 2 = ☐
2. There are 9 cars in the car park.
   3 cars leave the car park.
   How many cars were there at first? How many are left now?
   a) Cross out the cars that leave the car park.
   b) Complete the subtraction ☐ - ☐ = ☐
3. Complete the subtractions.
   a) 7 - 1 = ☐
   b) 4 - 3 = ☐
   c) 2 - 2 = ☐
   d) ☐ = 9 - 5
   e) ☐ = 6 - 4
   f) ☐ = 10 - 7



Autumn term Week 10 Small steps 14-17

Real world maths

Get 10 cubes, counters or other small objects from around your home.
Roll a dice.
Take this amount of objects away.
How many do you have left?
Write a subtraction to match.
How many do you need to subtract?
☐ - ☐ = ☐

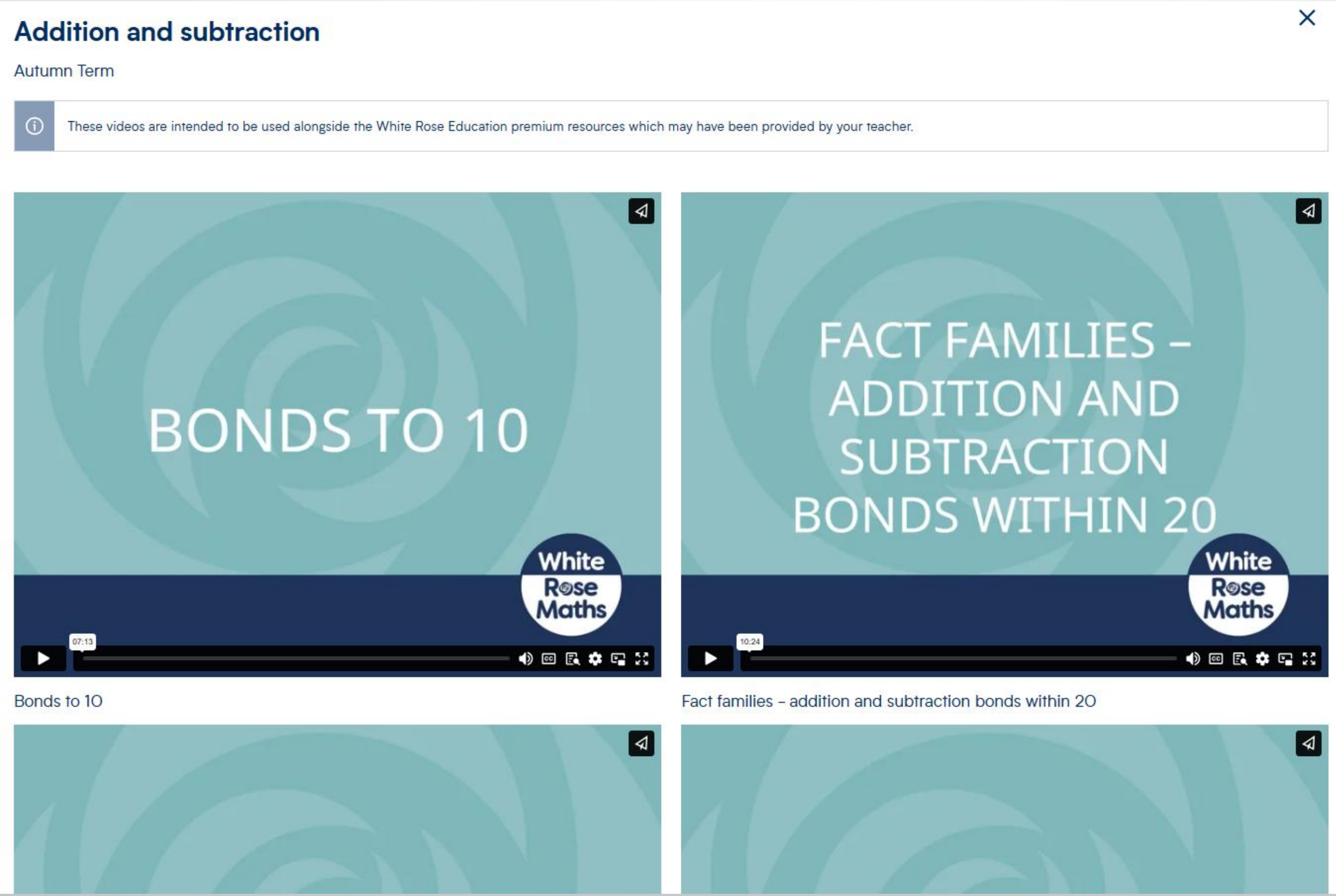
Talk it out

Max writes a subtraction to match the ten frame.
10 - 3 = 7
Explain the mistake.
I have noticed ...
The mistake Max has made is ...
The correct subtraction is ...

How did you find these questions?

34

Home learning videos (like in lockdown) are also available on the 'parents & pupils' section



Year 2 'SATS'

- [2022 Key stage 1 Mathematics; Paper 1: arithmetic (publishing.service.gov.uk)]

[2022 Key stage 1; Mathematics: paper 1 reasoning (publishing.service.gov.uk)]

13 67 – 40 = ☐

1 mark

14 8 + ☐ + 4 = 17

1 mark

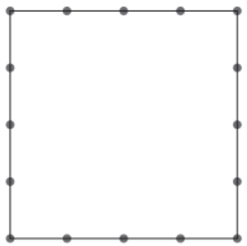
8 Kemi has **25** red beads and **6** green beads.

How many beads does Kemi have **altogether**?

☐ beads

1 mark

9 Draw **two lines** to divide the square into **quarters**.



1 mark

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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).

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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.

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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).

EYFS development matters

- https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1180056/DfE_Development_Matters_Report_Sep2023.pdf

Thank You - Please fill out my feedback sheet ☺