





Progression in the teaching of counting in Foundation Stage

<p>Pre-counting</p> <p>The key focus in pre-counting is an understanding of the concepts more, less and the same and an appreciation of how these are related. Children at this stage develop these concepts by comparison and no counting is involved.</p>	<p>Ordering</p> <p>Count by reciting the number names in order forwards and backwards from any starting point.</p>	<p>One to one correspondence</p> <p>One number word has to be matched to each and every object. Lack of coordination is a source of potential error – it helps if children move the objects as they count, use large rhythmic movements, or clap as they count.</p>	<p>Cardinality (Knowing the final number counted is the total number of objects)</p> <p>Count out a number of objects from a larger collection. Know the number they stop counting at will give the total number of objects.</p>
<p>Pre-counting ideas</p> <p>Provide children with opportunities to sort groups of objects explicitly using the language of more and less.</p> <div style="display: flex; justify-content: space-around; align-items: center;">  </div> <p>Which group of apples has the most? Which group of apples has the least?</p>	<p>Ordering ideas</p> <p>Provide children with opportunities to count orally on a daily basis. Rote count so that children are able to understand number order and can hear the rhythm and pattern. Use a drum or clap to keep the beat.</p> <div style="text-align: center;">  </div>	<p>One to one correspondence ideas</p> <p>Play counting games together moving along a track, play games involving amounts such as knocking down skittles.</p> <p>Use traditional counting songs throughout the day ensuring children have the visual/kinaesthetic resources eg. 5 little ducks, 10 green bottles</p> <div style="text-align: center;">  </div>	<p>Cardinal counting ideas</p> <div style="text-align: center;">  </div> <p>How many bananas are in my fruit bowl? Allow children to physically handle the fruit.</p> <p>Provide children with objects to point to and move as they count and say the numbers.</p>

Progression in the teaching of counting in Foundation Stage

Subitising (recognise small numbers without counting them)

Children need to recognise small amounts without counting them eg. dot patterns on dice, dots on tens frames, dominoes and playing cards as well as small groups of randomly arranged shapes stuck on cards.

Abstraction

You can count anything – visible objects, hidden objects, imaginary objects, sounds etc. Children find it harder to count things they cannot move (because the objects are fixed), touch (they are at a distance), see, that move around. Children also find it difficult to count a mix of different objects, or similar objects of very different sizes.

Conservation of number – MASTERY!

Ultimately children need to realise that when objects are rearranged the number of them stays the same.

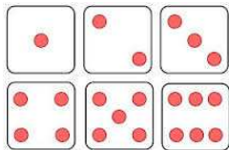
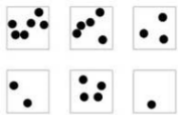
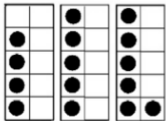
End of year counting expectations

- count reliably to 20
- count reliably up to 10 everyday objects
- estimate a number of objects then check by counting
- use ordinal numbers in context eg first, second, third
- count in twos, fives and tens
- order numbers 1-20
- say 1 more/ 1 less than a given number to 20



Subitising ideas

Provide children with opportunities to count by recognising amounts.



Abstraction ideas



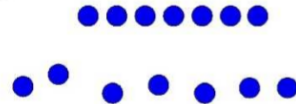
How many pigs are in this picture?

Provide children with a variety of objects to count.

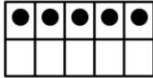
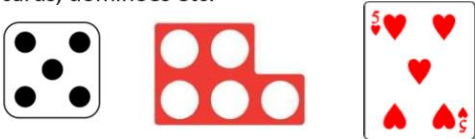
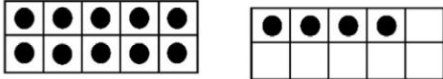



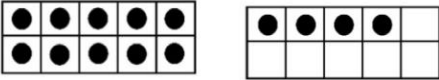





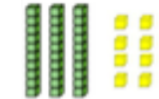

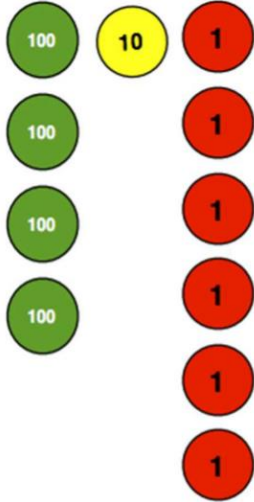
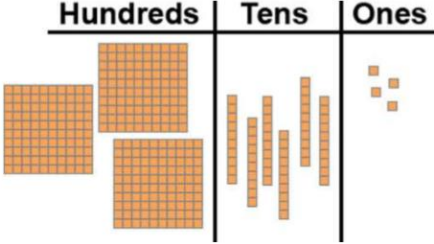


Conservation of Number

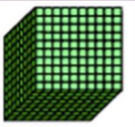



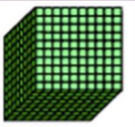



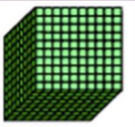



- The amount is "seven" and doesn't change.



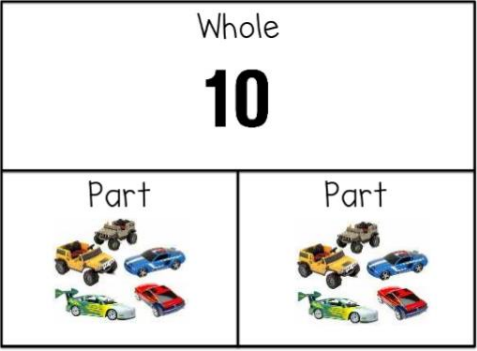

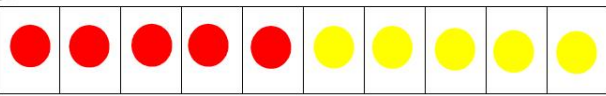

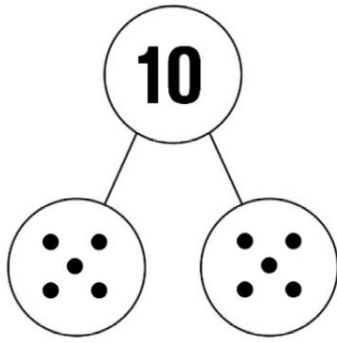
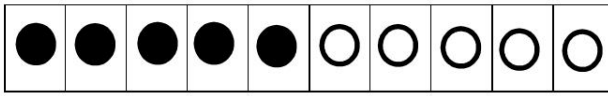
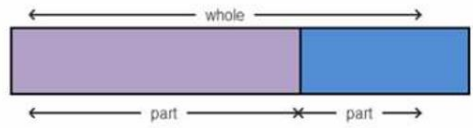
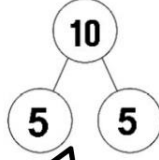
Progression in the teaching of place value

Foundation	Year 1	Year 2	Year 3 onwards
Understanding ten	Understanding numbers up to 20	Understanding numbers up to one hundred	Understanding numbers up to one thousand
<p>A TENS FRAME is a simple maths tool that helps children:</p> <ul style="list-style-type: none"> • Keep track of counting • See number relationships • Learn addition to 10 • Understand place value <p>Use tens frames flash cards daily to ensure children recognise amounts.</p> <p>Use empty tens frames to fill with counters to enable children to understand number relationships.</p> <p>Either fill the tens frame in pairs or in rows. In rows shows 5 as a benchmark. Children can easily see more than 5 or less.</p>  <p>Setting the counters in pairs, naturally allows the children to see addition concepts.</p> <p>Include other visual images such as dice, cards, dominoes etc.</p> 	<p>'Ten' is the building block of our Base 10 numeration system. Young children can usually 'read' two-digit numbers long before they understand the effect the placement of each digit has on its numerical value. A child might be able to correctly read 62 as sixty-two and 26 as twenty-six, and even know which number is larger, without understanding why the numbers are of differing values.</p> <p>Ten-frames can provide a first step into understanding two-digit numbers simply by the introduction of a second frame. Placing the second frame to the right of the first frame, and later introducing numeral cards, will further assist the development of place-value understanding.</p>    	<p>Continue developing place value through the use of tens frames.</p>       	<p>Continue developing place value through the use of manipulatives.</p>   <p>Use Dienes blocks and place value charts</p> 

Progression in the teaching of place value

Year 4	Year 5	Year 6																																																																		
Understanding numbers up to ten thousand	Understanding numbers up to one million including decimals	Understanding numbers beyond one million including decimals																																																																		
<p>Continue developing place value through the use of manipulatives.</p> <ul style="list-style-type: none"> • Place value arrow cards • Place value counters • Dienes blocks • Place value charts <div style="text-align: center; margin-top: 20px;"> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #e0e0e0;"> <th style="width: 25%;">thousands</th> <th style="width: 25%;">hundreds</th> <th style="width: 25%;">tens</th> <th style="width: 25%;">ones</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;"></td> <td style="text-align: center;"></td> <td style="text-align: center;"></td> <td style="text-align: center;"></td> </tr> <tr> <td style="text-align: center;">1 1,000</td> <td style="text-align: center;">2 200</td> <td style="text-align: center;">4 40</td> <td style="text-align: center;">7 7</td> </tr> </tbody> </table> </div>	thousands	hundreds	tens	ones					1 1,000	2 200	4 40	7 7	<p>Continue developing place value through the use of manipulatives.</p> <ul style="list-style-type: none"> • Place value arrow cards • Place value counters (including decimal counters) • Dienes blocks • Place value charts <div style="text-align: center; margin-top: 20px;"> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #e0e0e0;"> <th colspan="3">MILLIONS</th> <th colspan="3">THOUSANDS</th> <th colspan="3">ONES</th> </tr> <tr style="background-color: #e0e0e0;"> <th style="font-size: small;">hundred millions</th> <th style="font-size: small;">ten millions</th> <th style="font-size: small;">millions</th> <th style="font-size: small;">hundred thousands</th> <th style="font-size: small;">ten thousands</th> <th style="font-size: small;">thousands</th> <th style="font-size: small;">hundreds</th> <th style="font-size: small;">tens</th> <th style="font-size: small;">ones</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">7</td> <td style="text-align: center;">4</td> <td style="text-align: center;">5</td> <td style="text-align: center;">3</td> <td style="text-align: center;">0</td> <td style="text-align: center;">9</td> <td style="text-align: center;">2</td> <td style="text-align: center;">8</td> <td style="text-align: center;">1</td> </tr> </tbody> </table> </div>	MILLIONS			THOUSANDS			ONES			hundred millions	ten millions	millions	hundred thousands	ten thousands	thousands	hundreds	tens	ones	7	4	5	3	0	9	2	8	1	<p>Continue developing place value through the use of manipulatives.</p> <ul style="list-style-type: none"> • Place value arrow cards • Place value counters (including decimals counters) • Dienes blocks • Place value charts <div style="text-align: center; margin-top: 20px;"> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #e0e0e0;"> <th colspan="3">MILLIONS</th> <th colspan="3">THOUSANDS</th> <th colspan="3">ONES</th> </tr> <tr style="background-color: #e0e0e0;"> <th style="font-size: small;">hundred millions</th> <th style="font-size: small;">ten millions</th> <th style="font-size: small;">millions</th> <th style="font-size: small;">hundred thousands</th> <th style="font-size: small;">ten thousands</th> <th style="font-size: small;">thousands</th> <th style="font-size: small;">hundreds</th> <th style="font-size: small;">tens</th> <th style="font-size: small;">ones</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">7</td> <td style="text-align: center;">4</td> <td style="text-align: center;">5</td> <td style="text-align: center;">3</td> <td style="text-align: center;">0</td> <td style="text-align: center;">9</td> <td style="text-align: center;">2</td> <td style="text-align: center;">8</td> <td style="text-align: center;">1</td> </tr> </tbody> </table> </div>	MILLIONS			THOUSANDS			ONES			hundred millions	ten millions	millions	hundred thousands	ten thousands	thousands	hundreds	tens	ones	7	4	5	3	0	9	2	8	1
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ADD IT!

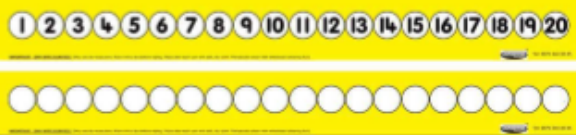
Objective and strategies	Concrete BUILD IT/USE IT!	Pictorial DRAW IT!	Abstract SOLVE IT!
<p>Combine two parts to make a whole model.</p> <p>Part-part-whole model</p> <p>Teach the children that the cubes/counters represent the real-life objects.</p> <p>Use cubes to add two numbers together as a group or in a bar.</p>	<p>Part, Part, Whole Mat</p>    	   <p>Part + Part = Whole</p> <p>Whole - Part = Part</p>	 <p>Use the part-part whole diagram as shown above to move into the abstract.</p> <p>$5 + 5 = 10$</p> <p>$10 = 5 + 5$</p> <p>Use the term 'number sentence'.</p>

Start at the larger number and count on



Start with the larger number on the bead string then count on 1 by 1 to find the

Use counters on a number track to count on.



$$7 + 4 = 11$$

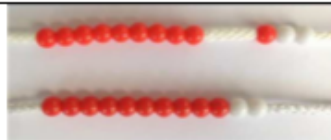


Start at the larger number on the number line and count on in ones or in one jump to find the answer.

$$4 + 7 = 11$$

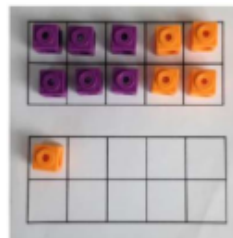
Place the larger number in your head and count on the smaller number to find your answer.

Regrouping to make 10.



$$6 + 5 = 11$$

Start with the bigger number and use the smaller number to make 10.



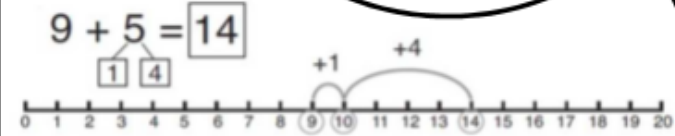
$$3 + 9 =$$

Use pictures or a number line. Regroup or partition the smaller number to make 10.

$$7 + 4 = 11$$

If I am at seven, how many more do I need to make 10. How many more do I add on now?

$$9 + 5 = 14$$

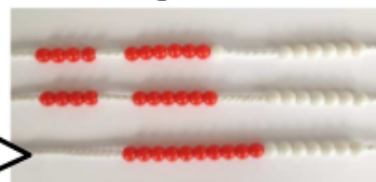


Adding three single digits.

$$4 + 7 + 6 = 17$$

Put 4 and 6 together to make 10. Add on 7.

Encourage children to use known facts.



Following on from making 10, make 10 with 2 of the digits (if possible) then add on the third digit.

Add together three groups of objects. Draw a picture to recombine the groups to make 10.

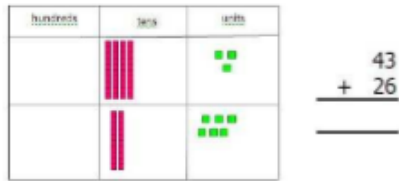


$$4 + 6 + 7 = 17$$

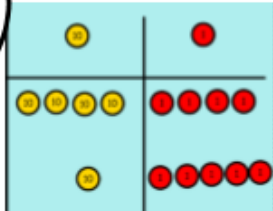
$$\begin{aligned} 4 + 7 + 6 &= 10 + 7 \\ &= 17 \end{aligned}$$

Combine the two numbers that make 10 and then add on the remainder.

Column method-
no regrouping



Use Dienes to add tens and ones before moving on to place value counters.



After practically using the base 10 blocks and place value counters, children can draw the Dienes to help them to solve addition calculations.

hundreds	tens	ones
	////	□□□
	//	□□□ □□□
	6	9

After practically using Dienes, children can draw the 'tens' and 'ones'.

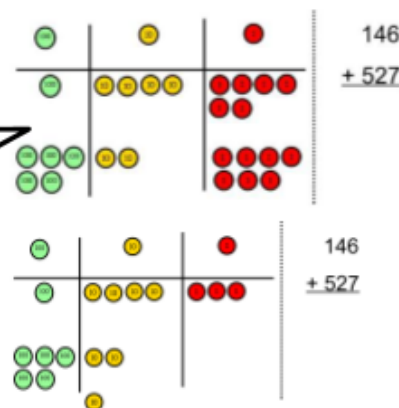
Calculations

$$21 + 42 =$$

$$\begin{array}{r} 21 \\ + 42 \\ \hline \end{array}$$

Only select numbers which do not involve regrouping.

Column method-
regrouping



Add up the units and exchange 10 ones for one 10 and so on.

If necessary children can draw a pictorial representation of the columns and place value counters to further support their learning and understanding.

hundreds	tens	ones
/	////	□□□□□
////	//	□□□□□ □□
6	6	3
	1	

Make both numbers on a place value grid.

This can also be done with Dienes to help children clearly see that 10 ones equal 1 ten and 10 tens equal 100.

Continue using place value counters as children begin to work with decimals.

$$\begin{array}{r} 536 \\ + 85 \\ \hline 621 \\ \hline 11 \end{array}$$

As the children move on, introduce decimals with the same number of decimal places.

$$\begin{array}{r} 72.8 \\ + 54.6 \\ \hline 127.4 \\ \hline 11 \end{array}$$

Then move onto decimals with a different number of decimal places.

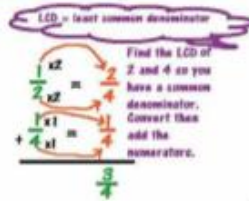
$$\begin{array}{r} 23.361 \\ 9.080 \\ 59.770 \\ + 1.300 \\ \hline 93.511 \\ \hline 212 \end{array}$$

Add fractions

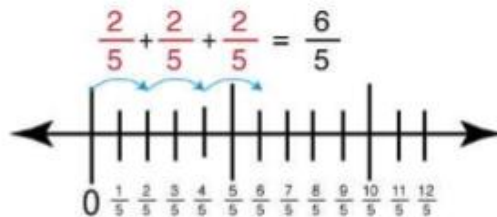
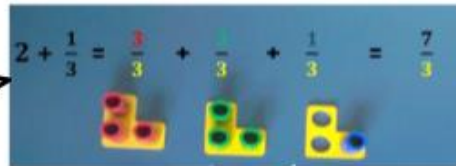
Count in fraction steps using real objects and a number line.



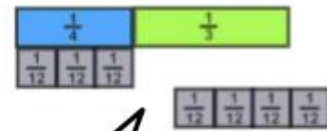
When I add the $\frac{1}{2}$ with the $\frac{1}{4}$ it matches the same space as three sections in the 'benchmark' one whole fraction bar.



Use Numicon to add fractions.



$$\frac{1}{4} + \frac{1}{3}$$



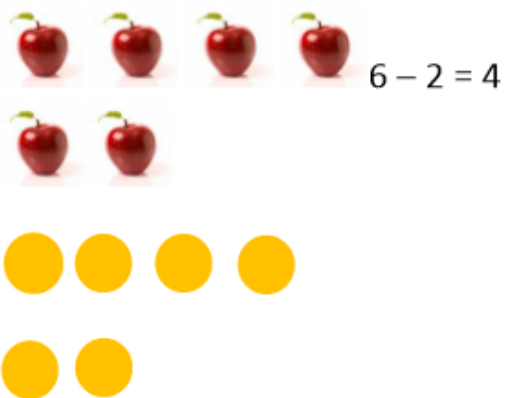
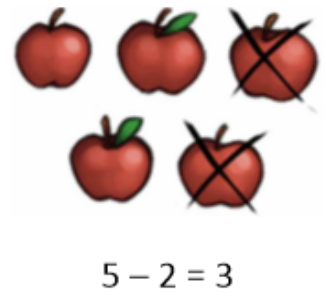


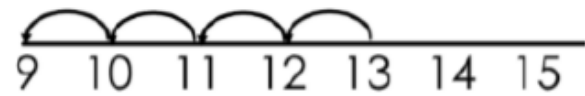
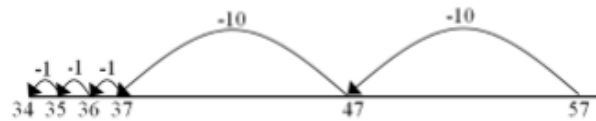
Use the bar model to add fractions.

$$\frac{1}{4} + \frac{1}{3} =$$

$$\frac{1 \times 3}{4 \times 3} + \frac{1 \times 4}{3 \times 4}$$

$$\frac{3}{12} + \frac{4}{12} = \frac{7}{12}$$

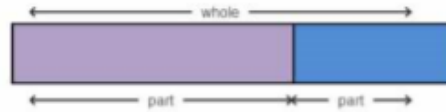
SUBTRACT IT!

Objective and strategies	Concrete BUILD IT/USE IT!	Pictorial DRAW IT!	Abstract SOLVE IT!
<p>Taking away ones</p>	<p>Use real-life physical objects, counters, cubes etc. to show how objects can be taken away.</p> 	<p>Cross out drawn objects to show what has been taken away.</p> 	<p>$4 = 6 - 2$</p> <p>$18 - 3 = 15$</p> <p>$8 - 2 = 6$</p>
<p>Counting back</p> <div style="border: 1px solid black; border-radius: 50%; padding: 10px; width: fit-content; margin-top: 20px;"> <p>Use counters and move them away from the group whilst counting backwards.</p> </div>	<p>Make the larger number in the subtraction calculation. Move the beads along the bead string whilst counting backwards in ones.</p>  	<p>Count back on a number line or number track</p>  <p>Start at the bigger number and count back the smaller number showing the jumps on the number line.</p> 	<p>Put 13 in your head, count back 4. What number are you at? Use your fingers to help.</p> <div style="border: 1px solid black; border-radius: 50%; padding: 20px; width: fit-content; margin-top: 20px;"> <p>Children will need regular practice counting backwards.</p> </div>

Use cubes to subtract a number from the bar.



Use the bar



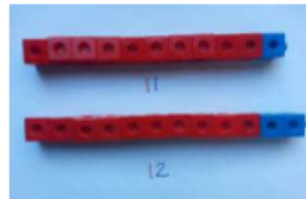
$$\text{Part} + \text{Part} = \text{Whole}$$

$$\text{Whole} - \text{Part} = \text{Part}$$

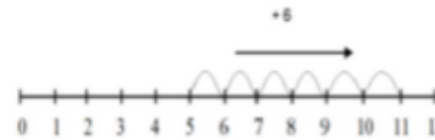
Find the difference

Compare amounts and objects to find the difference.

Use cubes to build towers or make bars to find the difference.

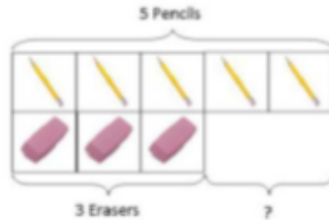


Count on to find the difference.



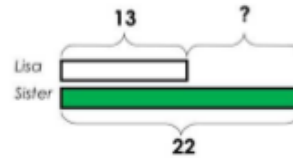
Hannah has 23 pencils, Helen has 15 pencils. Find the difference between the number of pencils.

Use basic bar models with items to find the difference.



Comparison Bar Models

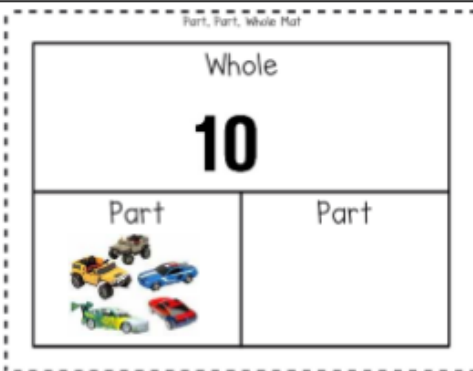
Lisa is 13 years old. Her sister is 22 years old. Find the difference in age between them.



Draw bars to find the difference between two numbers.

Part-part-whole model

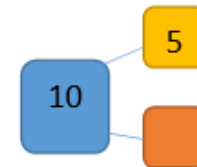
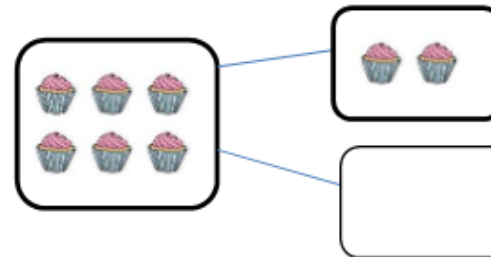
Link to addition-use the part whole model to help explain the inverse.



If 10 is the whole and 5 is one of the parts. What is the other part?

$$10 - 5 = \quad \text{or} \quad 10 - ? = 5$$

Use a pictorial representation of objects to show the part-part-whole model.



$$10 - 5 = 5 \quad \text{or} \quad 5 = 10 - ?$$

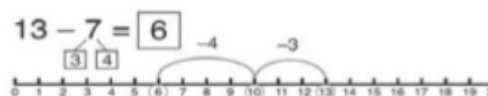
Move to using numbers with the part-part-whole model.

Make 10

$14 - 5 =$



Make 14 on the ten frame. Take away the four first to make 10 and then takeaway one more so you have taken away 5. You are left with the answer of 9.



Start at 13. Take away 3 to reach 10. Then take away the remaining 4 so you have taken away 7 altogether. You have reached your answer.

$16 - 8 =$

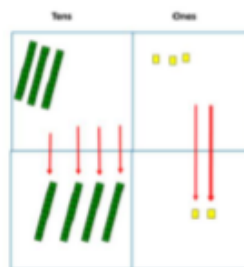
How many do we take off to reach the next 10?

How many do we have left to take off?

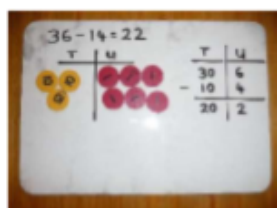
Column method without regrouping

$75 - 42 =$

Use Dienes to make the bigger number then take the smaller number away.



Show how you partition numbers to subtract. Again make the larger number first.



Draw the Dienes or place value counters alongside the written calculation to help to show working.



This will lead to a clear written column subtraction.

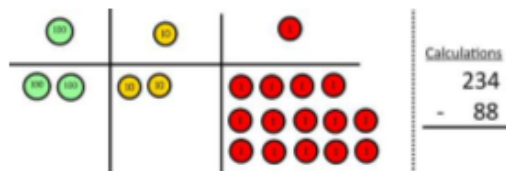
$$47 - 24 = 23$$

$$\begin{array}{r} 40 + 7 \\ - 20 + 4 \\ \hline 20 + 3 \end{array}$$

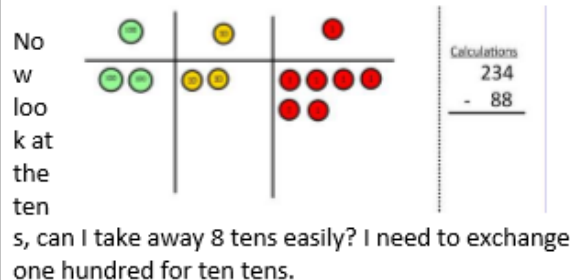
$$\begin{array}{r} 32 \\ - 12 \\ \hline 20 \end{array}$$

Column method with regrouping

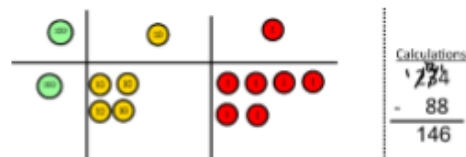
Make the larger number with the Dienes or place value counters. Start with the ones, can I take away 8 from 4 easily? I need to exchange one of my tens for ten ones.



Now I can subtract my ones.



Now I can take away eight tens and complete my subtraction

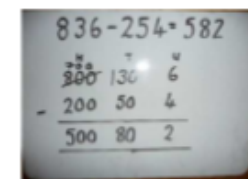


Show children how the concrete method links to the written method alongside your working. Cross out the numbers when exchanging and show where we write our new amount.

Draw the counters onto a place value grid and show what has been taken away by crossing the counters out as well as clearly showing the exchanges made.



When confident, children can find their own way to record the exchange/regrouping.

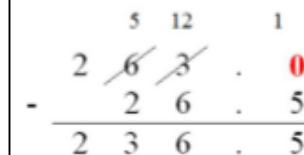


Children can start their formal written method by partitioning the number into clear place value columns.



Moving forward the children use a more compact method.

This will lead to an understanding of subtracting any number including decimals.



Subtract fractions

The cake has been divided into five slices. Each part is one fifth of the whole cake.

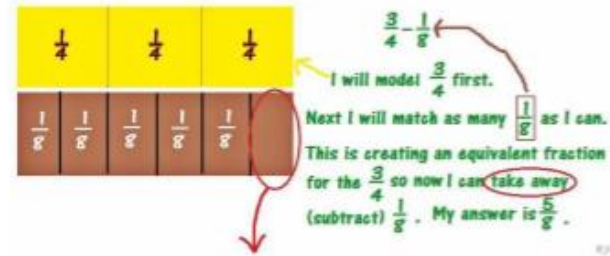


If there are five fifths and I eat one fifth, what fraction of the cake is left?

Draw a bar model to represent the cake.



Progress onto subtracting fractions with different denominators.





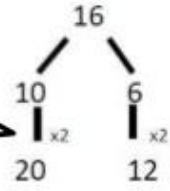
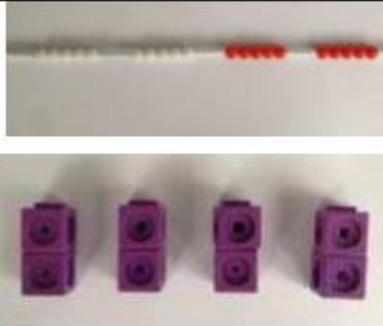
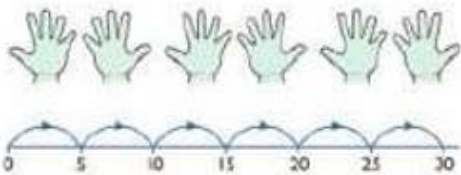
$$\frac{5}{5} - \frac{1}{5} = \frac{4}{5}$$

$$\frac{3}{4} - \frac{1}{8} =$$

$$\frac{3 \times 2}{4 \times 2} - \frac{1}{8}$$

$$\frac{6}{8} - \frac{1}{8} = \frac{5}{8}$$

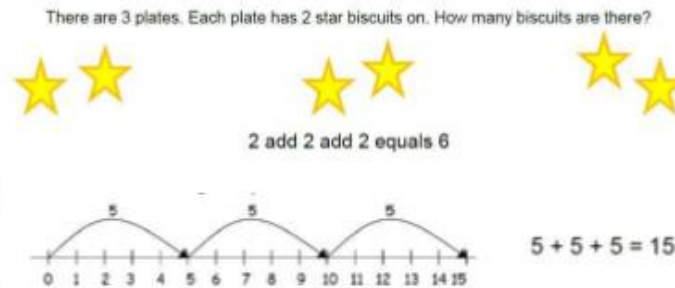
MULTIPLY IT!

Objective and strategies	Concrete BUILD IT/USE IT!	Pictorial DRAW IT!	Abstract SOLVE IT!
<p>Doubling</p> <p>Double five is ten.</p>	<p>Use practical activities to show how to double a number.</p>  <p>$5 \times 2 = 10$</p>	<p>Draw pictures to show how to double a number.</p> <p>Double 4 is 8</p>  <p>Double the 10 then double the 6.</p>	<p>Double 16</p>  <p>Partition a number and then double each part before recombining it back together.</p>
<p>Counting in multiples</p>	 <p>Count in multiples supported by concrete objects in equal groups.</p>	 <p>Use a number line or pictures to continue support in counting in multiples.</p>	<p>Count in multiples of a number aloud.</p> <p>Write sequences with multiples of numbers.</p> <p>2, 4, 6, 8, 10</p> <p>5, 10, 15, 20, 25, 30</p>

Repeated addition



Use different objects to add equal groups.



Write addition sentences to describe objects and pictures.

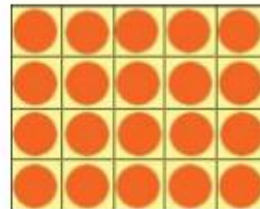
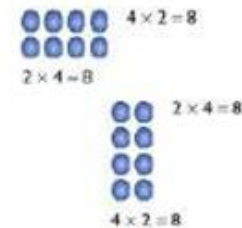


Arrays- showing commutative multiplication

Create arrays using counters/ cubes to show multiplication sentences.



Draw arrays in different rotations to find **commutative** multiplication sentences.



Link arrays to area of rectangles.

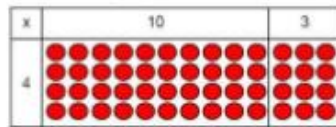
Use an array to write multiplication sentences and reinforce repeated addition.



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

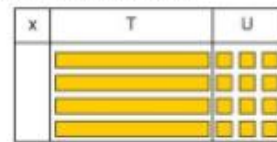
Grid Method

Show the link with arrays to first introduce the grid method.



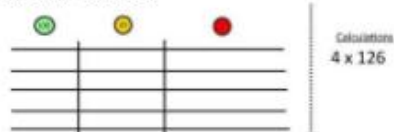
4 rows of 10
4 rows of 3

Use Dienes to move towards a more compact method.



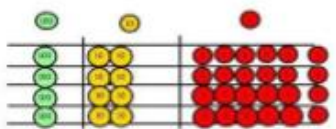
4 rows of 13

Use place value counters to show finding groups of a number eg. multiplying by 4 so we need 4 rows.



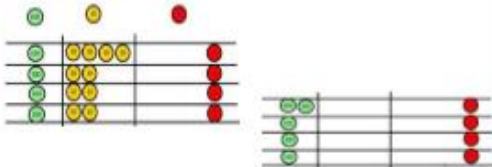
Calculations
 4×126

Fill each row with 126.



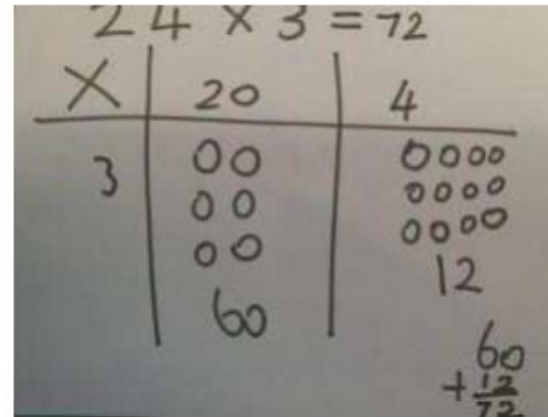
Calculations
 4×126

Add up each column, starting with the ones making any exchanges needed.



Children can represent the work they have done with place value counters in a way that they understand.

They can draw the counters, using colours to show different amounts or just use circles in the different columns to show their thinking as shown below.



Start with multiplying by one digit numbers and showing the clear addition alongside the grid.

X	30	5
7	210	35

$$210 + 35 = 245$$

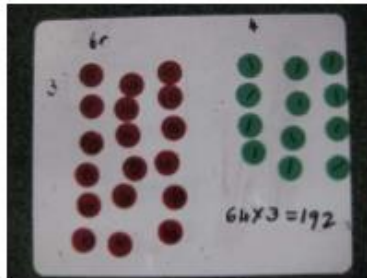
Moving forward, multiply by a 2 digit number showing the different rows within the grid method.

	10	8
10	100	80
3	30	24

X	1000	300	40	2
10	10000	3000	400	20
8	8000	2400	320	16

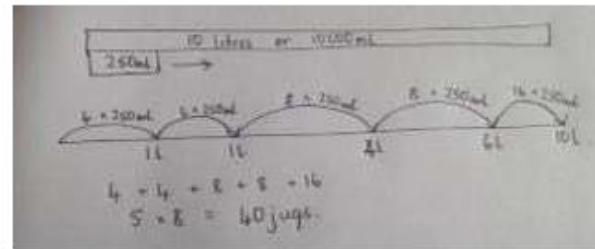
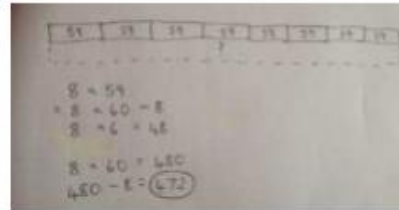
Column multiplication

Children can continue to be supported by place value counters at the stage of multiplication.



It is important at this stage that they always multiply the ones first and note down their answer followed by the tens which they note below.

Bar modelling and number lines can support learners when solving problems with multiplication alongside the formal written methods.



$354 \times 3 = 1062$

Expanded method	Short multiplication
$\begin{array}{r} 354 \\ \times \quad 3 \\ \hline 102 \\ 150 \\ 900 \\ \hline 1062 \end{array}$	$\begin{array}{r} 354 \\ \times \quad 3 \\ \hline 1062 \\ 11 \end{array}$

Start with long multiplication, reminding the children about lining up their numbers clearly in columns.

If it helps, children can write out what they are solving next to their answer.

$$\begin{array}{r} 32 \\ \times 24 \\ \hline 8 \quad (4 \times 2) \\ 120 \quad (4 \times 30) \\ 40 \quad (20 \times 2) \\ 600 \quad (20 \times 30) \\ \hline 768 \end{array}$$

$$\begin{array}{r} 74 \\ \times 63 \\ \hline 12 \\ 210 \\ 240 \\ + 4200 \\ \hline 4662 \end{array}$$

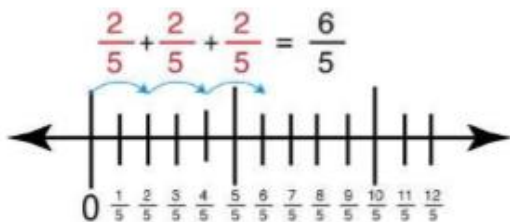
This moves to the more compact method.

$$\begin{array}{r} 327 \\ \times 53 \\ \hline 981 \leftarrow 327 \times 3 \\ 16350 \leftarrow 327 \times 50 \\ \hline 17331 \end{array}$$

Multiplication of fractions

Count in fraction steps (repeated addition)

What would three lots of one eighth be?



Three times one eighth.

$\frac{10}{8} = 1 \frac{2}{8}$
$\frac{9}{8} = 1 \frac{1}{8}$
$\frac{8}{8} = 1$
$\frac{7}{8}$
$\frac{6}{8}$
$\frac{5}{8}$
$\frac{4}{8} = \frac{1}{2}$
$\frac{3}{8}$
$\frac{2}{8} = \frac{1}{4}$
$\frac{1}{8}$

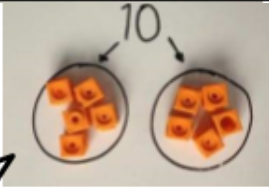


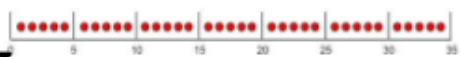


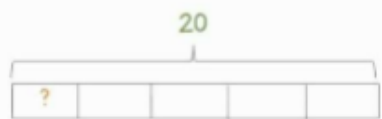
$3 \times \frac{1}{8} =$


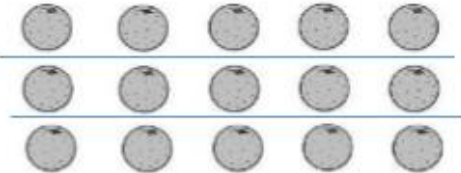
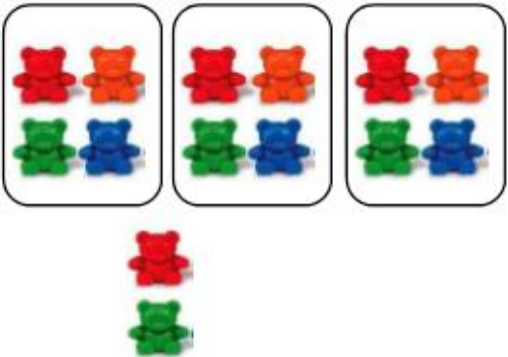


$\frac{3}{1} \times \frac{1}{8} = \frac{3}{8}$

Multiply the numerators together then multiply the denominators.

DIVIDE IT!

It is important to make links with fractions

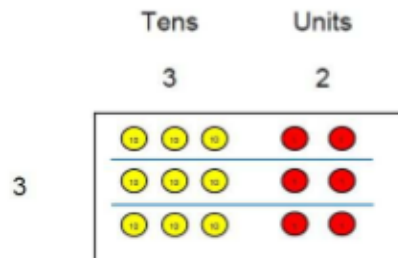
Objective and strategies	Concrete BUILD IT/USE IT!	Pictorial DRAW IT!	Abstract SOLVE IT!
<p>Sharing objects into groups</p> <p>If we are dividing by two we are finding one half.</p>	 <p>I have 10 cubes; can you share them equally into 2 groups?</p>	<p>Children use pictures or shapes to share quantities.</p>  <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> $8 \div 2 = 4$ </div>	<p>One half of 14 is 7 $\frac{1}{2}$ of 14 = 7 $14 \div 2 = 7$</p> <p>Share 9 cakes between three people.</p> <p style="text-align: center;">$9 \div 3 = 3$</p>
<p>Division as grouping</p> <p>If we are dividing by three we are finding one third.</p>	<p>Divide quantities into equal groups. Use cubes, counters, objects or place value counters to aid understanding.</p>   <p style="text-align: center;">$96 \div 3 = 32$</p> 	<p>Use a number line to show jumps in groups. The number of jumps equals the number of groups.</p>  <p>Think of the bar as a whole. Split it into the number of groups you are dividing by and work out how many would be within each group.</p>  <p style="text-align: center;">$20 \div 5 = ?$ $5 \times ? = 20$</p>	<p>$28 \div 7 = 4$</p> <p>Divide 28 into 7 groups. How many are in each group?</p>

<p>Division within arrays</p>	 <p>Link division to multiplication by creating an array and thinking about the number sentences that can be created.</p> <p>Eg $15 \div 3 = 5$ $5 \times 3 = 15$ $15 \div 5 = 3$ $3 \times 5 = 15$</p>	 <p>Draw an array and use lines to split the array into groups to make multiplication and division sentences.</p>	<p>Find the inverse of multiplication and division sentences by creating four linking number sentences.</p> <p>$7 \times 4 = 28$ $4 \times 7 = 28$ $28 \div 7 = 4$ $28 \div 4 = 7$</p>
<p>Division with a remainder</p>	<p>$14 \div 3 =$ Divide objects between groups and see how much is left over</p> 	<p>Jump forward in equal jumps on a number line then see how many more you need to jump to find a remainder.</p>  <p>Draw dots and group them to divide an amount and clearly show a remainder.</p> 	<p>Complete written divisions and show the remainder using r.</p> <p>$29 \div 8 = 3 \text{ REMAINDER } 5$</p> <p>↑ ↑ ↑ ↑ dividend divisor quotient remainder</p>

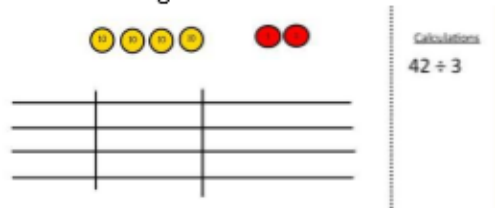
Short division

Find one third of 96.

$$96 \div 3 =$$

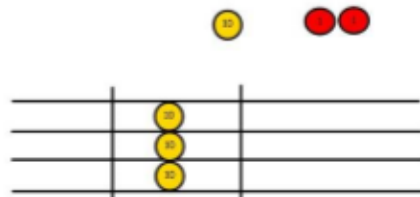


Use place value counters to divide using the bus stop method alongside

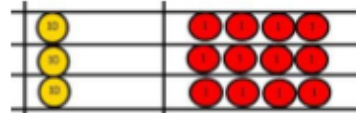


$$42 \div 3 =$$

Start with the biggest place value; share 40 into three groups. Put 1 ten in each group then 1 ten left over.

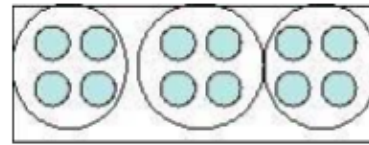


Exchange this ten for ten ones and then share the ones equally among the groups.



Look how much is in 1 group so the answer is 14.

Students can continue to use drawn diagrams with dots or circles to help them divide numbers into equal groups.



Encourage them to move towards counting in multiples to divide more efficiently.

Begin with divisions that divide equally with no remainder.



$$\begin{array}{r} 218 \\ 3 \overline{) 872} \\ \underline{6} \\ 27 \\ \underline{27} \\ 20 \\ \underline{21} \\ 1 \end{array}$$

Move onto divisions with a remainder.

$$\begin{array}{r} 86 \text{ r } 2 \\ 5 \overline{) 432} \\ \underline{40} \\ 32 \\ \underline{30} \\ 2 \end{array}$$

Finally move into decimal places to divide the total accurately.

$$\begin{array}{r} 14.6 \\ 35 \overline{) 511.0} \\ \underline{35} \\ 16 \\ \underline{16} \\ 11 \\ \underline{10} \\ 10 \\ \underline{10} \\ 0 \end{array}$$

<p>Long division (chunking method)</p> <p>Divide by single digit then progress to dividing by two digit number</p>			$\begin{array}{r} 86 \text{ r}2 \\ 5 \overline{) 432} \\ \underline{200} \quad (40 \times 5) \\ 232 \\ \underline{200} \quad (40 \times 5) \\ 32 \\ \underline{30} \quad (6 \times 5) \\ 2 \end{array}$ $\begin{array}{r} 13 \overline{) 1937} \\ - 1300 \quad 13 \times 100 \\ \hline 637 \\ - 520 \quad 13 \times 40 \\ \hline 117 \\ - 117 \quad 13 \times 9 \\ \hline 0 \end{array}$
<p>Division of fractions</p>	<p>$\frac{1}{2} \div 3 =$</p> 	<p>$\frac{1}{2} \div 3 =$</p> 	<p>$\frac{1}{2} \div 3 =$</p> <p>$\frac{1}{2} \div \frac{3}{1} =$</p> <p>$\frac{1}{2} \times \frac{1}{3} = \frac{1}{6}$</p>

Process of teaching times tables

Children will be taught the concept of multiplication using practical resources.

Children will progress on to using number lines or pictures.

Children will count in multiple steps.

Children will recite times tables by rote.
Links will be made with 'grouping' and division whilst times tables are being taught.

Concrete BUILD IT! / USE IT!

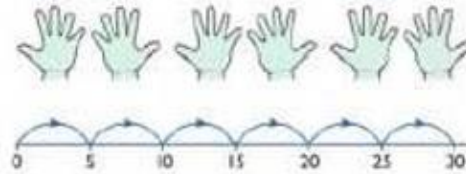
Count in multiples supported by concrete objects in equal groups.



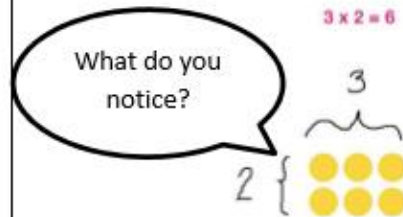
Use real-life arrays or build arrays.



Pictorial DRAW IT!



Use a number line or pictures to continue support in counting in multiples.



Link multiplication and division facts.

Abstract stage 1 SOLVE IT!

Count in multiples of a number aloud.

Write sequences with multiples of numbers.

2, 4, 6, 8, 10

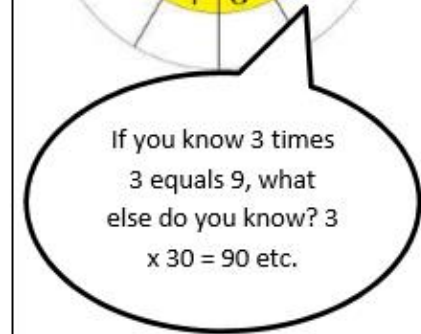
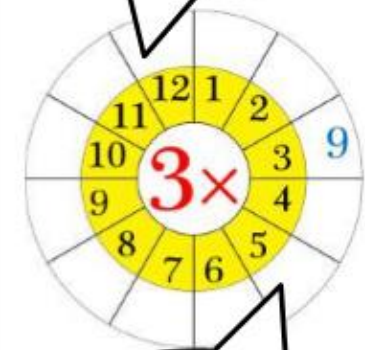
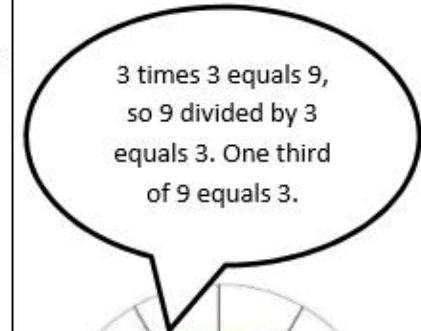
5, 10, 15, 20, 25, 30

Record multiplication number sentences.

$1 \times 7 = 7$	$7 \div 7 = 1$
$2 \times 7 = 14$	$14 \div 7 = 2$
$3 \times 7 = 21$	$21 \div 7 = 3$
$4 \times 7 = 28$	$28 \div 7 = 4$
$5 \times 7 = 35$	$35 \div 7 = 5$
$6 \times 7 = 42$	$42 \div 7 = 6$
$7 \times 7 = 49$	$49 \div 7 = 7$
$8 \times 7 = 56$	$56 \div 7 = 8$
$9 \times 7 = 63$	$63 \div 7 = 9$
$10 \times 7 = 70$	$70 \div 7 = 10$
$11 \times 7 = 77$	$77 \div 7 = 11$
$12 \times 7 = 84$	$84 \div 7 = 12$

Abstract stage 2 PRACTISE IT!

Recite times tables by rote orally.



REASON IT!

There is a huge emphasis on reasoning in maths lessons. Children need opportunities to justify and explain their knowledge.

Ensure you are using:

NCETM reasoning questions

NCETM mastery documents

NRICH tasks

Odd one out	Would you rather have ... ?	Find the mistake.	What is the same and what is different?
True or false?	Here is the answer, explain how it was worked out.	Always, sometimes, never	Give me a silly answer to this problem. What makes it silly?
Tell me about this...	Prove/disprove this statement.	Convince me that ...	What if....?
<p>Give me a hard and easy example of a calculation you could do with these numbers.</p> <p>Give me a hard and easy example of a five-digit calculation.</p> <p>Give me a hard and easy example of a question you could ask about this graph/pie chart etc.</p>	What do you notice?	How are these linked?	<p>If you know this fact, what else do you know? Eg. If you know:</p> $4 + 6 = 10$ You know: $40 + 60 = 100$ $100 - 40 = 60$ The sum of 6 and 4 is 10. $4000 + 6000 = 10,000$ $100,000 - 60,000 = 40,000$ If it is 6 o'clock now, in 4 hours it will be 10 o'clock.