

Maths Information Evening



Presented by
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March 2022

Maths is an important part of daily life and we need to equip our children with the tools and skills to be effective mathematicians.

Top Tips

Always be positive about maths.

Avoid saying you are bad at maths, or don't understand it.

Work with your child to make it a pleasant experience. If you are unsure about an element, try learning together.

addition

- add
- more
- plus
- sum
- total
- altogether



Number bonds

These are taught from Early Years.

Starting with bonds to and within 10, then moving onto bonds to 20. Bonds to 10 can also help to work out bonds to 100, 1000 etc. as they move through the school.

To support mental calculations and to be able to manipulate numbers, it is vital children have a secure recall of these facts.

It is important that children can subitise.



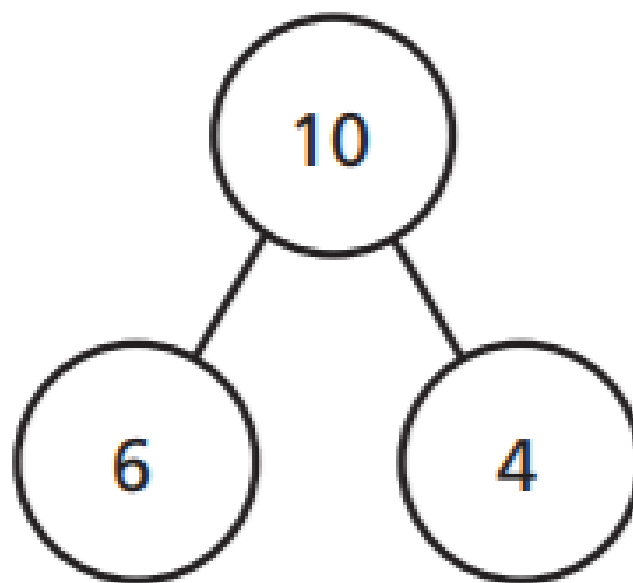
How many dots can you see?

Did you count them individually or just know?

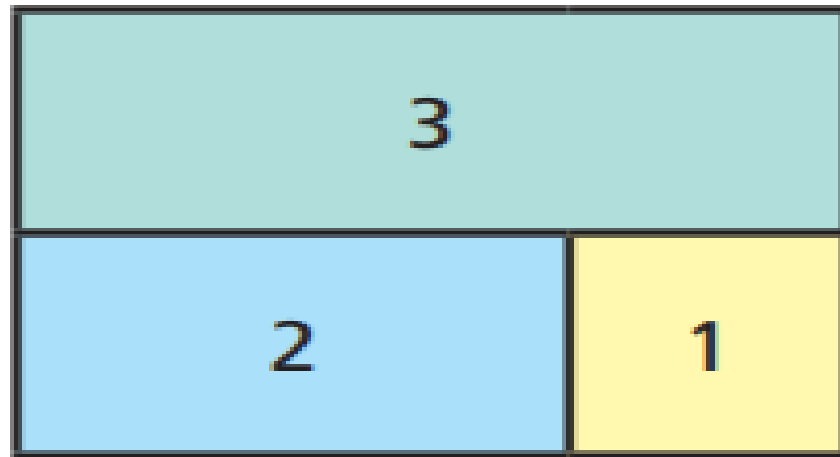
Subitise means to instantly recognise a small number.

Children learn to complete a fact family and use a part/whole model.

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<input type="text"/>	+	<input type="text"/>	=	<input type="text"/>
<input type="text"/>	=	<input type="text"/>	+	<input type="text"/>
<input type="text"/>	=	<input type="text"/>	+	<input type="text"/>



You might also see a bar model being used.



It is also important that children know number facts of all numbers up to and including 20.

Find three different ways to make 4



$$\square + \square = 4$$

$$\square + \square = 4$$

$$\square + \square = 4$$

E.g.

$$1 + 6 = 7$$

$$2 + 5 = 7$$

$$3 + 4 = 7$$

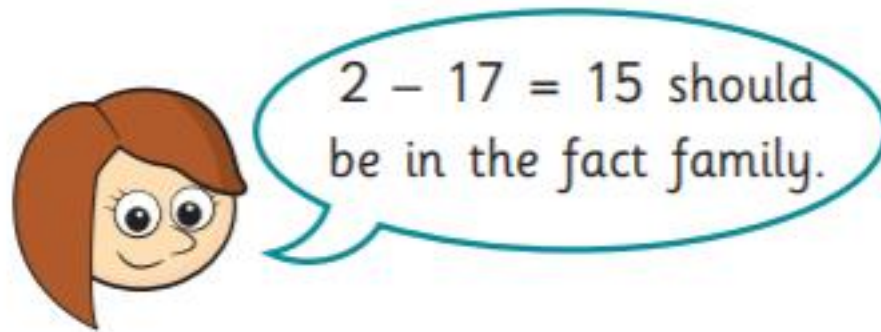
These facts need to be recalled automatically.

Children progress further with their fact families.

Complete the fact family.

a) 15	+	2	=	17	17	-	15	=	<input type="text"/>
17	=	15	+	2	<input type="text"/>	=	<input type="text"/>	-	<input type="text"/>
2	+	15	=	<input type="text"/>	<input type="text"/>	-	<input type="text"/>	=	<input type="text"/>
<input type="text"/>	=	<input type="text"/>	+	<input type="text"/>	<input type="text"/>	=	<input type="text"/>	-	<input type="text"/>

Understanding, is a key part of learning. Being able to recognise and discuss why something is wrong is just as important.



Explain why Rosie is wrong.

Children move onto using their number bonds knowledge to solve other number bonds. This time to 100.

Fill in the missing numbers.

$$100 = 100 - 0$$

$$90 = 100 - 10$$

$$80 = 100 - \square$$

$$\square = 100 - \square$$

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

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

Can you continue this pattern?

This is another example of how a part/whole model can be used.

Use number bonds to complete the additions.

The first one has been done for you.

a)

$17 + 5 = 22$

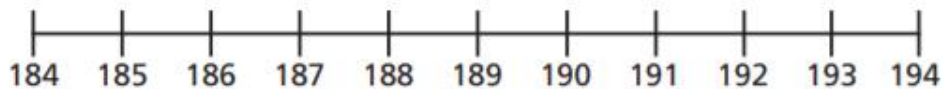
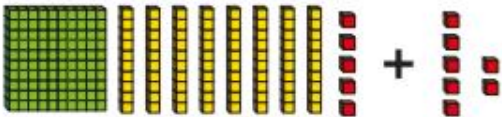
$20 + 2 = 22$

b)

$6 + 7 = \quad$

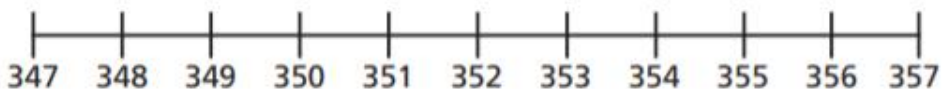
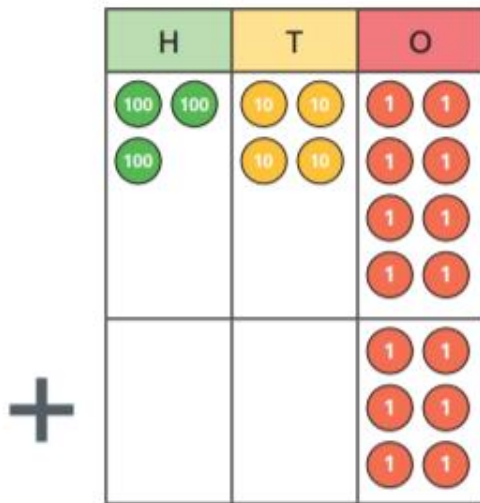
Children will progress onto using 3-digit numbers.

a) Work out $185 + 7$



How did you work this out?

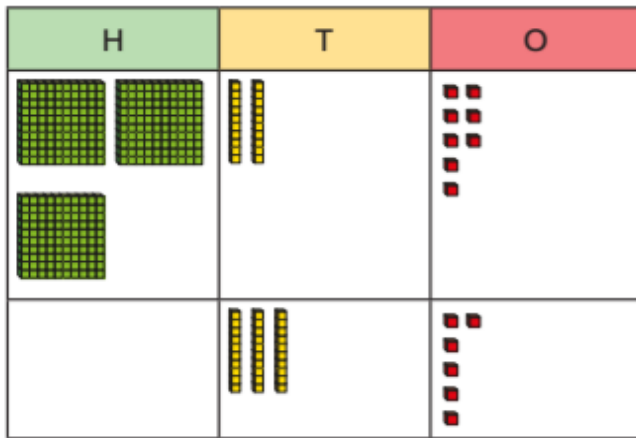
b) Work out $348 + 6$



Numberlines,
Dienes and place
value counters
are used to
secure
understanding.

When children start to use the column method, it is used along side Dienes and place value counters to ensure the children have understood what it is they are adding.

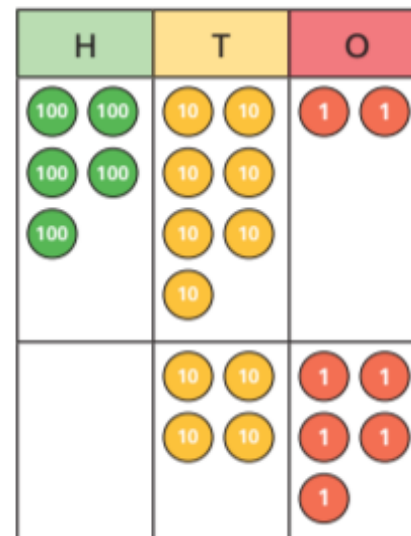
Use the place value chart to work out $328 + 36$



	H	T	O
	3	2	8
+		3	6
	<hr/>		

Work out the additions.

a) $572 + 45$

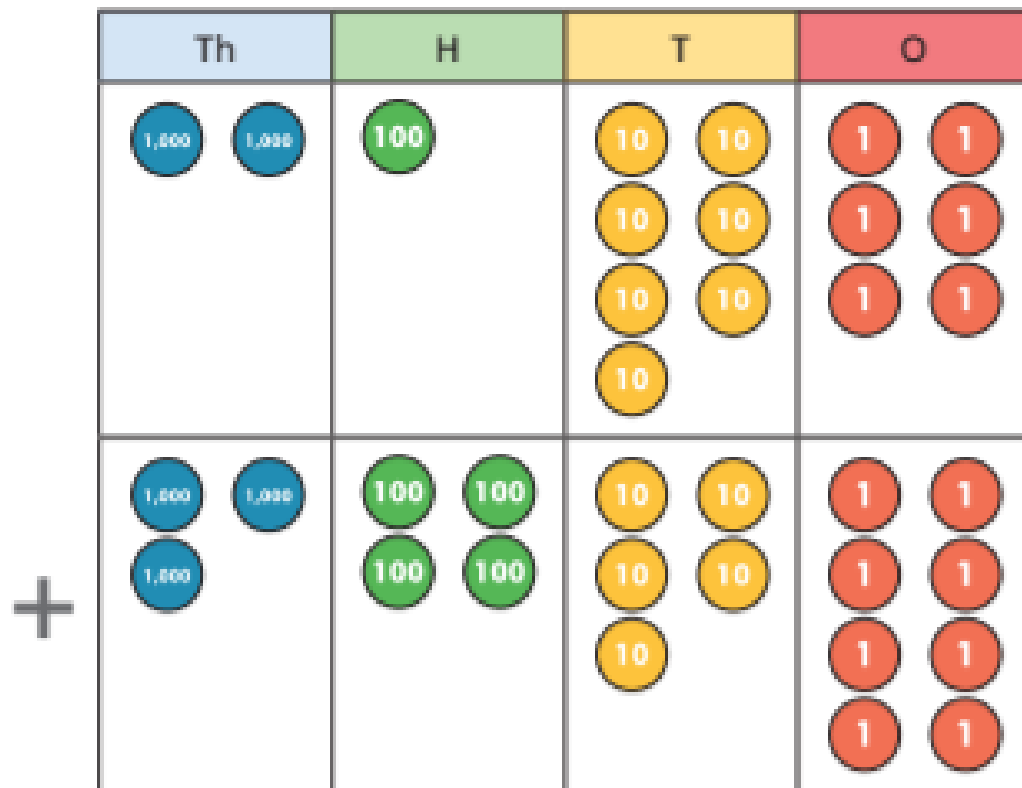


+

	H	T	O
	5	7	2
+		4	5
	<hr/>		

The principle is the same when moving beyond 3 digit numbers.

Complete the calculation.



		Th	H	T	O	
		2	1	7	6	
	+	3	4	5	8	

Questions/methods are presented in different ways to check understanding. Understanding is key.

Work out the missing digits.

a)

		Th	H	T	O
		3	7		9
	+			8	
		<hr/>			
		6	9	2	5
		<hr/>			

b)

		Th	H	T	O
				8	1
	+		9	8	
		<hr/>			
		4	2		8
		<hr/>			

c) Find two possible answers.

		Th	H	T	O
		2		1	
	+	3		6	
		<hr/>			
		6	1	8	2
		<hr/>			

		Th	H	T	O
		2		1	
	+	3		6	
		<hr/>			
		6	1	8	2
		<hr/>			

How did you work this out? Talk about it with a partner.

Are there any more answers?

Children need to be able to explain their calculations.

Mr Hall has written these additions on the board.

$$324,846 + 12,475$$

Dexter's workings

$$\begin{array}{r} 3 \ 2 \ 4 \ 8 \ 4 \ 6 \\ + \quad 1 \ 2 \ 4 \ 7 \ 5 \\ \hline 3 \ 3 \ 6 \ 2 \ 1 \ 1 \\ \hline \quad \quad \quad 1 \ 1 \ 1 \end{array}$$

$$17,654 + 2,935$$

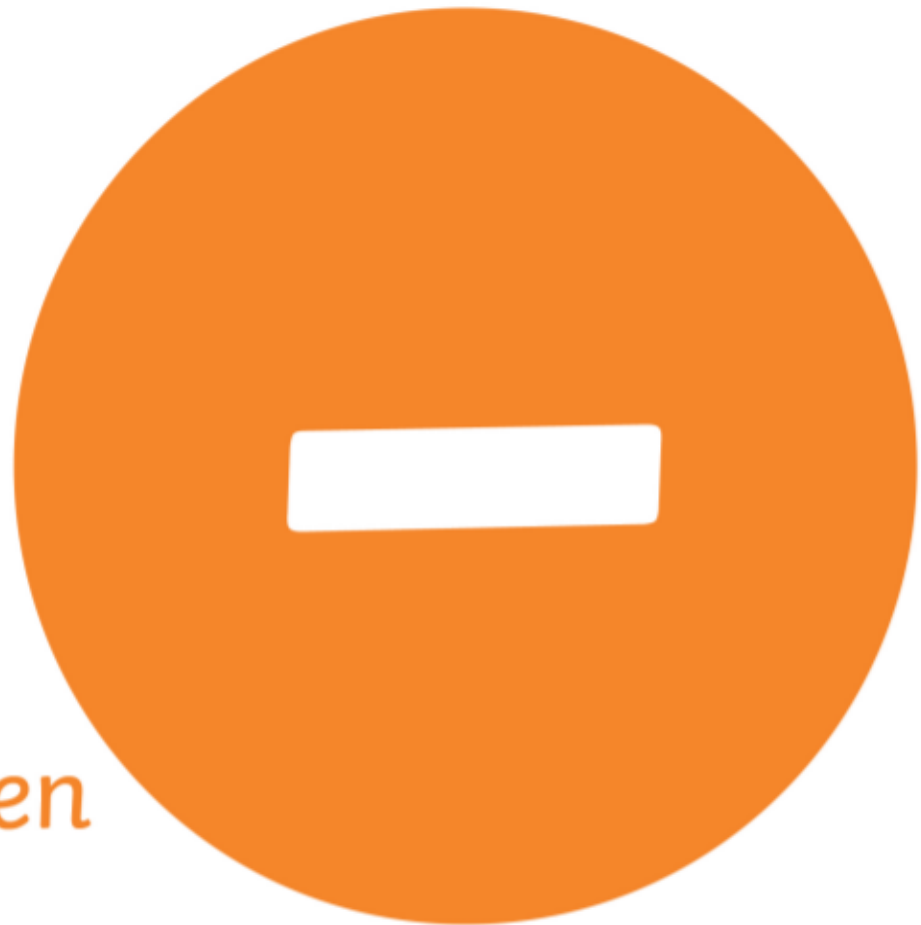
Eva's workings

$$\begin{array}{r} 1 \ 7 \ 6 \ 5 \ 4 \\ + \quad 2 \ 9 \ 3 \ 5 \\ \hline 4 \ 7 \ 0 \ 0 \ 4 \\ \hline \quad \quad \quad 1 \ 1 \ 1 \end{array}$$

Explain the mistakes that Dexter and Eva have made.

subtraction

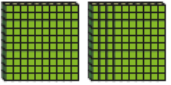
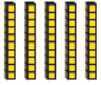

- subtract
- minus
- leave
- less
- take away
- difference between



Subtraction uses similar principles to addition however we do not use the term 'borrowing'. The children learn to 'exchange'.

I Complete the column subtractions.




a) $254 - 126$

Hundreds	Tens	Ones
		

	H	T	O
	2	5	4
-	1	2	6

What exchange did you have to make?

b) $532 - 281$

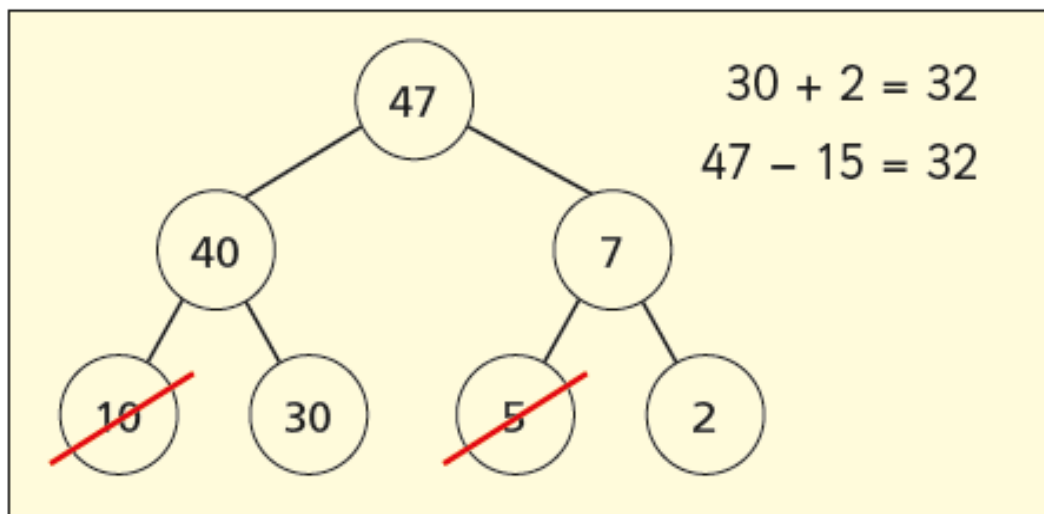
Hundreds	Tens	Ones
		

	H	T	O
	5	3	2
-	2	8	1

What exchange did you have to make?

Again, Dienes and place value counters are used to secure understanding of the actual process of what is happening.

Jack is working out $47 - 15$



Talk about Jack's method with a partner.

Use Jack's method to complete the calculations.

a) $47 - 16 =$

c) $37 - 15 =$

b) $36 - 22 =$

d) $57 - 31 =$

Part/whole models are used to show working out.

Children are taught to look at ways of making calculations simpler to work out.

$$4000 - 472 =$$

$$\begin{array}{r} 4000 \\ - 472 \\ \hline \\ \hline \end{array}$$

This would involve a lot of exchanging.

But taking one from each number makes the calculation simpler.

$$3999 - 471 =$$

$$\begin{array}{r} 3999 \\ - 471 \\ \hline \\ \hline \end{array}$$

multiplication

- lots of
- times
- multiply
- groups of
- product
- multiplied by
- multiple of
- repeated addition
- array



The most important thing for your child to do is know their times tables up to and including 12×12 .

They need to know them by rote and have automatic recall.

Don't worry if initially they do not understand what times tables mean, this will be taught in school.

Children start with their 2, 5 and 10's.

Move onto 3, 4, 6 and 8 and then the rest are learnt.

If your children is secure with one times table, move them onto the next one but keep practising ones they have learnt previously.

Repeat addition is linked with multiplication.

Complete the pattern.

$$5 \times 2 = 5 + 5 = \boxed{}$$

$$5 \times 3 = 5 + 5 + 5 = \boxed{}$$

$$5 \times 4 = 5 + 5 + 5 + 5 = \boxed{}$$

$$5 \times 5 = \underline{\hspace{10em}} = \boxed{}$$

What comes next?

Arrays are used to visualise times tables.

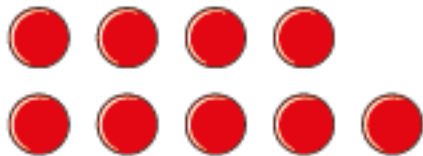
Complete the array and times-table fact so that they match.

a)



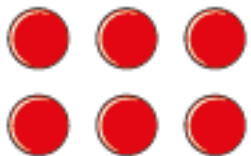
$$2 \times 2 = \square$$

b)



$$2 \times 5 = \square$$

c)

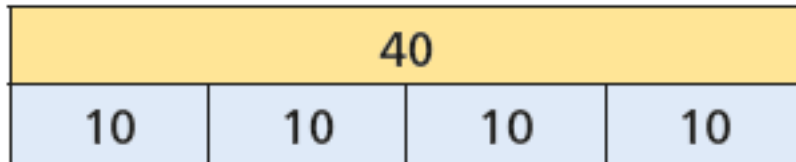


$$2 \times \square = 8$$

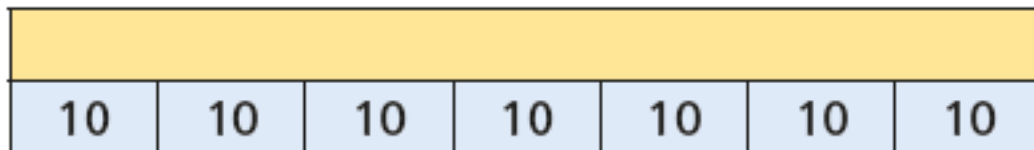
Bar models can show the calculation.

Write a multiplication fact to match the bar model.

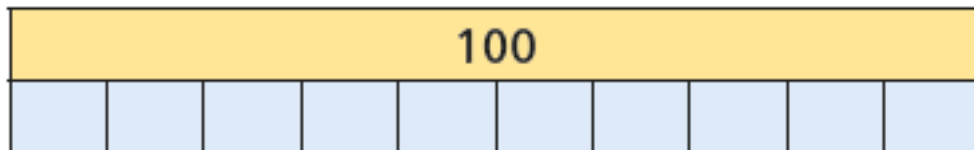
a)



b)



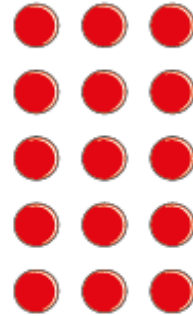
c)



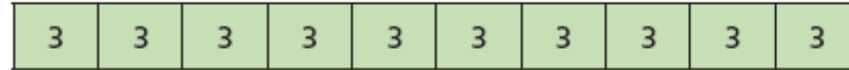
Children use different methods to help secure understanding.

Write two multiplication sentences for each part of the question.

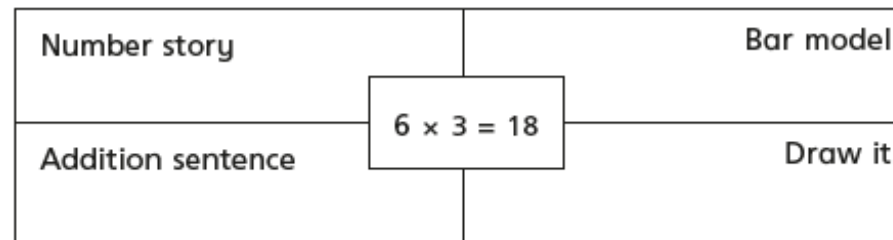
a)



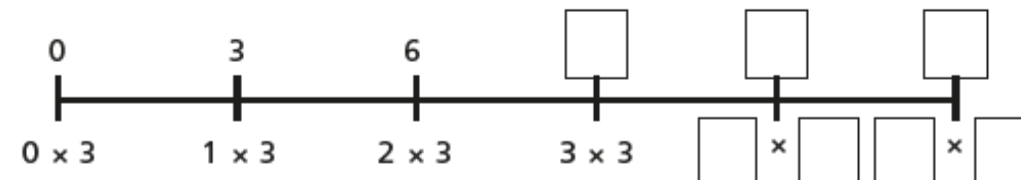
b)



Complete the diagram.

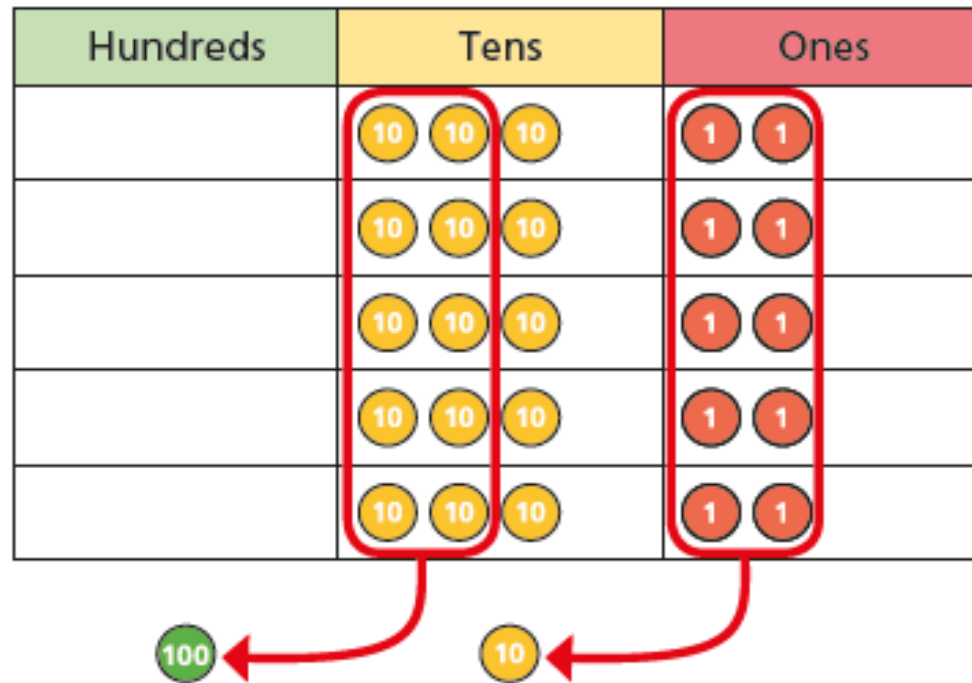


Complete the number line.



Children continue to use place value charts and place value counters to aid understanding.

Brett uses a place value chart to work out 5×32



Talk about Brett's method with a partner.

Work out the multiplication.

$$5 \times 32$$

Use Brett's method to work out 6×34

Different methods are taught so children are able to choose the one they feel more confident with.

Rosie works out 4×37 using a written method.

		H	T	O						
			3	7						
	x			4						
			2	8		(7	x	4)		
		1	2	0		(3	0	x	4)	
		1	4	8						

Dani uses a different written method to work out 8×42

		H	T	O						
			4	2						
	x			8						
			3	3	6					
				1						

Talk about Dani's method with a partner.

Use Dani's method to work out 3×27

It is important that children also learn to use their times tables to solve multiplication calculations.

For the calculation 6×24 , children are encouraged to think of what they already know.










Therefore $6 \times 12 = 72$ twice results in $6 \times 24 = 144$.

Or $6 \times 24 = 12 \times 12$ (double one number and half the other)

Continuing to use place value charts and using visual aids ensure children realise exactly what they are doing.

Complete the multiplication.

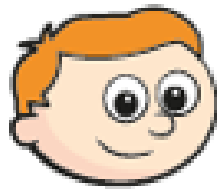
Use the place value chart to help you.

H	T	O
		
		
		

		H	T	O	
		2	1	5	
	x			3	
		<hr/>			
		<hr/>			

Children are taught to reason and use knowledge to check answers are sensible.

Ron and Teddy are working out 5×245



Ron

I know the answer will be greater than 1,000 because I know 5×200 is 1,000

I know the answer should end in 5 because I know 5×5 is 25



Teddy

a) Who is correct?

Ron

Teddy

both

neither

Being able to multiply by 10 and 100 is an important skill. Knowing what is happening to the number and that it moves along the place value chart is essential, especially when the children start to use decimal numbers.

Using the correct language from the very beginning will help to stop misconceptions later on.

We NEVER 'just add a zero'!

8 Complete the calculations.

a) $45 \times 10 = \square$

d) $31 \times \square = 310$

g) $32 \times 10 = 10 \times \square$

b) $36 \times 10 = \square$

e) $10 \times \square = 140$

h) $670 = 2 \times 5 \times \square$

c) $\square = 10 \times 78$

f) $\square = 40 \times 10$

9 Eva walks 60 m to school.

Teddy walks 10 times as far as Eva to school.

How far does Teddy walk to school?

10 Amir thinks of a 2-digit number.

He multiplies it by 10



My answer is
between 755
and 795

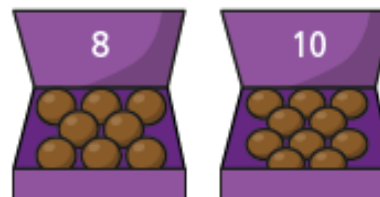
Write all the numbers Amir could be thinking of.

11 Chocolates come in boxes of 8 and 10

Rosie needs to buy 80 chocolates.

a) What boxes could Rosie buy?

b) What is the fewest number of boxes Rosie needs to buy?



Multiply each number by 100 and then by 1,000

a)

HTh	TTh	Th	H	T	O
					9

9×100

$9 \times 1,000$

b)

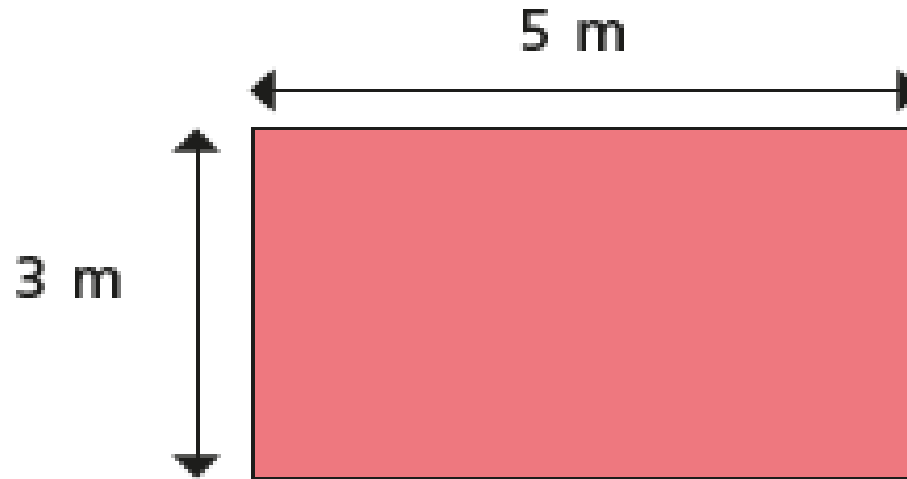
HTh	TTh	Th	H	T	O
				1	6

16×100

$16 \times 1,000$

Being able to apply multiplication to other situations is key.

Calculate the perimeter of the rectangle.

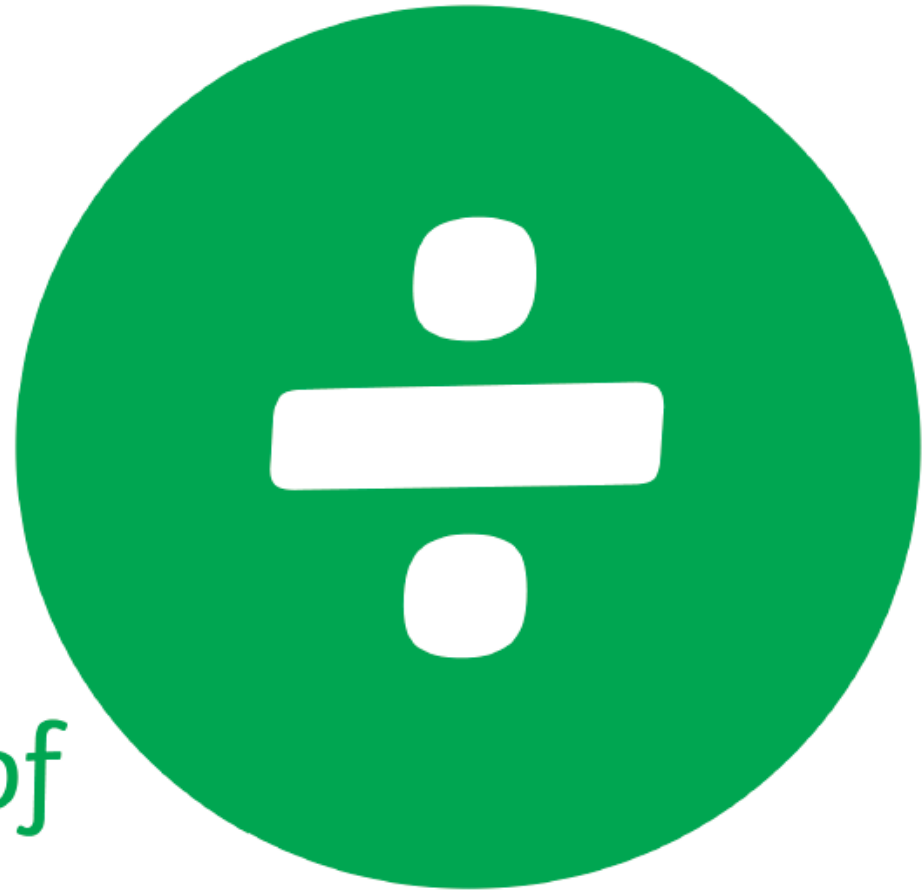


Give your answer in centimetres.

Multiplication facts help us solve problems involving fractions, area, perimeter and measurements.

division

- divide
- divided by
- divided into
- share
- share equally
- equal groups of



Division is an area of calculation that children often find more challenging. It is essential they understand the basics of division before they are able to move on.

This can be done at home, when sharing sweets, toys etc. Get your child to do the sharing. Are they checking it is fair?

Discuss what is fair and unfair when sharing. Try sharing different amounts with different size groups.

You can try making the link between division and multiplication.

If you know that $3 \times 4 = 12$ then you also know that 12 divided by $3 = 4$ and 12 divided by $4 = 3$.

Share the sweets between the party bags.



There are sweets.

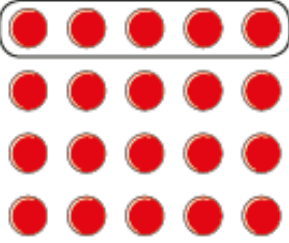
There are party bags.

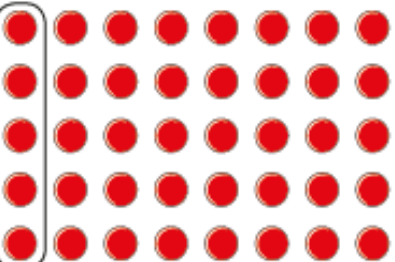
There are sweets in each bag.

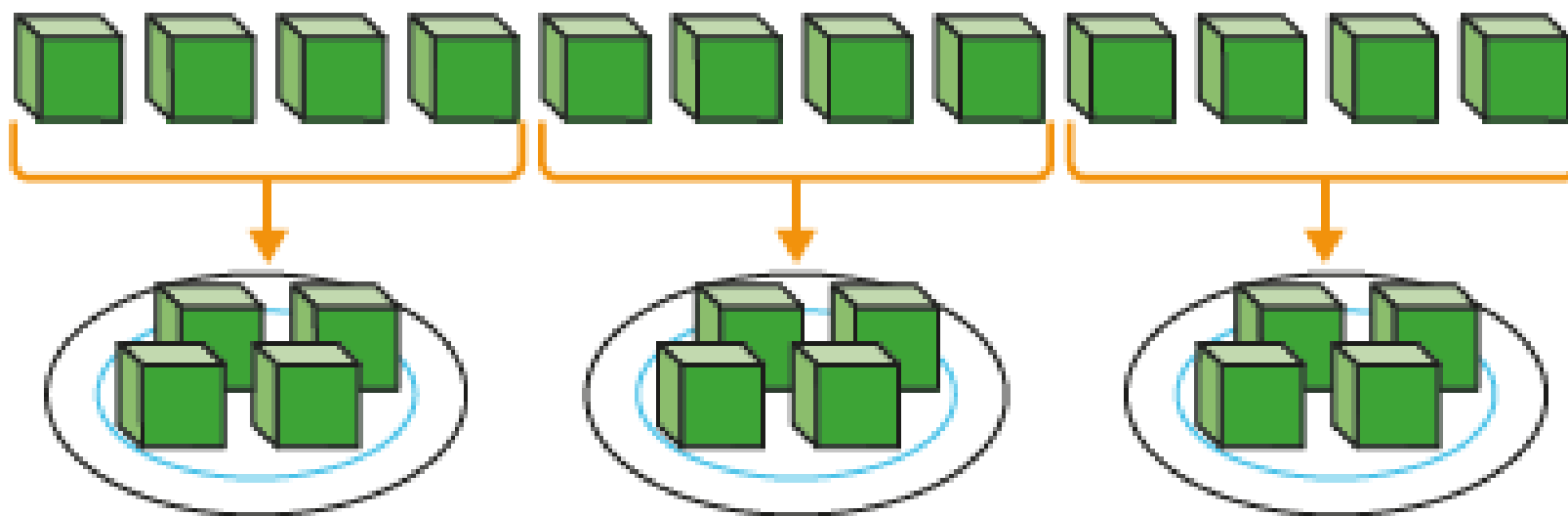
$$15 \div \square = \square$$

Children start
with sharing
equally.

Complete the number sentences for each array.

a)  $\times 5 = 20$
 $20 \div 5 = \square$

b)  $\times 5 = \square$
 $\div 5 = \square$



Complete the sentences.

There are 12 cubes.

There are plates.

Each plate has cubes.

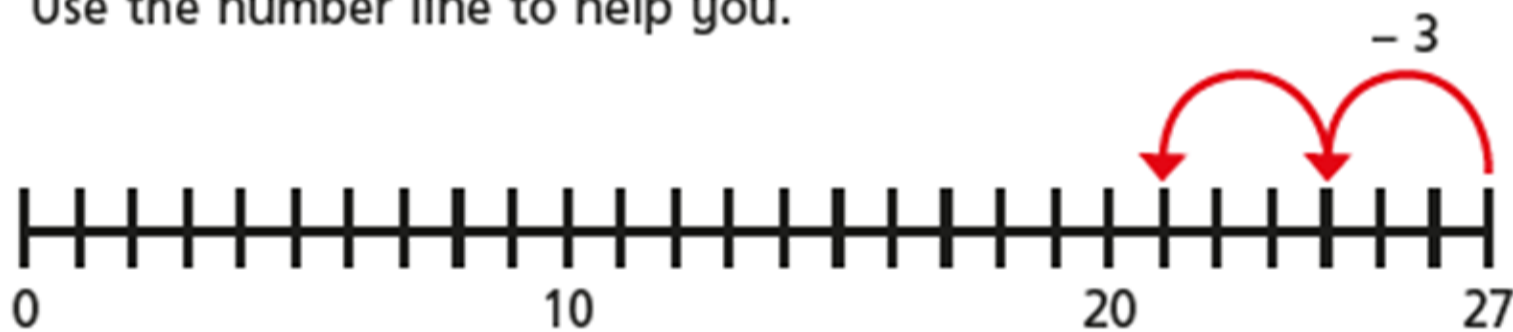
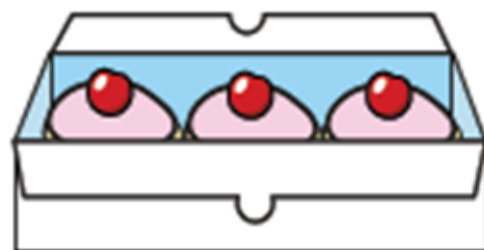
12 divided into equal groups is

There are 27 cakes.

A box can hold 3 cakes.

How many boxes of 3 cakes can be filled?

Use the number line to help you.



Complete the bar model for the division $33 \div 3 = 11$



Is there more than one way to do this?

Being able to use mental strategies is also important. Children need to be able to identify when to use a written method and when to calculate mentally.

This an important skill for all four areas of calculation.

This is one example where children can use a mental strategy effectively.

Alex is trying to divide 48 by 4



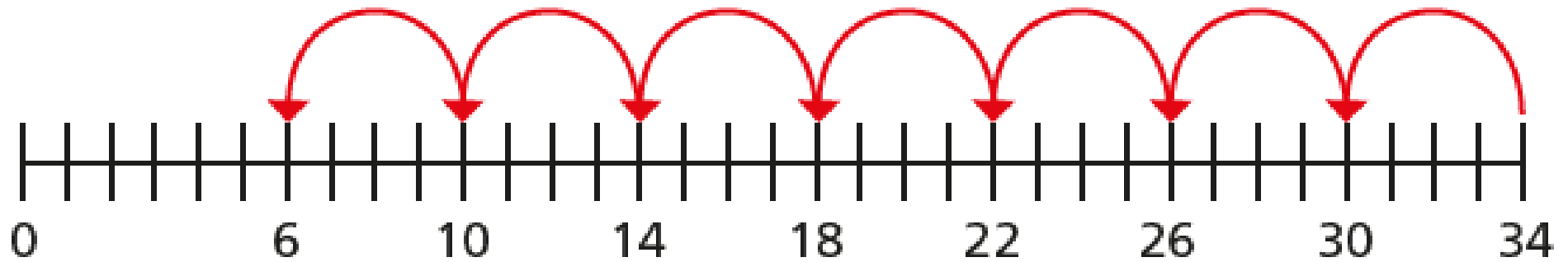
To multiply by 4, you can double the number and double again.

To divide a number by 4, I think you can halve the number and halve it again.

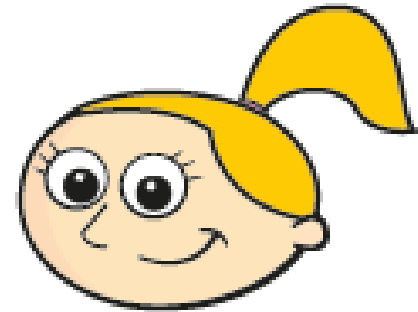
Use an array to show that Alex's method works.

Does Alex's method always work?

Eva works out $34 \div 4$



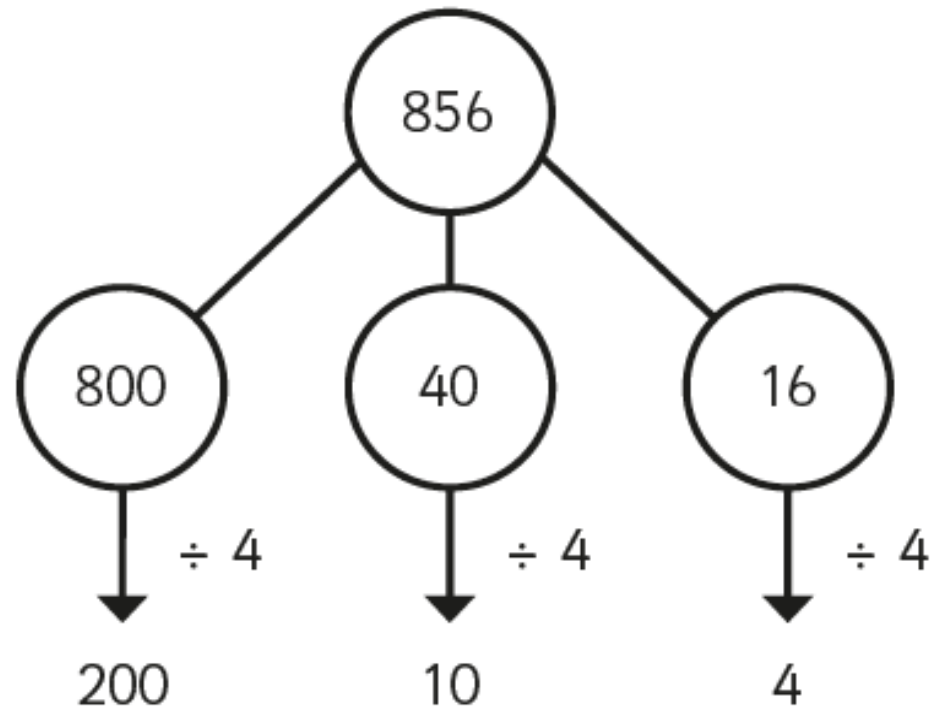
There is a remainder of 6



Is Eva correct?

How do you know?

Whitney is using flexible partitioning to divide a 3-digit number.



Could Whitney have partitioned her number another way?

Children eventually move onto the short division method, but only when they are secure on their time tables and place value.

	5	5	6	5	

	5	6	6	5	

	5	4	6	5	0	

Eventually this method is used for long division when dividing by a 2-digit number.

$$598 \div 13 = 46$$

$$13 \times 1 = 13$$

$$13 \times 10 = 130$$

$$13 \times 2 = 26$$

$$13 \times 20 = 260$$

$$13 \times 3 = 39$$

$$13 \times 30 = 390$$

$$\underline{13 \times 4 = 52}$$

$$13 \times 40 = 520$$

$$13 \times 5 = 65$$

$$13 \times 50 = 650$$

$$\underline{13 \times 6 = 78}$$

$$13 \times 60 = 780$$

$$13 \times 7 = 91$$

$$13 \times 70 = 910$$

		4	6
13	<u>5</u>	9	8
—	5	2	0
		<u>7</u>	8
—		7	8
			0

($\times 40$)

($\times 6$)

$$741 \div 13 = 57$$

		5	7
13	67	<u>14</u>	1
—	6	5	0
		<u>9</u>	<u>1</u>
—		9	1
			0

$$13 \times 1 = 13$$

$$13 \times 2 = 26$$

$$13 \times 3 = 39$$

$$13 \times 4 = 52$$

$$\underline{13 \times 5 = 65}$$

$$13 \times 6 = 78$$

$$\underline{13 \times 7 = 91}$$

$$13 \times 10 = 130$$

$$13 \times 20 = 260$$

$$13 \times 30 = 390$$

$$13 \times 40 = 520$$

$$13 \times 50 = 650$$

$$13 \times 60 = 780$$

$$13 \times 70 = 910$$

(×50)

(×7)

And finally...

Please remember:

Knowing number bonds for all numbers from 1 to 20 are key when helping children mentally add and subtract.

Learning multiplication facts with associated division facts are the bedrock for most maths and once learnt, will aid your child enormously.

When choosing a calculation method, it is about finding one which is the most efficient for the child. This will vary from depending on age, experience and confidence.

Useful websites

<https://www.topmarks.co.uk/maths-games/hit-the-button>

<https://www.timestables.co.uk/>

<http://www.maths-games.org/times-tables-games.html>

<http://www.mental-arithmetic.co.uk/>

<https://www.mathsisfun.com/>

We hope you now feel more informed about the methods of calculation used in our school and how you can help your child. If you need any further information, please do not hesitate to speak with your child's class teacher.