

Mathletics

Series

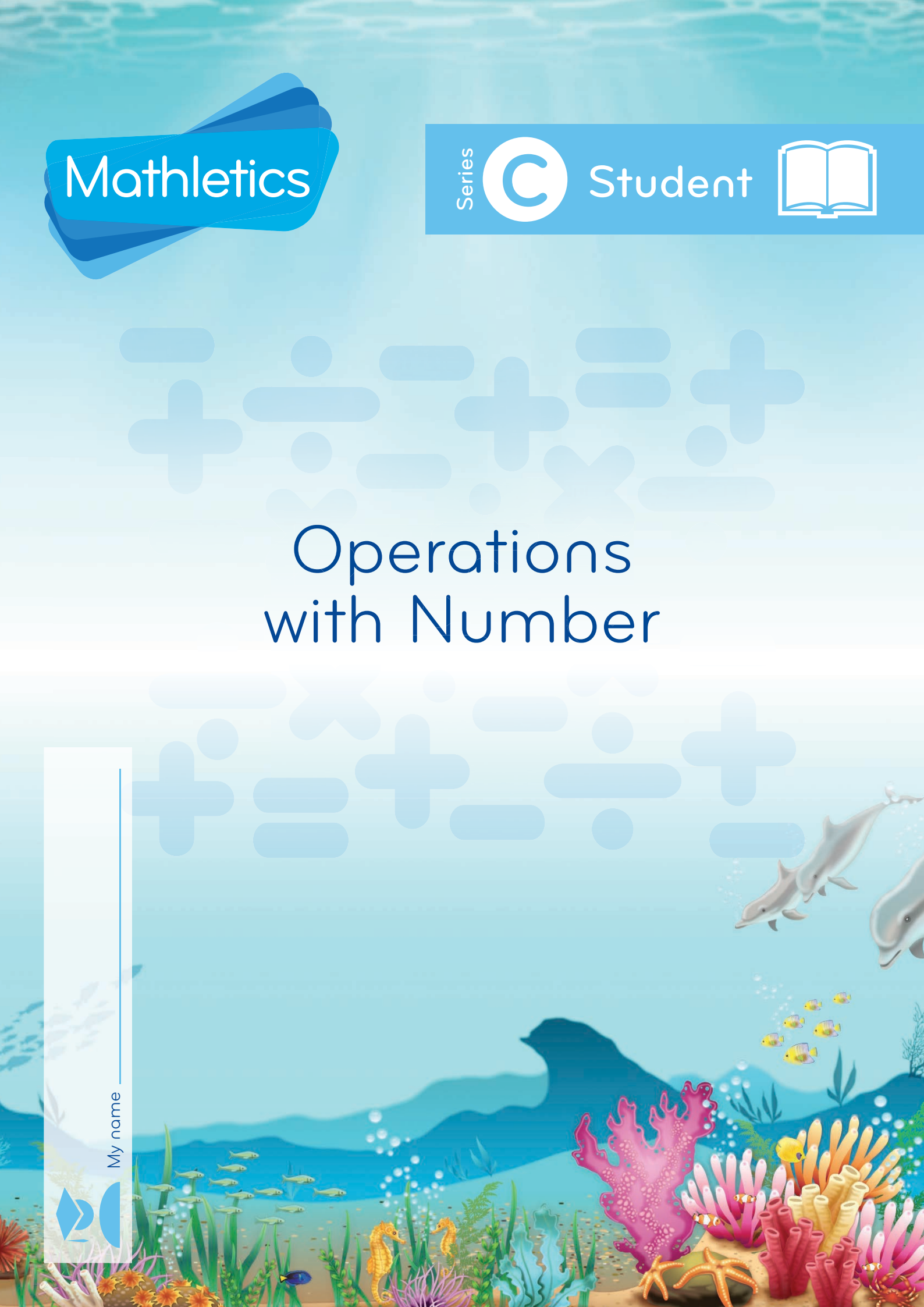


Student



Operations with Number

My name _____



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Series C – Operations with Number

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Series Author:

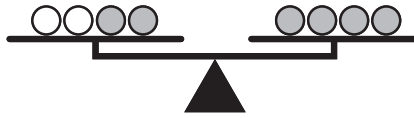
Rachel Flenley

Addition and subtraction facts – equivalence

Did you know that we are balancing or making the sides the same when we solve number problems?

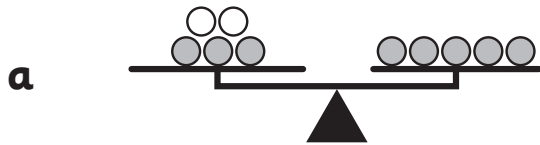
Think about $2 + 2 = 4$.

On the scales it looks like this.



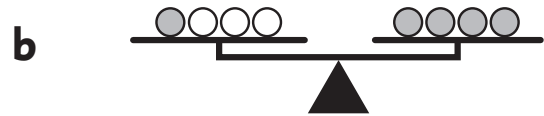
$2 + 2 = 4$ is another way of saying 2 and 2 **is the same as** 4.

- 1 Write the addition problems shown on each scale 2 ways.
Say them out loud to a partner.



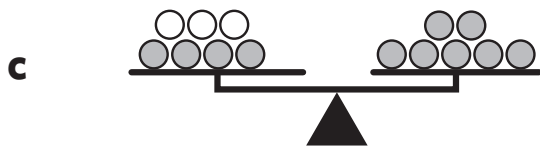
$$3 + 2 = 5$$

3 and ___ is the same as 5



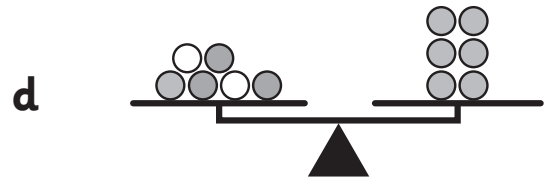
$$\underline{\quad} + \underline{\quad} = 4$$

___ and ___ is the same as ___



$$\underline{\quad} + \underline{\quad} = \underline{\quad}$$

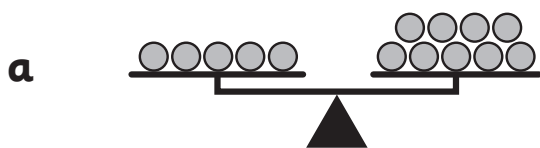
___ and ___ is the same as ___



$$\underline{\quad} + \underline{\quad} = \underline{\quad}$$

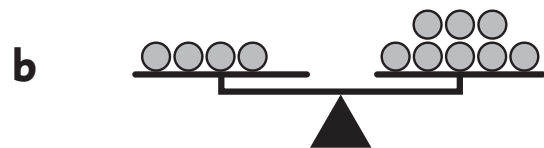
___ and ___ is the same as ___

- 2 Now draw the missing counters and fill in the missing numbers.



$$5 + 4 = 9$$

___ and ___ is the same as 9

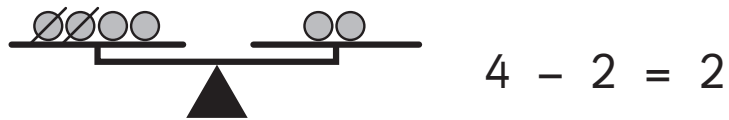


$$4 + 4 = \underline{\quad}$$

___ and 4 is the same as ___

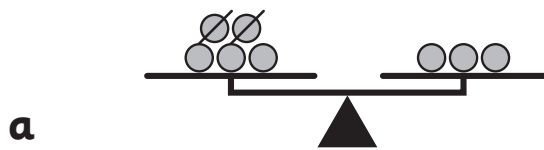
Addition and subtraction facts – equivalence

We are balancing or **making sides the same** when we solve all kinds of number problems, not just addition problems.

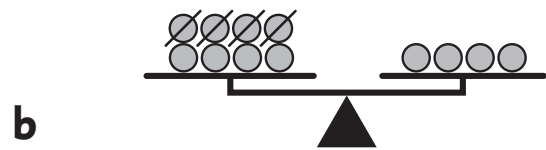


This shows that 4 subtract 2 is the same as 2.

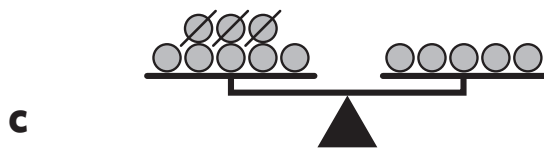
1 Write the subtraction problems shown on each scale.



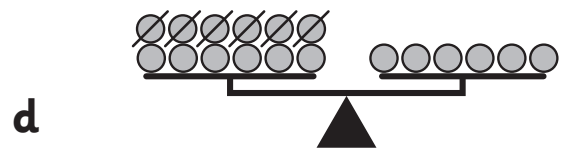
$\underline{3} - \underline{\quad} = 3$



$\underline{\quad} - \underline{\quad} = 4$



$\underline{\quad} - \underline{\quad} = \underline{\quad}$



$\underline{\quad} - \underline{\quad} = \underline{\quad}$

2 Draw the counters and fill in the missing numbers.



3 Now create your own subtraction problem.



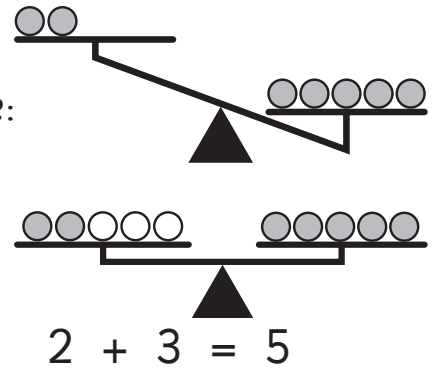
Addition and subtraction facts – finding the unknown

Sometimes we have to work out the missing part of a problem. We call this **finding the unknown**. We can use symbols like squares or circles to stand for what we don't know.

Think about $2 + \blacksquare = 5$ Look at the scale:

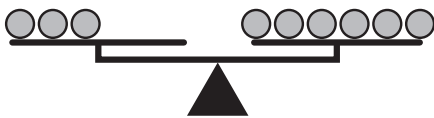
How many more counters do we need to add to the left side to equal 5? We add 3 more.

Our unknown is 3.



- 1 Put on your detective cap and find the unknowns in these problems. Draw more counters on the left of each scale to make the sides equal. Fill in the missing numbers below to match.

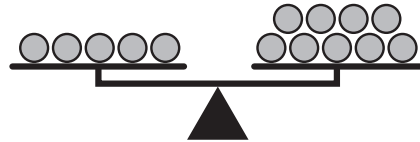
a $3 + \blacksquare = 6$



The unknown (\blacksquare) is 3

$3 + 3 = 6$

b $5 + \star = \underline{\quad}$



The unknown (\star) is

$5 + \underline{\quad} = \underline{\quad}$

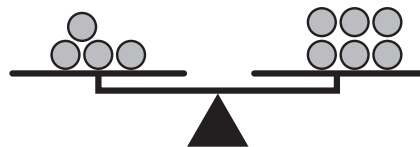
c $1 + \blacktriangle = 5$



The unknown (\blacktriangle) is

 + =

d $4 + \bullet = \underline{\quad}$



The unknown (\bullet) is

 + =

Addition and subtraction facts – finding the unknown

You will need:  counters

What to do:

Help! While at a party, someone stole some sweets from these children's party bags. Your job is to work out how many sweets are missing from each bag.

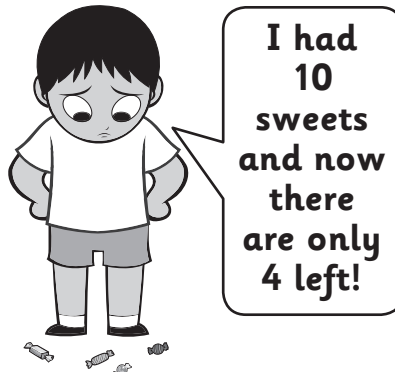
Pretend counters are the sweets and work out the unknown amount. Write it in the number sentence.



Melody

$$8 - \blacksquare = 3$$

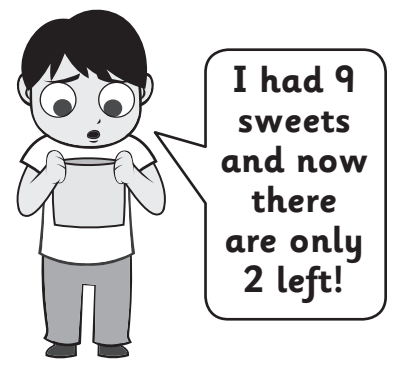
$$8 - \underline{\quad} = 3$$



Harry

$$10 - \bullet = 4$$

$$10 - \underline{\quad} = 4$$



Jack

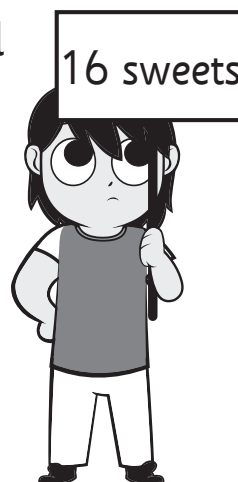
$$9 - \blacktriangle = 2$$

$$9 - \underline{\quad} = 2$$

What to do next:

These children on the right had already eaten all their sweets.

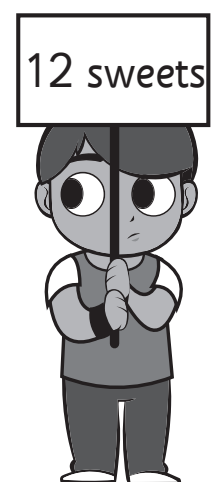
They say a mum gave them some more but 1 person is not telling the truth. This person has exactly the number of stolen sweets. Who stole the sweets?



Ellie



Thomas



Danny

Addition and subtraction facts – zero

1 Do you know any other words for zero? Write them here.

2 What happens when we **add** zero to a number or a number to zero? Try these.

a $13 + 0 = \underline{\quad}$ **b** $19 + 0 = \underline{\quad}$ **c** $23 + 0 = \underline{\quad}$

d $0 + 4 = \underline{\quad}$ **e** $0 + 27 = \underline{\quad}$ **f** $0 + 38 = \underline{\quad}$

g What do you notice?

3 What about if we **subtract** zero from a number? Try these.

a $10 - 0 = \underline{\quad}$ **b** $13 - 0 = \underline{\quad}$ **c** $8 - 0 = \underline{\quad}$

d $67 - 0 = \underline{\quad}$ **e** $16 - 0 = \underline{\quad}$ **f** $28 - 0 = \underline{\quad}$

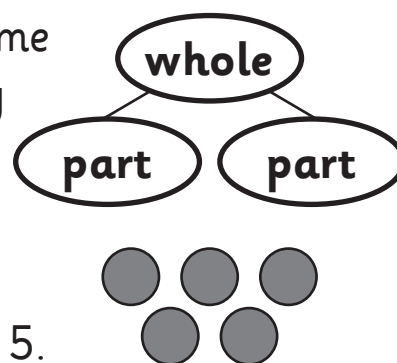
g What do you notice?

4 What is the largest 'add zero' problem you can think of? Write it here.

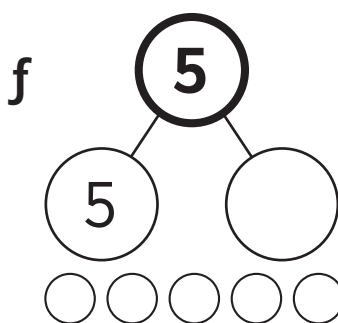
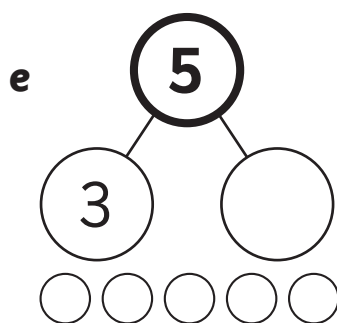
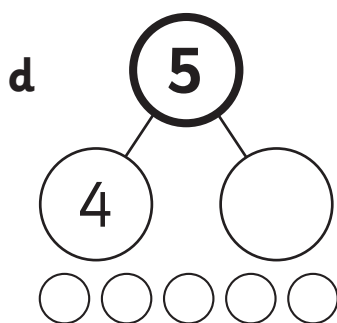
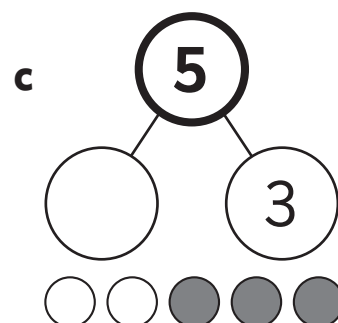
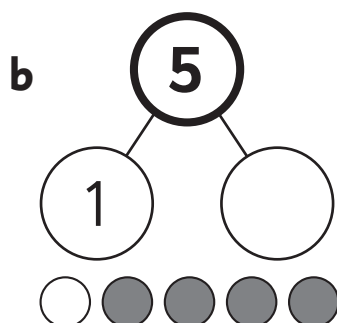
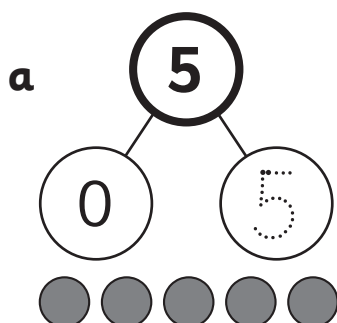
Addition and subtraction facts – number bonds below 10

There are lots of different ways to make the same number. We call these number bonds. It's really useful to learn number bonds because they can help us to solve number problems.

Do you know your number bonds to 5? Think about all of the different ways you could make 5.



1 Complete these part-whole diagrams.

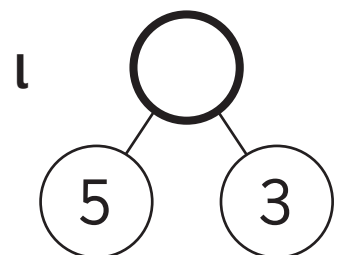
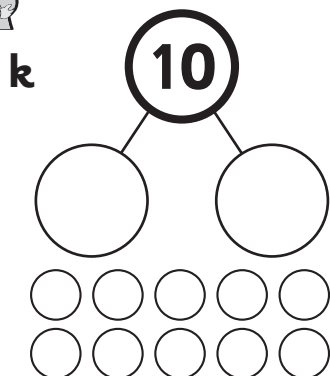
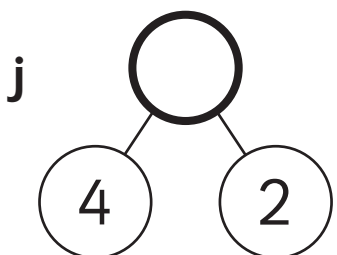
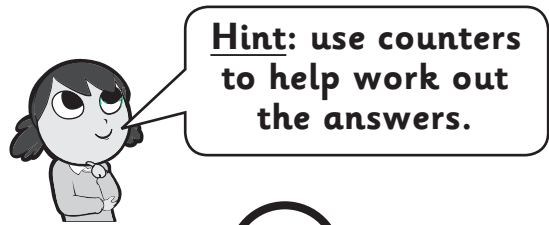
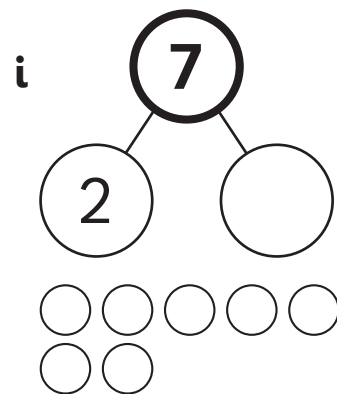
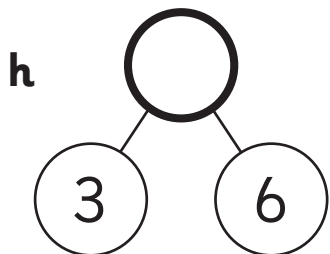
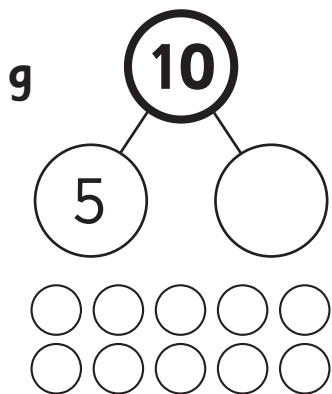
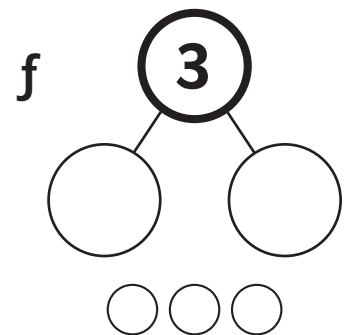
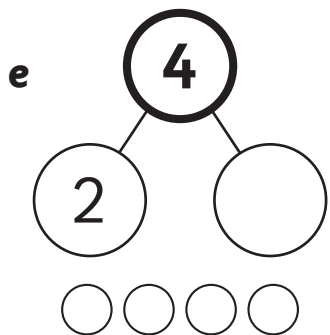
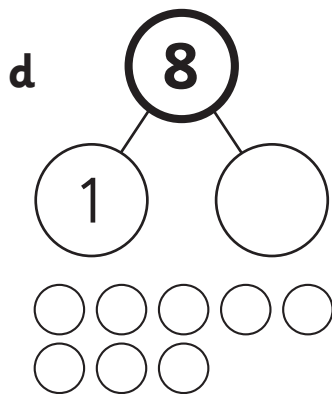
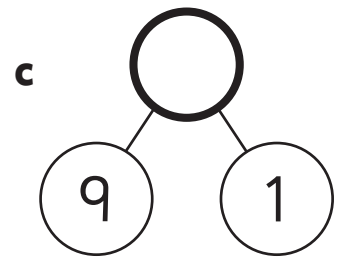
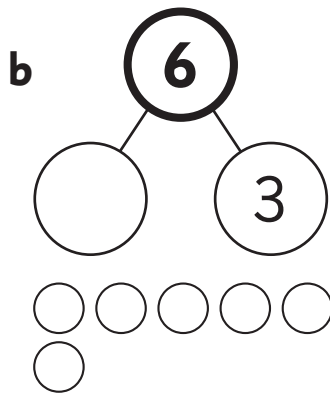
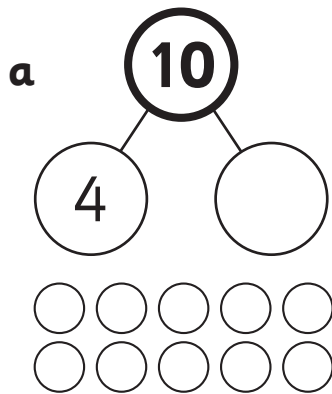


2 Draw part-whole diagrams for the number 6.

How do you know if you have found them all?

Addition and subtraction facts – number bonds below 10

1 Complete these part-whole diagrams.



Addition and subtraction facts – number bonds below 10

1 Now you have the hang of this, can you find all the possibilities for these without using counters? If you still want to use counters, that's fine too.

a

6

$$0 + 6 = 6$$

$$1 + \underline{\quad} = 6$$

$$\underline{\quad} + \underline{\quad} = 6$$

$$\underline{\quad} + \underline{\quad} = 6$$

$$\underline{\quad} + \underline{\quad} = 6$$

$$\underline{\quad} + \underline{\quad} = 6$$

$$\underline{\quad} + \underline{\quad} = 6$$

b

8

$$0 + \underline{8} = 8$$

$$1 + \underline{\quad} = 8$$

$$\underline{\quad} + \underline{\quad} = 8$$

$$\underline{\quad} + \underline{\quad} = 8$$

$$\underline{\quad} + \underline{\quad} = 8$$

$$\underline{\quad} + \underline{\quad} = 8$$

$$\underline{\quad} + \underline{\quad} = 8$$

$$\underline{\quad} + \underline{\quad} = 8$$

$$\underline{\quad} + \underline{\quad} = 8$$

2 Fill in the missing numbers in these addition combinations.

a $0 + 4 = \underline{\quad}$

$$1 + \underline{\quad} = 4$$

$$2 + 2 = \underline{\quad}$$

$$\underline{\quad} + 1 = 4$$

$$\underline{\quad} + 0 = 4$$

b $\underline{\quad} + 2 = 2$

$$1 + \underline{\quad} = 2$$

$$2 + \underline{\quad} = 2$$

Addition and subtraction facts – number bonds below 10

You will need:  1–10 dice  tokens

What to do:

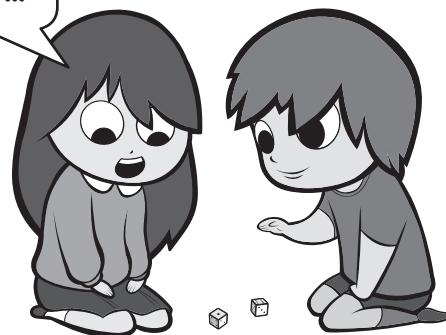
Player 1 rolls the dice and calls out all of the number bonds for the number rolled.

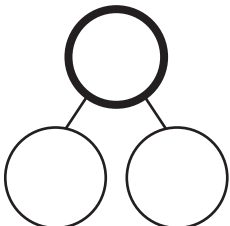
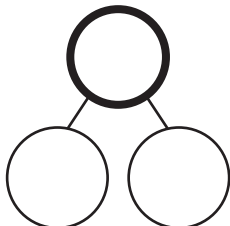
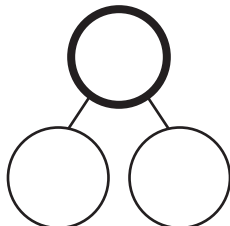
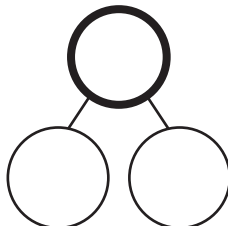
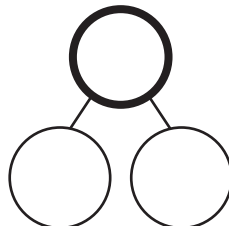
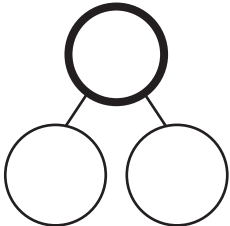
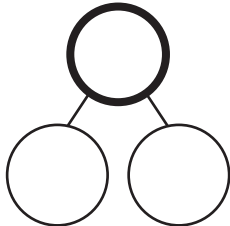
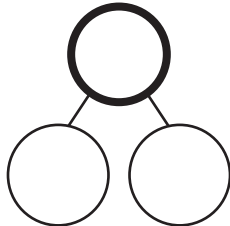
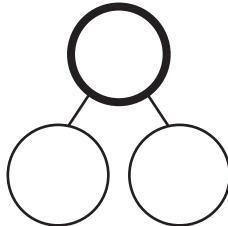
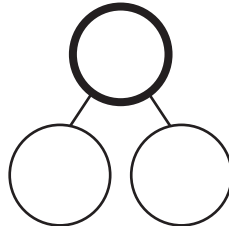
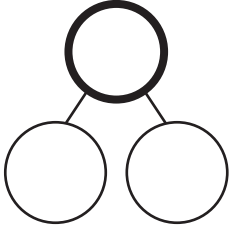
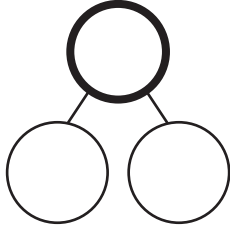
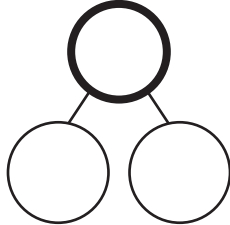
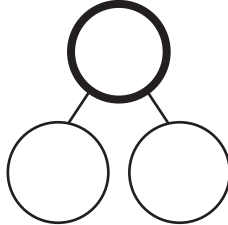
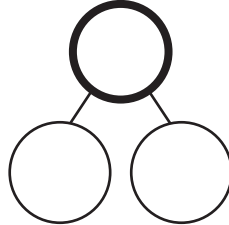
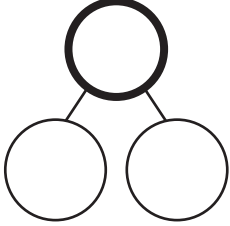
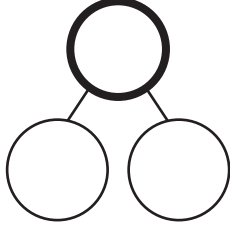
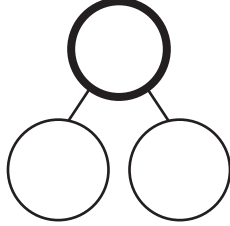
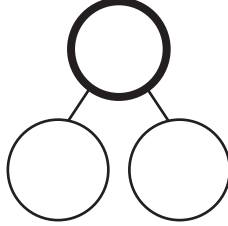
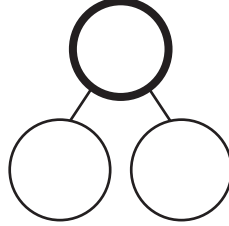
Player 2 writes down the part-whole diagrams for each number.

Working together, check that Player 1 has said all of the number bonds for that number. If they have, they get a token.

The winner is the first player to get 5 tokens.

1 and 6, 2 and 5,
3 and 4, 4 and 3...

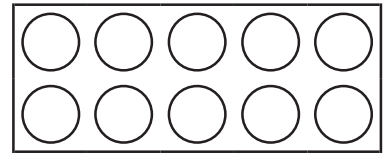


If you need more part-whole diagrams, continue on another sheet.

Addition and subtraction facts – number bonds to 10 and 20

Now, we're going to have a look at number bonds to 20. But first, check that you can remember all of the number bonds to 10.



1 Write down all of the number bonds to 10.

10	<input type="text"/>	<input type="text"/>	<input type="text"/>
1 9	<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"/>
<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"/>	<input type="text"/>	
<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	

2 Can you complete these subtraction sentences using your number bonds to 10?

a $10 - \square = 10$

b $10 - \square = 6$

c $10 - \square = 9$

d $10 - \square = 4$

e $10 - \square = 7$

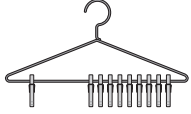
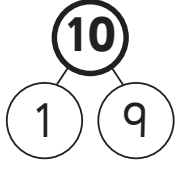
f $10 - \square = 3$

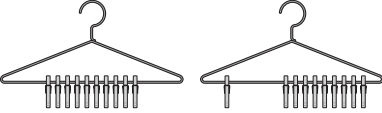
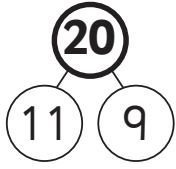
g $10 - \square = 1$

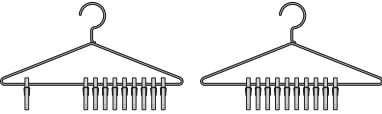
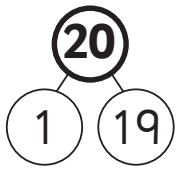
h $10 - \square = 2$

i $10 - \square = 8$

Addition and subtraction facts – number bonds to 10 and 20



 If we know that $1 + 9 = 10$

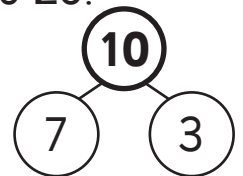
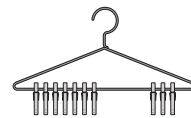


 then we know that $11 + 9 = 20$



 And, we also know that $1 + 19 = 20$

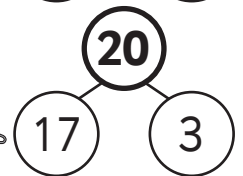
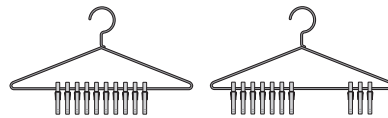
Each time we have added a 10 to one of the numbers in the number bond.

1 Use the number bond to 10 to work out the number bond to 20.

a If you know that $7 + 3 = 10$

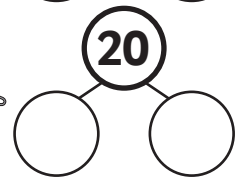
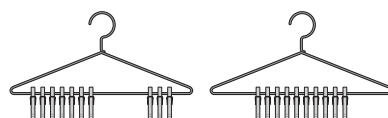


then you know that $17 + 3 = 20$

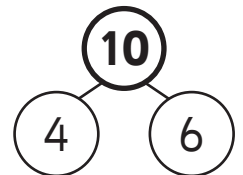
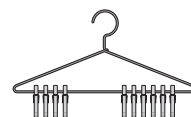


What else do you know?

___ + ___ = 20

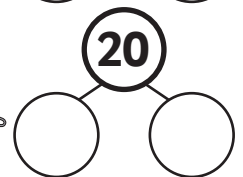
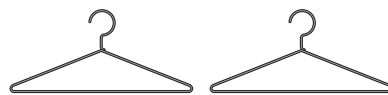


b If you know that $4 + 6 = 10$

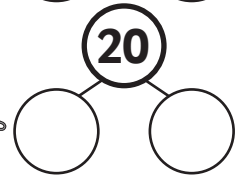


What else do you know?

___ + ___ = 20

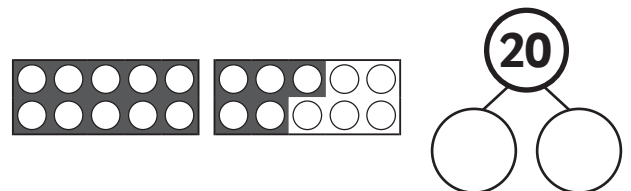
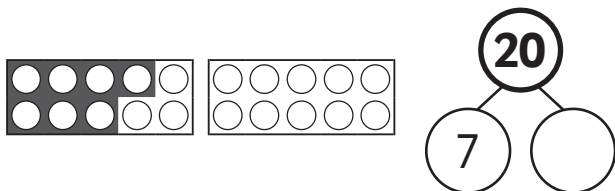
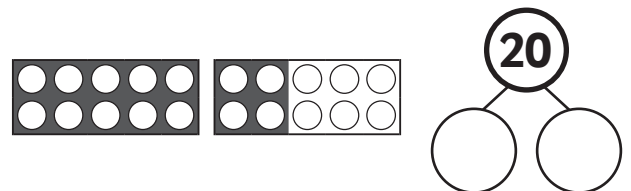
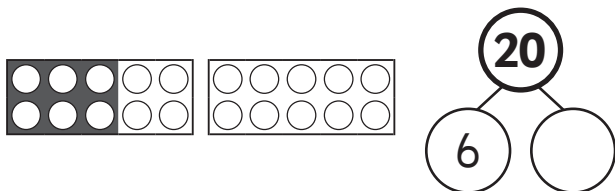
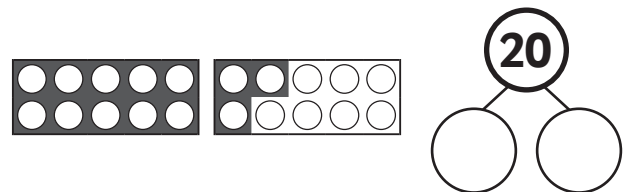
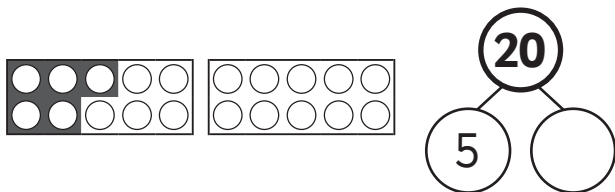
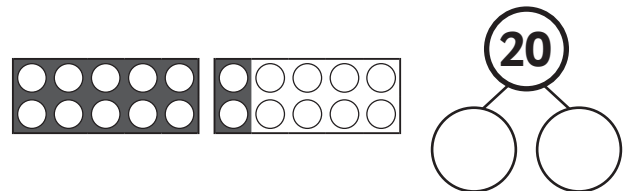
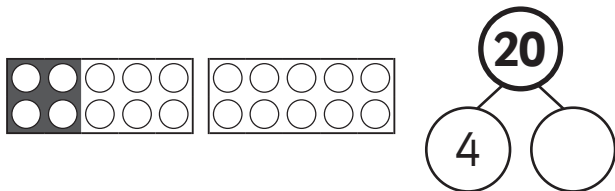
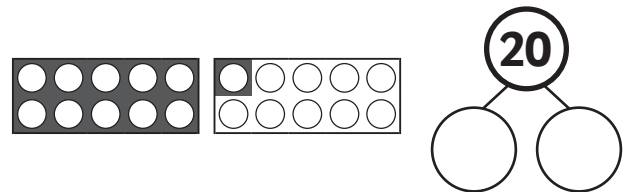
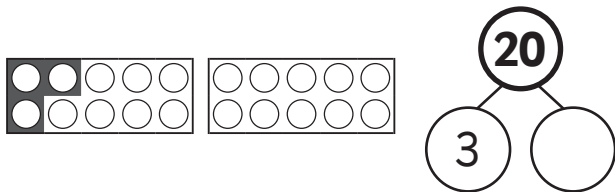
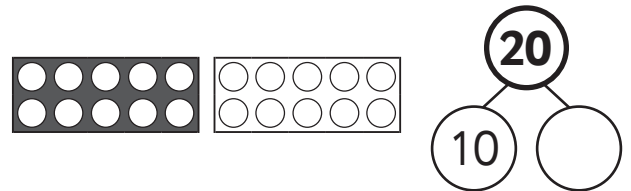
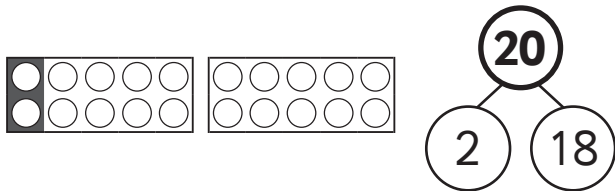
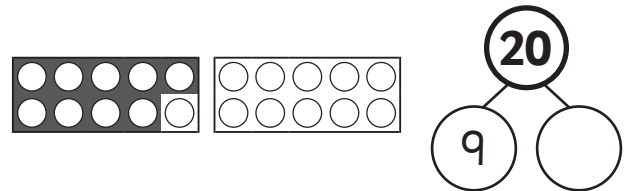
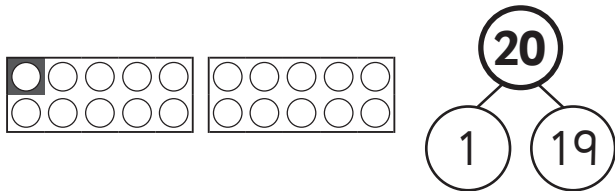
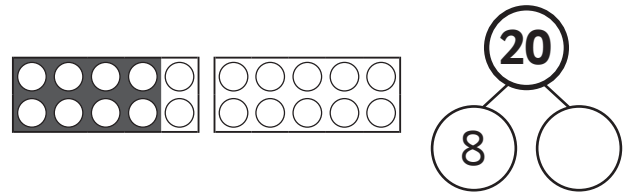
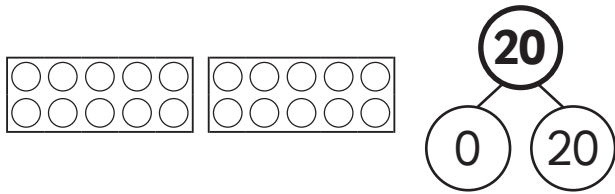


___ + ___ = 20






Addition and subtraction facts – number bonds to 10 and 20

1 Check these part-whole diagrams for number bonds to 20.



Addition and subtraction facts – number bonds to 10 and 20

You will need:  a partner  scissors
 a set of the cards for each player

What to do:

Each player needs to cut out a set of the cards below. On the back of each card, write the number that makes a number bond to 20 with the number on the front of the card.

Shuffle the cards and arrange them into a pile. Show one card to your partner. If they can call out the number on the back of the card, to complete the number bond to 20, they keep the card. If they answer incorrectly, it is your turn to call out the number bond. How many cards can you collect? Keep trying until you can collect all 15 cards in one go.

0	5	2	4	9
5	1	3	7	8
6	10	9	13	14

Addition and subtraction facts – addition facts to 20

Knowing your basic addition and subtraction facts is handy. It means you don't have to keep on working out the same answers all the time!

- 1 Complete this addition facts table for additions to 20. Write the answer to the addition in the box where the row and column meet.

+	0	1	2	3	4
0					
1		2			
2			?		
3					
4					

$$1 + 1 = 2$$

+	0	1	2	3	4	5	6	7	8	9	10
0				3							
1		2									
2	2										
3											
4			6								
5											
6											
7								15			
8											
9											
10											

Circle the answers that you know really well already.

Share your 100 square with a partner and ask them to test you on the ones you don't know so well. When you think you know a fact really well put a circle round it.

Come back to the 100 square another day. Can you still remember the addition facts?

Addition and subtraction facts – addition facts to 20

How quickly can you complete these number sentences for the addition facts that you have learnt?

1 Ask someone to time you using a stopwatch or by counting.

$4 + 3 =$
$5 + 7 =$
$9 + 10 =$
$6 + 8 =$
$7 + 9 =$
$3 + 2 =$
$5 + 4 =$
Time

$9 + 5 =$
$3 + 10 =$
$1 + 9 =$
$8 + 9 =$
$2 + 6 =$
$9 + 7 =$
$5 + 5 =$
Time

$8 + 4 =$
$10 + 10 =$
$3 + 6 =$
$1 + 7 =$
$9 + 0 =$
$1 + 10 =$
$7 + 7 =$
Time

Now check your answers.

2 Now cover your answers above and try again.

$4 + 3 =$
$5 + 7 =$
$9 + 10 =$
$6 + 8 =$
$7 + 9 =$
$3 + 2 =$
$5 + 4 =$
Time

$9 + 5 =$
$3 + 10 =$
$1 + 9 =$
$8 + 9 =$
$2 + 6 =$
$9 + 7 =$
$5 + 5 =$
Time

$8 + 4 =$
$10 + 10 =$
$3 + 6 =$
$1 + 7 =$
$9 + 0 =$
$1 + 10 =$
$7 + 7 =$
Time

Did you manage to improve your time?

Addition and subtraction facts – subtraction facts to 20

You will need:



a partner



1 minute timer

- 1 Let's have a look at subtraction facts. How many can you complete in one minute? Complete as many as you can and then use the answer sheet to check your answers.

$2 - 0 =$	$19 - 10 =$	$12 - 0 =$	$10 - 1 =$
$12 - 3 =$	$10 - 7 =$	$20 - 10 =$	$12 - 9 =$
$16 - 7 =$	$3 - 2 =$	$7 - 7 =$	$15 - 6 =$
$14 - 7 =$	$12 - 10 =$	$15 - 1 =$	$14 - 8 =$
$11 - 0 =$	$20 - 0 =$	$17 - 8 =$	$18 - 9 =$
$7 - 2 =$	$4 - 3 =$	$11 - 9 =$	$13 - 10 =$
$10 - 9 =$	$16 - 10 =$	$8 - 2 =$	$6 - 5 =$
$16 - 7 =$	$5 - 0 =$	$9 - 6 =$	$12 - 8 =$
$16 - 10 =$	$8 - 8 =$	$8 - 0 =$	$15 - 8 =$
$20 - 10 =$	$11 - 9 =$	$17 - 7 =$	$8 - 5 =$
$14 - 8 =$	$16 - 7 =$	$12 - 3 =$	$11 - 2 =$
$15 - 9 =$	$15 - 5 =$	$10 - 10 =$	$12 - 9 =$
$18 - 10 =$	$10 - 9 =$	$16 - 6 =$	$10 - 2 =$
$12 - 5 =$	$15 - 8 =$	$8 - 1 =$	$16 - 7 =$
$13 - 8 =$	$1 - 0 =$	$14 - 9 =$	$13 - 9 =$
$6 - 0 =$	$16 - 8 =$	$9 - 8 =$	$16 - 9 =$





Addition and subtraction facts – subtraction facts to 20

$18 - 9 =$	$9 - 8 =$	$11 - 3 =$	$8 - 2 =$
$9 - 3 =$	$8 - 6 =$	$5 - 5 =$	$13 - 7 =$
$13 - 5 =$	$3 - 0 =$	$9 - 7 =$	$17 - 8 =$
$7 - 2 =$	$7 - 1 =$	$9 - 6 =$	$17 - 10 =$
$2 - 1 =$	$9 - 2 =$	$10 - 3 =$	$13 - 6 =$
$7 - 6 =$	$12 - 7 =$	$15 - 0 =$	$7 - 4 =$
$3 - 1 =$	$12 - 9 =$	$9 - 1 =$	$6 - 4 =$
$9 - 5 =$	$11 - 2 =$	$10 - 6 =$	$13 - 9 =$
$14 - 5 =$	$7 - 7 =$	$11 - 8 =$	$5 - 2 =$
$17 - 7 =$	$11 - 6 =$	$15 - 7 =$	$4 - 0 =$
$9 - 4 =$	$17 - 9 =$	$9 - 9 =$	$9 - 1 =$
$14 - 10 =$	$15 - 6 =$	$17 - 9 =$	$10 - 5 =$
$12 - 8 =$	$11 - 6 =$	$6 - 0 =$	$5 - 4 =$
$14 - 8 =$	$9 - 5 =$	$8 - 5 =$	$18 - 8 =$
$17 - 0 =$	$14 - 6 =$	$10 - 8 =$	$7 - 4 =$
$9 - 9 =$	$12 - 6 =$	$11 - 5 =$	$8 - 2 =$
$7 - 5 =$	$10 - 6 =$	$8 - 3 =$	$9 - 9 =$
$17 - 7 =$	$10 - 8 =$	$16 - 8 =$	$4 - 1 =$

Now have another go with the ones you haven't completed. Can you improve your score?

Did you find it easy? If not you just need more practise!

Addition and subtraction facts – subtraction facts to 20

You will need:  a partner  scissors  1–10 dice
 counters

What to do:

First of all you will need to set up your bingo board. Write a subtraction problem in each of the boxes below from the problems on the previous page, but don't write in the answer. The first one has been done for you. Then cut out the bingo board and swap it with another player.




$15 - 8 =$		

What to do next:

Player 1 rolls the dice. Everyone looks at their bingo board. If the number rolled is the answer to one of the subtraction problems, they call out the number sentence and place a counter on it.

The winner is the first player to cover all of the subtraction sentences on their bingo board.

Addition and subtraction facts – subtraction facts to 20

You will need:  a partner  scissors
 a set of the cards from page 19 and 20

What to do:

Take turns to deal the cards:

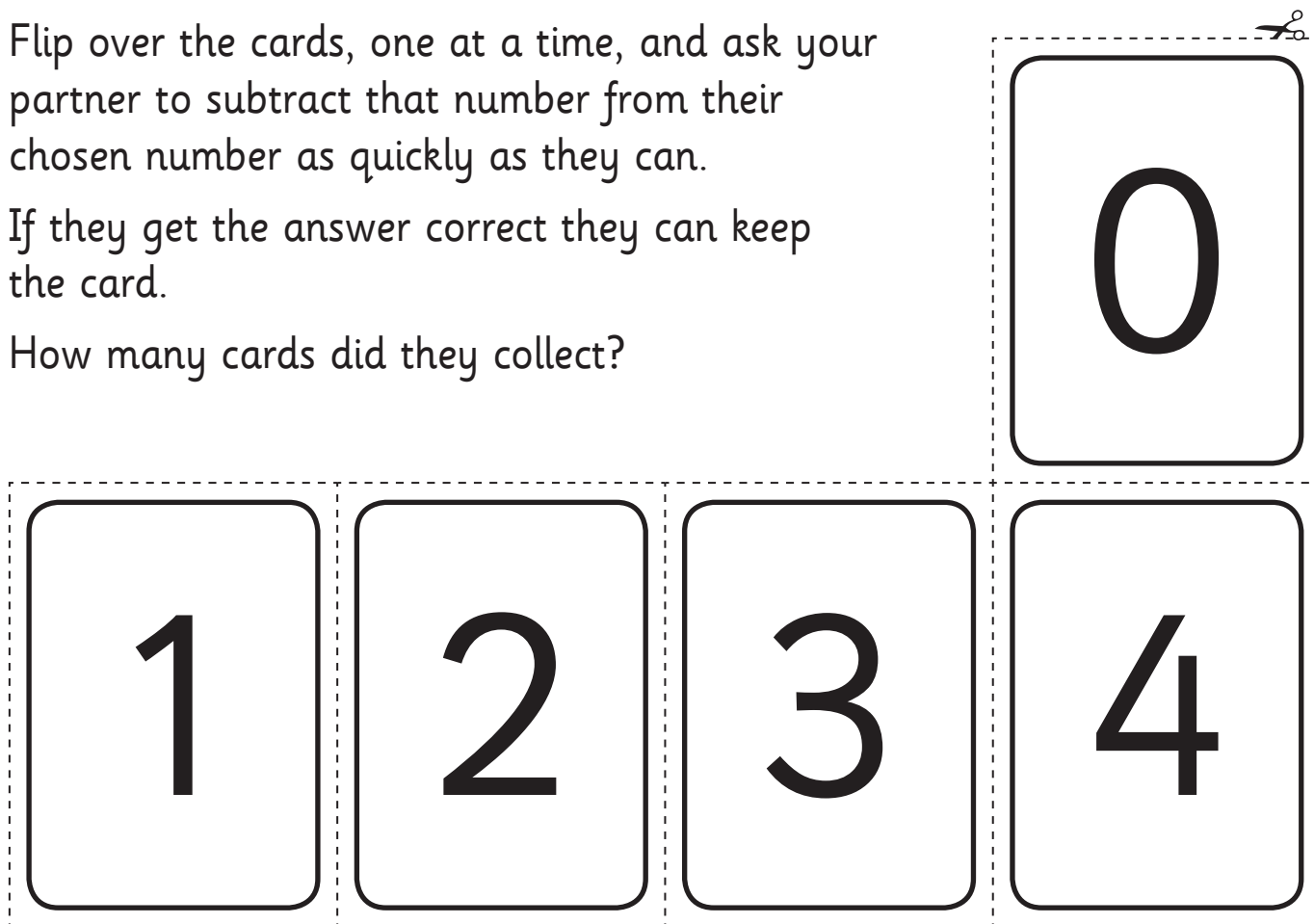
Shuffle the number cards and hold them face down in your hand.

Ask your partner to choose a number between 11 and 20.

Flip over the cards, one at a time, and ask your partner to subtract that number from their chosen number as quickly as they can.

If they get the answer correct they can keep the card.

How many cards did they collect?



Addition and subtraction facts – subtraction facts to 20

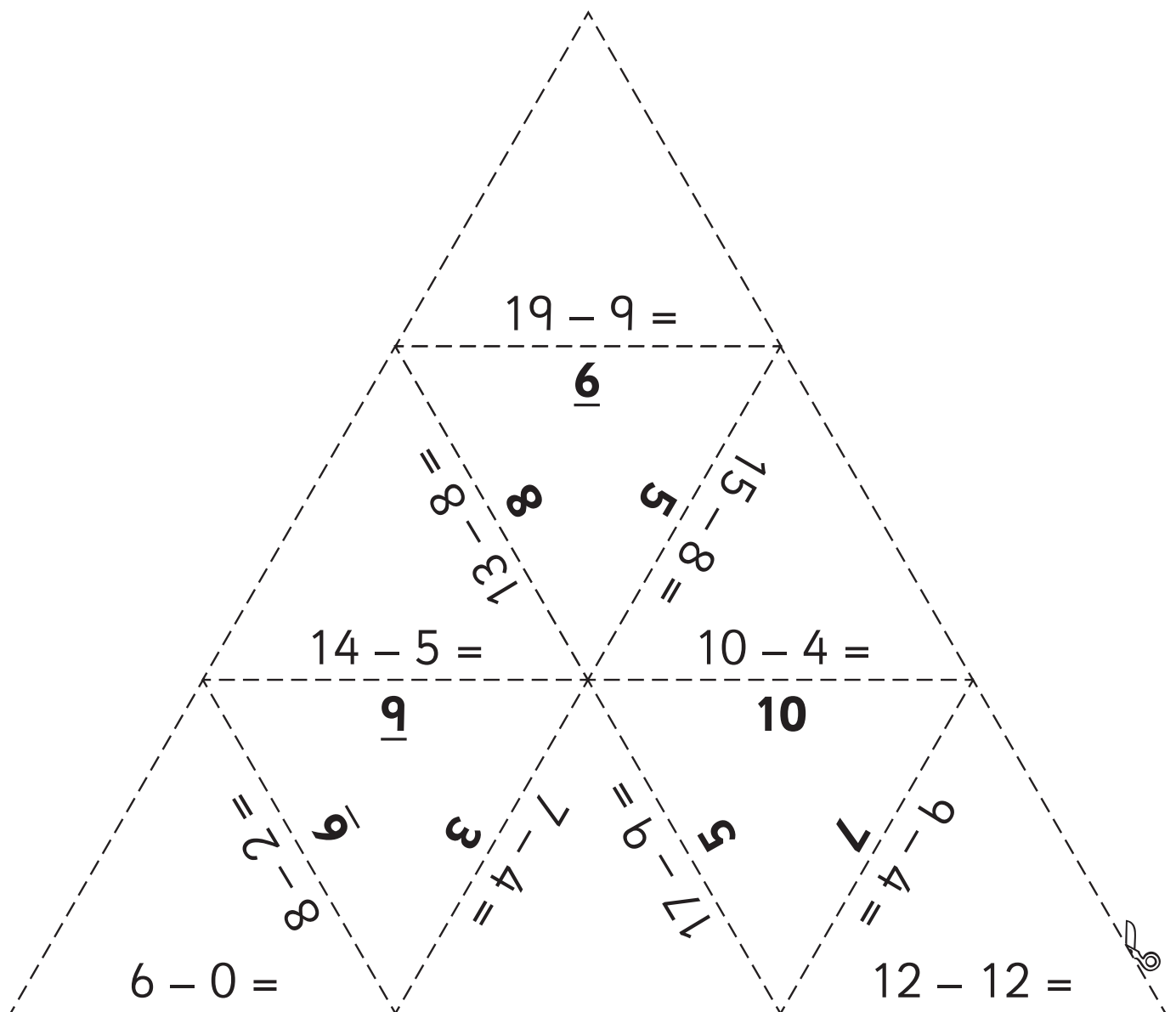
5	6	7	8
9	10	11	12
13	14	15	16
17	18	19	20

Addition and subtraction facts – subtraction facts to 20

You will need:  scissors

What to do:

Cut out the puzzle tiles below and fit them back together so that the sides of the touching pieces match.



Addition and subtraction facts – related facts to 20

For any number sentence, we can create three related number sentences. This means that we use the same numbers but rearrange them into a different sentence. Knowing related facts can help us to work out tricky number sentences and check our answers.

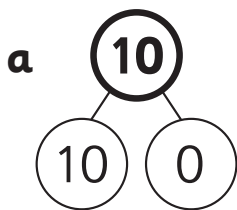
Let's look at an example. $3 + 7 = 10$

We can use these numbers to create one related addition sentence and two related subtraction sentences.

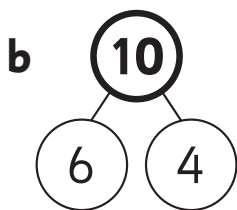
$$7 + 3 = 10 \text{ and } 10 - 7 = 3 \text{ and } 10 - 3 = 7$$

Let's start with our number bonds to 10 because we know them really well.

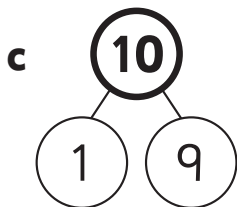
1 For each number bond write four related number sentences.



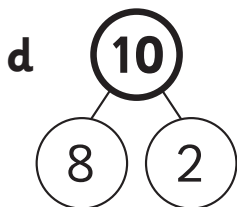
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Addition and subtraction facts – related facts to 20

1 Create three related facts for these number sentences.

a	$9 + 8 = 17$	$8 + 9 = 17$	$17 - 8 = 9$	$17 - 9 = 8$
b	$10 - 1 = 9$			
c	$7 + 8 = 15$			
d	$16 - 9 = \square$			
e	$4 + 9 = \square$			

2 Write in the missing symbols to complete these related facts. The first one has been done for you.

a	$9 \square + 8 = 17$	$8 \square + 9 = 17$	$17 \square - 8 = 9$	$17 \square - 9 = 8$
b	$14 \square 6 = 8$	$6 \square 8 = 14$	$8 \square 6 = 14$	$14 \square 8 = 6$
c	$3 \square 8 = 11$	$11 \square 3 = 8$	$11 \square 8 = 3$	$8 \square 3 = 11$
d	$13 \square 6 = 7$	$6 \square 7 = 13$	$13 \square 7 = 6$	$7 \square 6 = 13$
e	$9 \square 8 = 1$	$9 \square 1 = 8$	$1 \square 8 = 9$	$8 \square 1 = 9$

Addition and subtraction facts – related facts to 100

Have a look at these number sentences and related facts. What do you notice?

$5 + 3 = 8$

$50 + 30 = 80$

$3 + 5 = 8$

$30 + 50 = 80$

$8 - 3 = 5$

$80 - 30 = 50$

$8 - 5 = 3$

$80 - 50 = 30$

- 1 Use the addition and subtraction facts that you learnt to help you check each sentence. Tick all of the number sentences that are correct.

$20 + 80 = 100$ <input type="checkbox"/>	$40 + 60 = 100$ <input type="checkbox"/>	$100 - 20 = 80$ <input type="checkbox"/>
$70 - 30 = 100$ <input type="checkbox"/>	$70 + 30 = 100$ <input type="checkbox"/>	$80 + 100 = 20$ <input type="checkbox"/>
$100 + 0 = 100$ <input type="checkbox"/>	$80 - 20 = 100$ <input type="checkbox"/>	$50 - 50 = 100$ <input type="checkbox"/>
$10 + 90 = 100$ <input type="checkbox"/>	$80 + 20 = 100$ <input type="checkbox"/>	$30 + 70 = 100$ <input type="checkbox"/>
$50 + 60 = 100$ <input type="checkbox"/>	$70 + 20 = 100$ <input type="checkbox"/>	$100 - 30 = 60$ <input type="checkbox"/>
$100 - 40 = 60$ <input type="checkbox"/>	$20 + 70 = 100$ <input type="checkbox"/>	$60 + 40 = 100$ <input type="checkbox"/>
$50 + 50 = 100$ <input type="checkbox"/>	$100 - 70 = 60$ <input type="checkbox"/>	$90 - 10 = 70$ <input type="checkbox"/>

Addition and subtraction facts – related facts to 100

1 Continue the pattern down then write in the related facts.

$100 = 100 - 0$	$0 + 100 = 100$	$100 + 0 = 100$	$100 - 0 = 100$
$90 = 100 - 10$			
$80 = 100 - 20$			

Addition and subtraction facts – related facts to 100

When we write down all of the related facts for a number sentence we call it a fact family.

Here's an example:

$$100 - 10 = 90 \quad 100 - 90 = 10 \quad 90 + 10 = 100 \quad 10 + 90 = 100$$

You will need:  a partner  scissors  10 sticks

What to do:

Cut out the number cards below and put them in a pile face down. Take two cards and create a fact family for those two numbers. Record your fact family. Use 10 sticks to help if you want.

Play until you have used all of the cards.

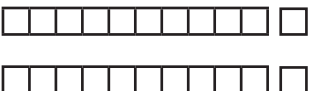
10	50	30	80
20	40	100	30
60	90	70	20
50	70	90	80

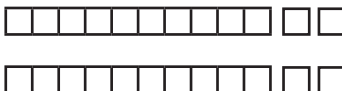
Addition and subtraction facts – doubling

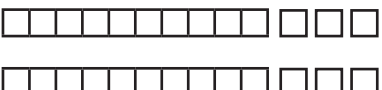
1 Knowing our doubles facts can be useful when we need to do calculations in our head. How well do you know your doubles facts?


$2 + 2$	6	double 4	$5 + 5$	4
double 3	$4 + 4$	$6 + 6$	10	12
8	double 5	double 2	double 6	$3 + 3$


2 Count the base-ten blocks to help you finish the doubles facts.


a 
 $11 + 11 = \square$


b 
 $12 + 12 = \square$


c 
 $13 + 13 = \square$

d 
 $14 + 14 = \square$

e 
 $15 + 15 = \square$

f 
 $16 + 16 = \square$

g 
 $17 + 17 = \square$

h 
 $18 + 18 = \square$

Addition and subtraction facts – doubling

You will need:  a partner

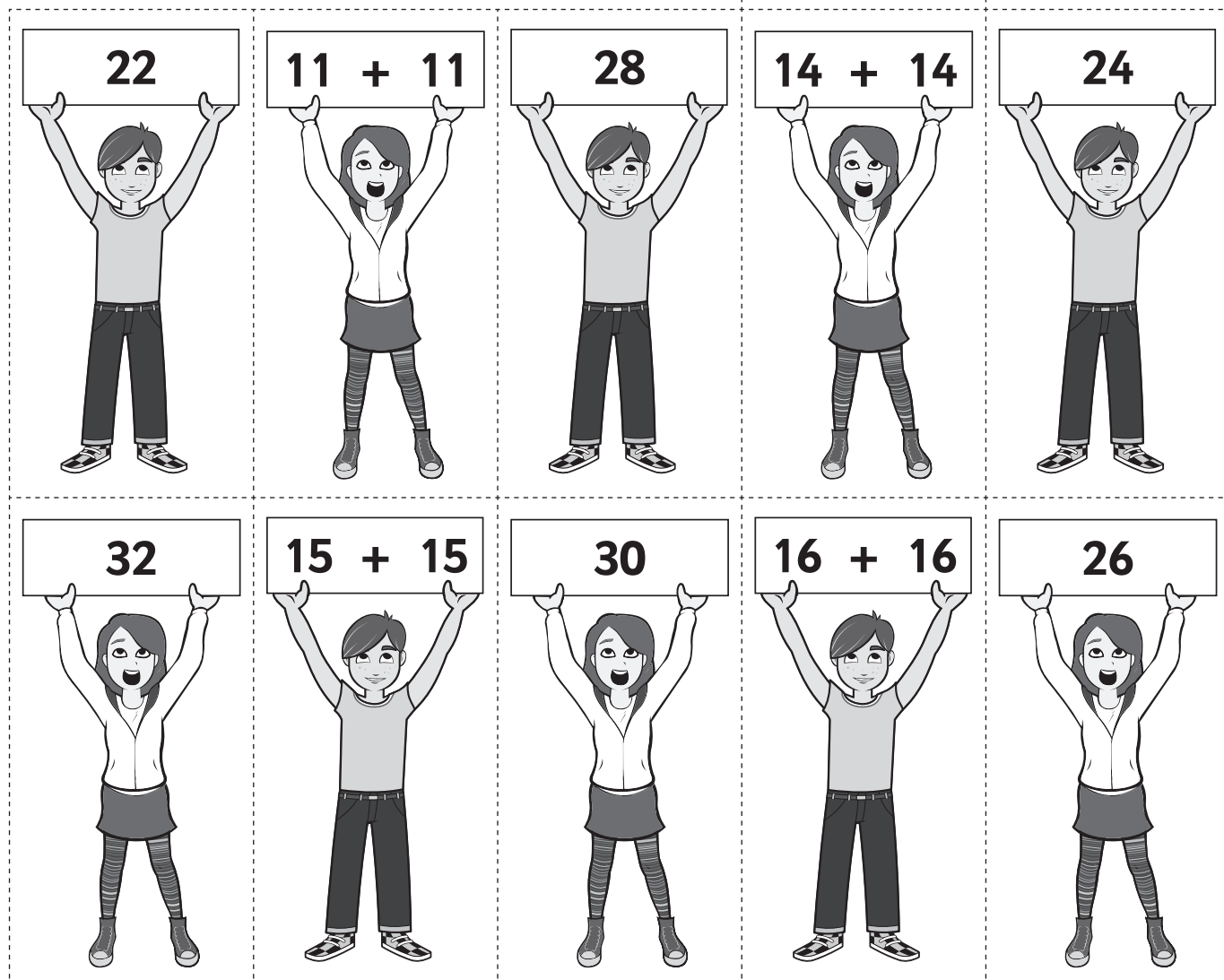
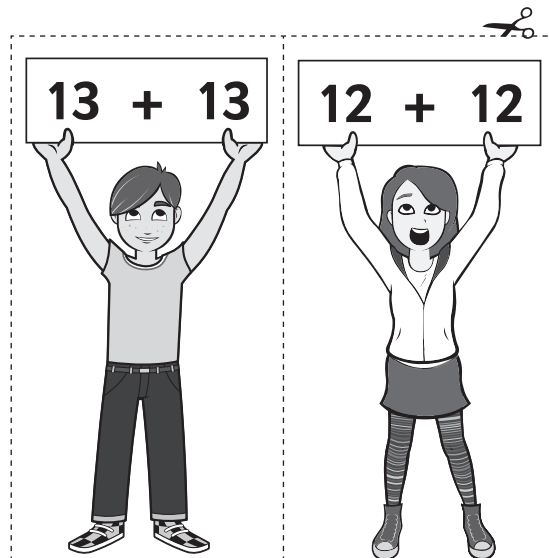


What to do:

Cut out the teenagers and place them all face down. Take turns taking 2 cards. If they match, then you keep them. Play until all the cards are gone.

What to do next:

Join up with a partner and play 'Snap!' using both sets of cards.



Addition and subtraction facts – doubling

1 Finish these doubles. Can you find patterns to help you?

a	Double	1	10	100
		2	20	200

b	Double	2	20	200
				400

c	Double	3	30	300
		6		

d	Double	4	40	400
			80	

e	Double	5	50	500
				1,000

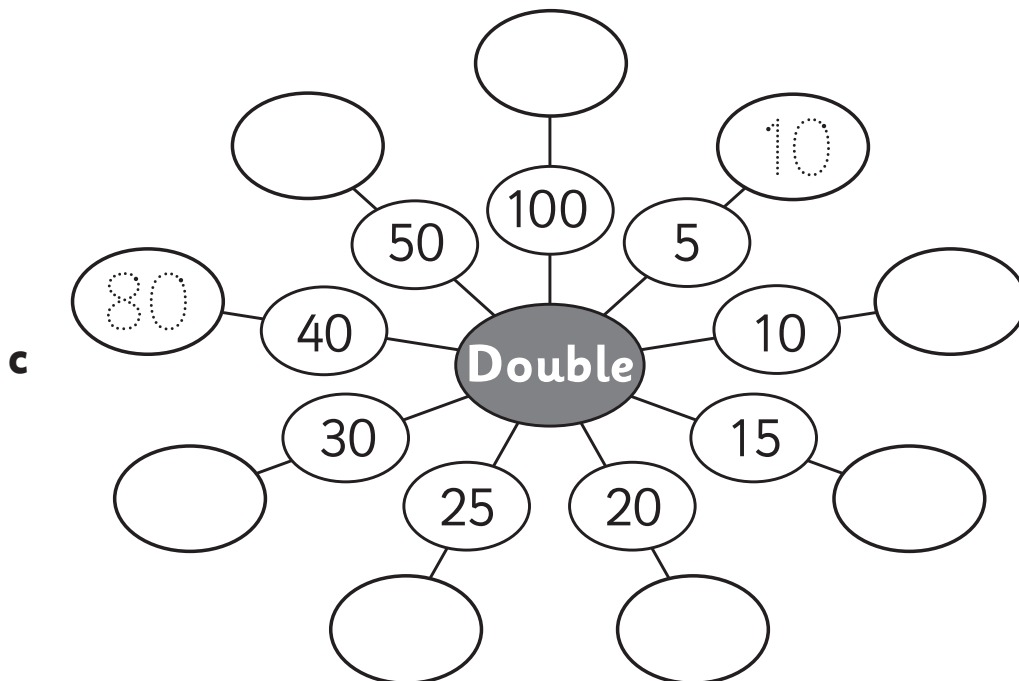
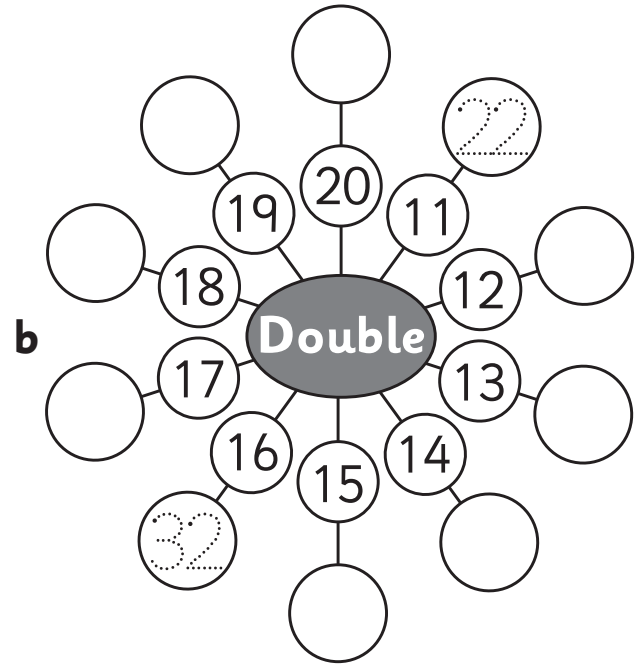
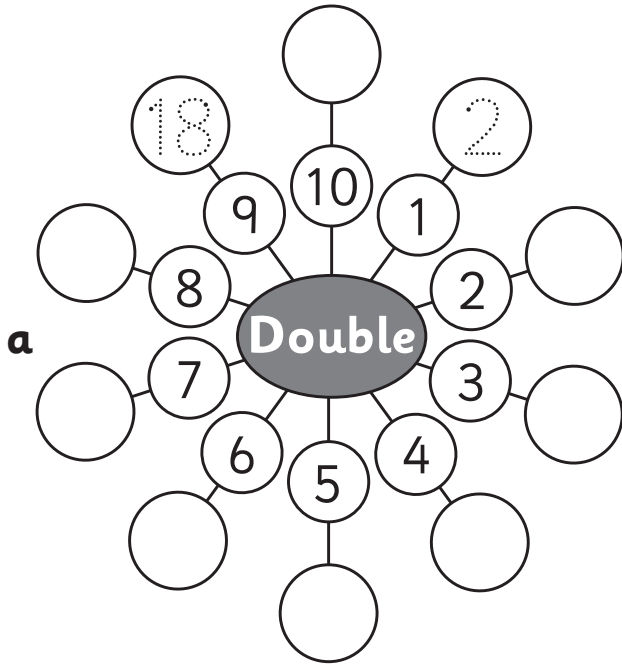
2 Solve these doubles problems.

a Mia saved £20 towards the show. Her dad said he would double that if she kept her room clean. She did. How much money did she have for the show?

b Liam ate 5 doughnuts. Mark ate double that amount. Freddie ate double the amount Mark ate. How many doughnuts did Freddie eat?

Addition and subtraction facts – doubling

1 Finish these doubles facts.



Addition – adding more than 2 numbers

We can add more than 2 numbers at a time and we can add them in any order. Look at $\textcircled{3} + 5 + \textcircled{7} = \boxed{?}$

We know that 3 and 7 makes 10 so we can add them together first. Then we add 5 to 10.

$$3 + 7 + 5 = 15 \quad \text{is the same as} \quad 3 + 5 + 7 = 15$$

1 Warm up by practising these make 10 problems.

a $0 + \boxed{10} = 10$

b $3 + \boxed{} = 10$

c $1 + \boxed{} = 10$

d $9 + \boxed{} = 10$

e $5 + \boxed{} = 10$

f $4 + \boxed{} = 10$

g $8 + \boxed{} = 10$

h $6 + \boxed{} = 10$

i $2 + \boxed{} = 10$

2 Practise turning these addition facts around.

a $2 + 5 = \boxed{}$

b $1 + 7 = \boxed{}$

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

$\boxed{} + \boxed{} = \boxed{}$

3 Circle pairs of numbers that add to 10 first, then add what is left.

a $\textcircled{6} + 3 + \textcircled{4} = \boxed{13}$

b $1 + 5 + 5 = \boxed{}$





c $9 + 5 + 1 = \boxed{}$

d $7 + 6 + 3 = \boxed{}$

e $5 + 6 + 4 = \boxed{}$

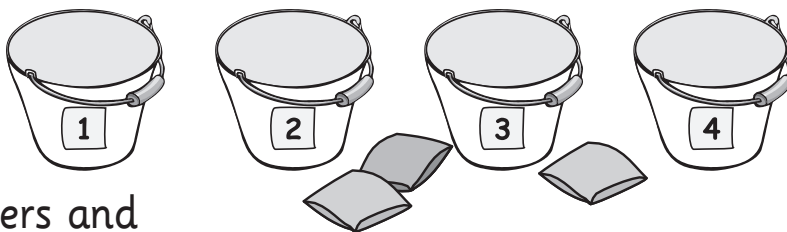
f $2 + 1 + 8 = \boxed{}$

Addition – adding more than 2 numbers

You will need:  a partner  4 containers  3 bean bags
 sticky notes

What to do:

Label the sticky notes, 1, 2, 3 and 4 and stick them on the



containers. Line up the containers and

stand at least two (2) big steps back from them. Take turns throwing the 3 bean bags into the containers. The number on the container is the amount of points you get. You can throw more than one bean bag into a container. If you miss, you may throw again. If the bean bag goes into a container, it must stay there.

Your aim is to score 6 points. If you don't score 6, try again when it's your turn. You must find a different way to your partner. Record your number fact here.

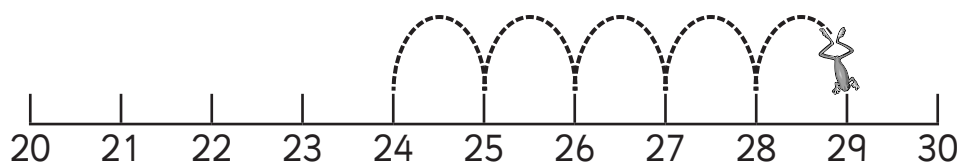
Your aim is to score 9 points. You must find a different way to your partner. Record your number fact here.

What to do next:

How many different scores can you make? Record them below. Circle the highest score you can make.

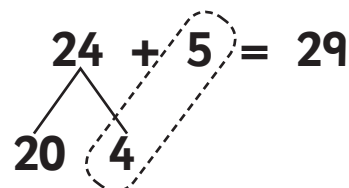
Addition – adding ones

There are different strategies that we can use when we add ones to a number. We already know how to use the number line.



$$24 + 5 = 29$$

We can also count on in ones in our head.
And we can use our number bonds by adding the tens and the ones separately.



1 Finish the facts.

a $14 + 2 = \square$

b $23 + 3 = \square$

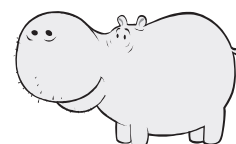
c $14 + 6 = \square$

d $12 + 5 = \square$

e $11 + 7 = \square$

f $24 + 2 = \square$

2 How quickly can you finish these? Perhaps ask someone to time you using '1 hippopotamus, 2 hippopotamus' as the (quiet) count.






+ 1
$12 + 1 =$
$16 + 1 =$
$13 + 1 =$
$20 + 1 =$
$22 + 1 =$
Time

+ 2
$14 + 2 =$
$21 + 2 =$
$17 + 2 =$
$23 + 2 =$
$15 + 2 =$
Time

+ 3
$15 + 3 =$
$11 + 3 =$
$23 + 3 =$
$17 + 3 =$
$21 + 3 =$
Time

Addition – adding ones

You will need:  a partner  counters in 2 different colours
 a die

What to do:

This game is like tic tac toe. Choose a starting number on the 100 square and tell your partner what it is. Roll the die and add the number you roll to your chosen number. Say the addition fact and cover the answer with a counter.

The first person to cover 3 numbers in a row wins! Your row can go up, down, across or diagonally.

11	12	13	14	15
16	17	18	19	20
21	22	23	24	25
26	27	28	29	30
31	32	33	34	35

Addition – adding tens

If we can count on in ones,
then we can count on in tens.

Look at $17 + 20 = \boxed{?}$

We start at 17 and jump down
↓ the 100 square counting in tens.

17, 27, 37 so,

$$17 + 20 = 37$$

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70

- 1 Practise counting in 10s by reading **down** the columns on the 100 square out loud to a partner. Now try doing it without looking at the 100 square. Give yourself a tick for each column you can do.

- 2 Use the 100 square to help you count on. Finish the facts.

a $14 + 10 = \boxed{}$ **b** $34 + 20 = \boxed{}$ **c** $27 + 10 = \boxed{}$

d $25 + 30 = \boxed{}$ **e** $46 + 20 = \boxed{}$ **f** $35 + 30 = \boxed{}$

- 3 Create your own addition facts by writing a number on the left for each fact. Swap with a partner and answer each other's facts.

a $\boxed{} + 20 = \boxed{}$ **b** $\boxed{} + 10 = \boxed{}$

c $\boxed{} + 10 = \boxed{}$ **d** $\boxed{} + 30 = \boxed{}$

Addition – adding tens

You will need:



a partner



scissors



a 100 square



What to do:

Cut out the 2 sets of cards and put each set face down. Take a card from each set. Add the numbers together. Use a 100 square to help if it makes it easier.

If you can say and finish the number fact correctly, then you keep the cards. If your partner doesn't think you are right, check with someone else. If you were wrong, then put the cards back. Play until all the cards are gone. Who has the most cards at the end?

Set 1

23	46
17	32
41	18
29	56
15	27
33	26

Set 2

1	10
2	20
3	30
1	10
2	20
3	30

Addition – near doubles

Now that we know our doubles we can learn the near-doubles strategy.

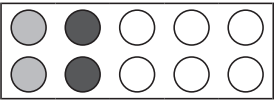
$$6 + 7 = \boxed{?}$$

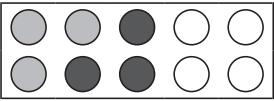
We know that $6 + 6 = 12$

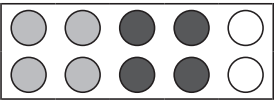
7 is 1 more than 6 so we count on 1 more.

$$6 + 7 = 13$$

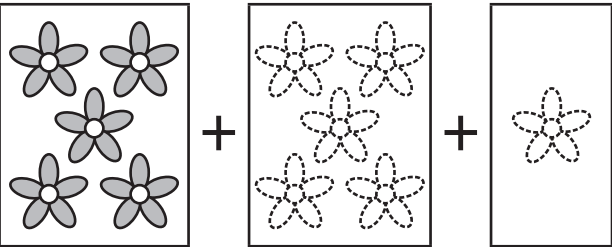
1 Colour 1 more counter on each tens frame. Complete the number facts.

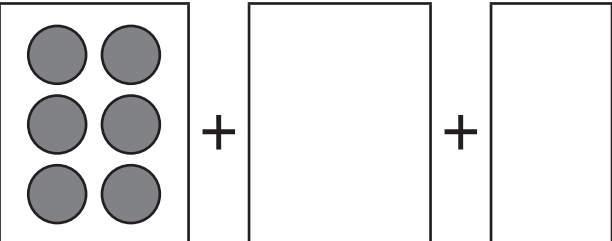
a  $2 + 3 = \square$ $\boxed{2} + \boxed{2} + \boxed{1} = \square$

b  $3 + 4 = \square$ $\square + \square + \square = \square$




c  $4 + 5 = \square$ $\square + \square + \square = \square$

2 Complete the double plus 1 pictures and number facts.

a  $5 + 6 = \square$
 $\boxed{5} + \boxed{5} + \boxed{1} = \square$

b  $6 + 7 = \square$
 $\square + \square + \square = \square$

Addition – near doubles

You will need:  a partner  counters in 2 different colours
 a die

What to do:

Take turns rolling the die. Use either the double or near-double strategy to create a number fact and cover the answer on the chart. For example, if you roll a 3, you could make $3 + 3$ or $3 + 4$. So you could cover 6 or 7.

If your answer is already covered, it is the other player's turn. Play until all the numbers are covered. Who has the most counters on the board at the end of the game?

2	3	4
5	6	7
8	9	10
11	12	13

I can cover
4 or 5. Which
shall I choose?



What to do next:

Which **kind** of numbers do you get when you double?

Which **kind** of numbers do you get when you double + 1?

Addition – near doubles

We can also subtract from our doubles to find a near double.

$$\text{Look at } 7 + 8 = \boxed{?}$$

We know that $8 + 8 = 16$

8 is 1 more than 7 so we have added 1 too many. We take 1 back.

$$16 - 1 = 15$$

$$7 + 8 = 15$$

- 1 Draw lines to match the facts (on the left) with their strategies (on the right). Finish them.

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

$$4 + 4 - 1 = \boxed{}$$

$$3 + 4 = \boxed{}$$

$$6 + 6 - 1 = \boxed{}$$

$$6 + 5 = \boxed{}$$

$$7 + 7 - 1 = \boxed{}$$

$$7 + 6 = \boxed{}$$

$$5 + 5 - 1 = \boxed{}$$

- 2 Use near doubles to solve these.

a Maria has **£7**. She earns **£6** more. How much money does she have now?

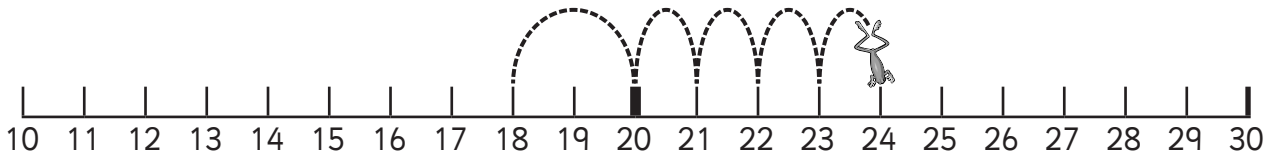
b Cameron buys **4** books. Then he buys **5** more books. How many books does Cameron have now?

Addition – bridge to 10

Number lines can help us to bridge tens.

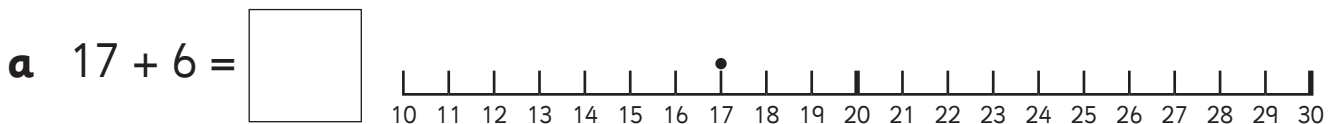
Look at $18 + 6 = \boxed{?}$

First we make a jump of 2 to get to the nearest ten. This is twenty.
Now we need to jump 4 more.

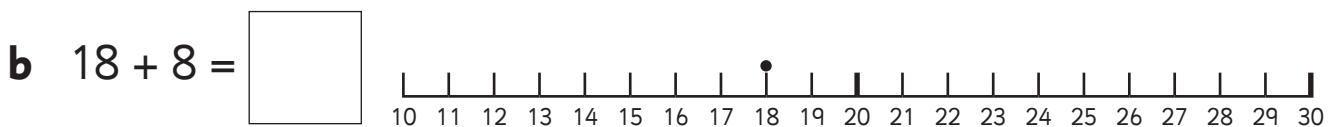


$18 + 6 = 24$

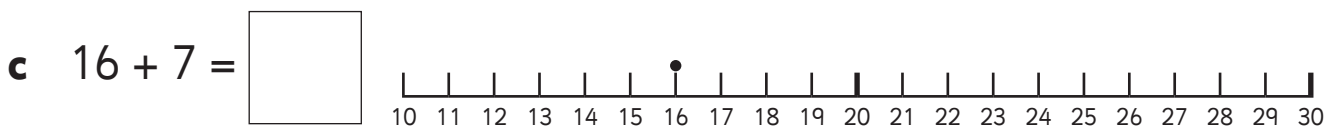
1 Jump along these number lines. Finish the statements.



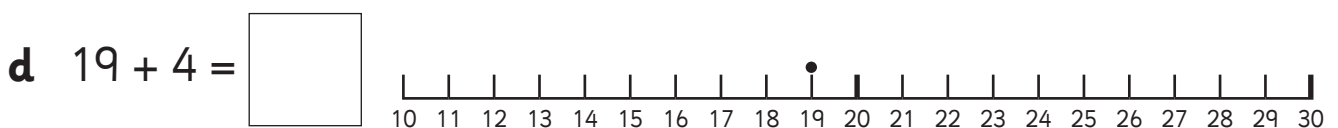
I jumped $\boxed{3}$ to get to $\boxed{20}$. Then I jumped $\boxed{3}$ more.



I jumped $\boxed{}$ to get to $\boxed{20}$. Then I jumped $\boxed{}$ more.



I jumped $\boxed{}$ to get to $\boxed{20}$. Then I jumped $\boxed{}$ more.



I jumped $\boxed{}$ to get to $\boxed{20}$. Then I jumped $\boxed{}$ more.

Addition – multiples of 10

Remember, we can use our number facts to add multiples of ten.

$$7 + 3 = 11$$

$$70 + 30 = 100$$

$$4 + 5 = 9$$

$$40 + 50 = 90$$

1 Complete the number sentences using number facts.

a $10 + 70 = \square$

b $50 + 30 = \square$

c $80 + 10 = \square$

d $60 + 40 = \square$

e $70 + 20 = \square$

f $40 + 30 = \square$

g $10 + 20 = \square$

h $30 + 30 = \square$

2 Fill in the missing numbers to complete the number sentence.

a $30 + 20 = \square$

b $10 + \square = 60$

c $30 + \square = 90$

d $\square + 40 = 50$

e $40 + 20 = \square$

f $20 + \square = 40$

g $20 + \square = 80$

h $\square + 10 = 70$

Addition – adding two 2-digit numbers

We can use a 100 square to help us add tens and ones.

We count **down** the 100 square to add the tens and **across** to the right to add the ones.

$$25 + 23 = \boxed{?}$$

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

We find 25. We split 23 into 2 tens and 3 ones.

We make 2 jumps of 10 **down** the 100 square.

Then we make 3 jumps of one **across** the 100 square.

$$25 + 23 = 48$$

1 Use the 100 square to help you solve these problems.

a $33 + 21 = \boxed{}$

b $17 + 13 = \boxed{}$

c $11 + 21 = \boxed{}$

d $52 + 24 = \boxed{}$

e $67 + 23 = \boxed{}$

f $71 + 12 = \boxed{}$

2 Solve.

a You start at 68. You make 1 ten jump down and 2 ones jumps across. Which number do you land on?

b You start at 54. You make 4 tens jumps down and 4 ones jumps across. Which number do you land on?

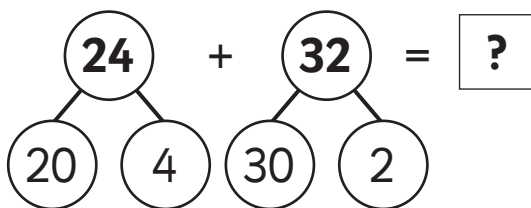
Addition – adding two 2-digit numbers

Let's have a look at what strategies we could use to add two 2-digit numbers.

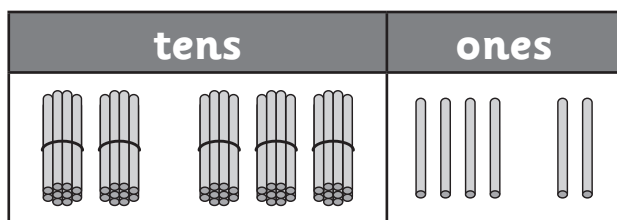
We can use what we know about number bonds, and what we know about partitioning numbers.

$$24 + 32 = \boxed{?}$$

We can use the straws to answer the addition sentence. First of all we need to partition the numbers into tens and ones.



Now we group all of the tens together and all of the ones together.



Then we count how many we've got.

Remember:

Step 1: Add the ones.

$$4 \text{ ones} + 2 \text{ ones} = 6$$

Step 2: Add the tens.

$$2 \text{ tens} + 3 \text{ tens} = 50$$

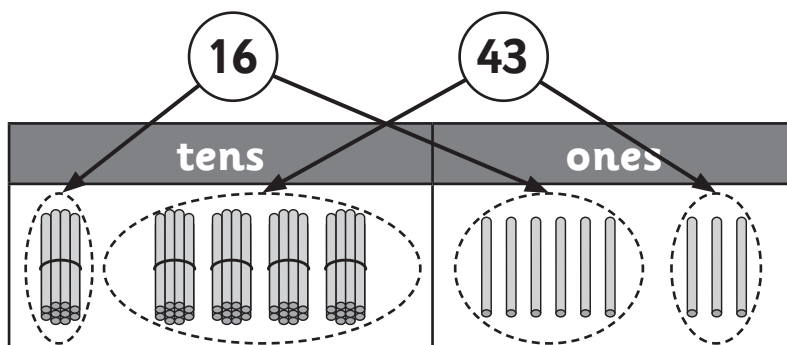
Step 3: Put them together and we've got **56**.

$$24 + 32 = 56$$



You will need: straws (some in bundles of ten)

1 Let's try another one.



How many are there altogether?

Addition – adding two 2-digit numbers

1 Use your straws and the partitioning grid below to write in the answers:

a $21 + 35 =$

b $54 + 12 =$

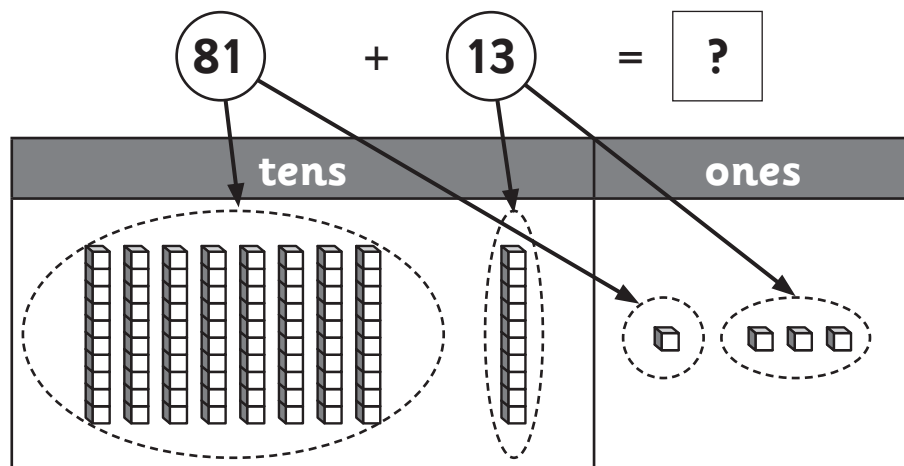
c $24 + 22 =$

d $44 + 31 =$

tens	ones

Addition – adding two 2-digit numbers

This time let's use base-ten blocks. Remember, the long stick represents 10 cubes and each cube represents one. It works in just the same way as using straws.



How many are there altogether?

You will need:  a partner  base-ten blocks

1 Use your blocks and the partitioning grid on the previous page to write in the answers below:

a $38 + 11 =$

b $41 + 27 =$

c $64 + 24 =$

d $26 + 53 =$

2 Work with a partner. Use base-ten blocks to make correct addition sentences.

a

3	
---	--

 +

--	--

 =

3	
---	--

b

1	
---	--

 +

--	--

 =

2	
---	--

c

--	--

 +

	8
--	---

 =

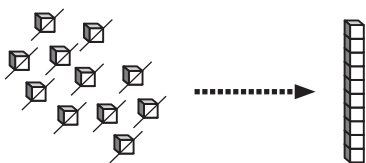
3	
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Addition – adding two 2-digit numbers with regrouping

What happens when you try to find the answer to this number sentence?

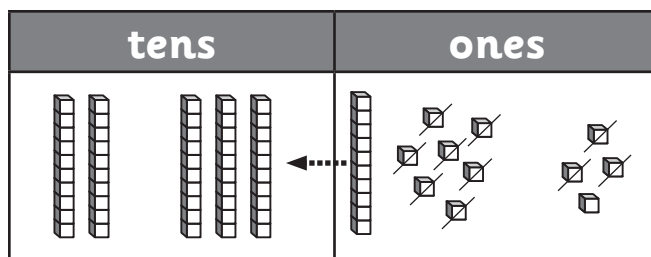
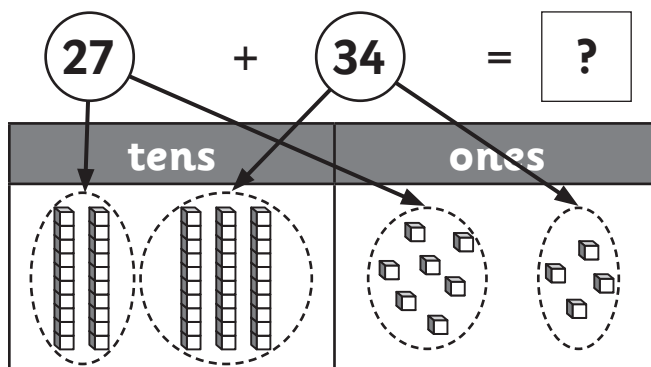
$$27 + 34 = \boxed{?}$$

That makes 5 lots of 10 and 11 ones. **We've got too many ones!** We need to **regroup** the ones.

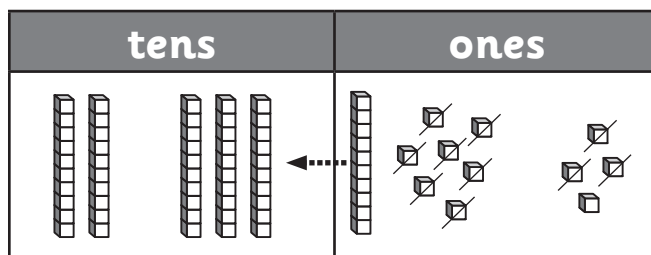


We then move the ten to the tens box.

Now we have 6 lots of 10 (which makes 60) and 1, that's **61**.



$$\begin{array}{c} 27 \\ \swarrow \searrow \\ 20 \quad 7 \end{array} + \begin{array}{c} 34 \\ \swarrow \searrow \\ 30 \quad 4 \end{array} = \boxed{?}$$



60 and 1 is 61

$$27 + 34 = 61$$

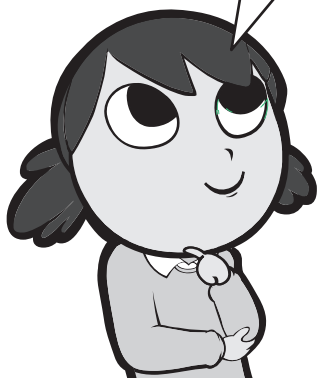
Remember: $27 + 34 = \boxed{?}$

Step 1: Partition the numbers into tens and ones.

Step 2: Add the ones and regroup them if you need to.

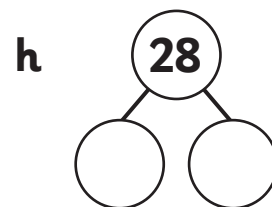
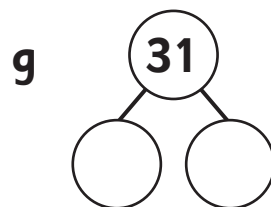
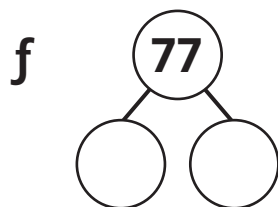
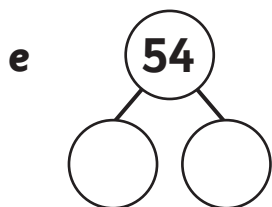
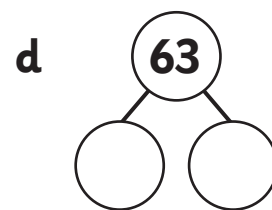
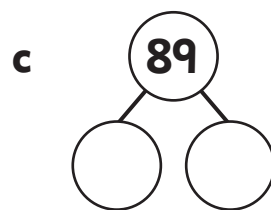
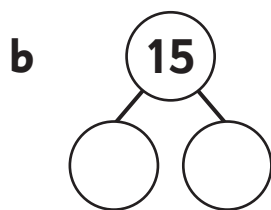
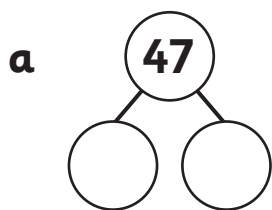
Step 3: Add the tens.

Step 4: Put the tens and ones together.



Addition – adding two 2-digit numbers with regrouping

1 Partition these numbers into tens and ones.



2 **Regroup** the ones and write the total below. The first one has been done for you.

a

tens	ones

b

tens	ones

c

tens	ones

d

tens	ones

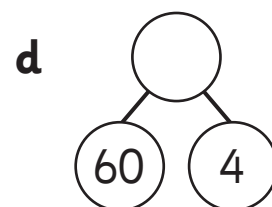
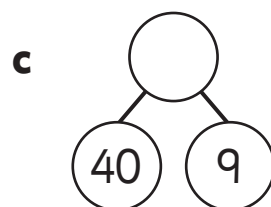
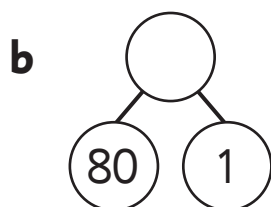
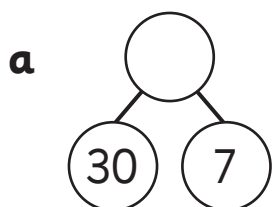
e

tens	ones

f

tens	ones

3 Put the tens and the ones together.



Addition – adding two 2-digit numbers with regrouping

Hint: Draw tens and ones onto the partitioning grid to help you work out the answer.

1 Find the answers to these addition sentences. You'll need to **regroup** some of them!

a $32 + 21 =$

tens	ones

b $76 + 15 =$

tens	ones

c $45 + 59 =$

tens	ones

d $17 + 65 =$

tens	ones

e $18 + 37 =$

tens	ones

f $34 + 54 =$

tens	ones

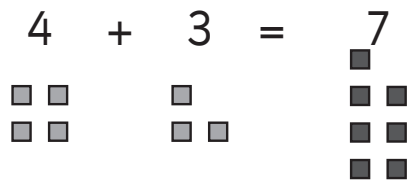
g $67 + 28 =$

tens	ones



Addition – introducing the vertical format

A number sentence can also be written vertically (from top to bottom). This can be useful when we add or subtract large numbers. Let's have a look at how it works. Look at the number sentence.

$$4 + 3 = 7$$


We can use what we know about place value to write the number sentence in columns.



	tens	ones
	0	4 ■ ■ ■ ■
+	0	3 ■ ■ ■
	0	7 ■ ■ ■ ■ ■ ■ ■

We write the place value with tens in one column and ones in the other.

Step 1: Add the ones

Step 2: Add the tens

Step 3: Put the tens and ones together

The answer is written at the bottom of the columns.

- 1 Draw in the tens and ones then write in the answer to the number sentence and the column addition.

a $6 + 3 = \square$

	tens	ones




b $11 + 6 = \square$

	tens	ones

Addition – introducing the vertical format


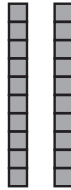

1 This time the tens and units have already been drawn in but you need to write in the numbers and complete the number sentence.

a

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

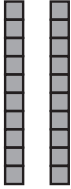


+ =

b

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





+ =

c

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

+ =

d

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

+ =

Addition – introducing the vertical format

Hint: Use base-ten blocks to help you work out the answer.

1 Complete these column additions.

a

	tens	ones
	6	2
+		4
<hr/>		

b

	tens	ones
	3	5
+		4
<hr/>		



c

	tens	ones
	2	4
+		5
<hr/>		

d

	tens	ones
	5	8
+	1	1
<hr/>		

e

	tens	ones
	2	2
+	2	7
<hr/>		

f

	tens	ones
	1	7
+	3	2
<hr/>		

g

	tens	ones
	6	4
+	2	5
<hr/>		

h

	tens	ones
	1	4
+	4	3
<hr/>		

i

	tens	ones
	2	3
+	5	5
<hr/>		

j

	tens	ones
	7	2
+	1	7
<hr/>		

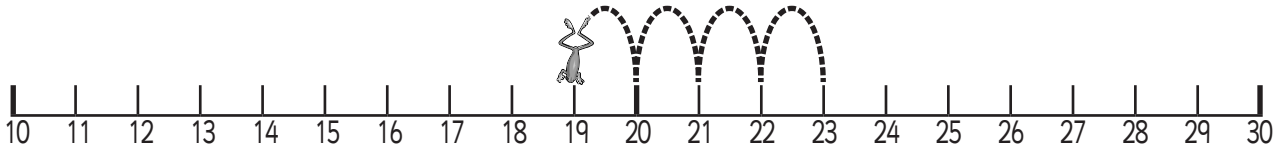
k

	tens	ones
	3	1
+	4	4
<hr/>		

Subtraction – counting on and counting back

Counting back is a handy strategy to use when we only have to subtract a small number. Number lines can help us do this.

Look at $23 - 4 = \boxed{?}$



We start at 23. We jump back 4 spaces to 19.

$$23 - 4 = 19$$

- 1 Use the number line above and count back to solve these subtraction problems.

a $17 - 4 = \boxed{}$

b $18 - 2 = \boxed{}$

c $19 - 5 = \boxed{}$

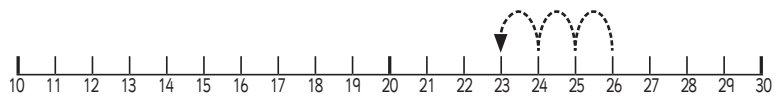
d $25 - 2 = \boxed{}$

e $30 - 4 = \boxed{}$

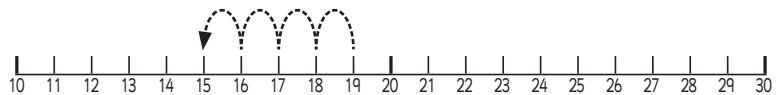
f $21 - 2 = \boxed{}$

- 2 Look at these number lines. What subtraction fact does each show?

a $\boxed{} - \boxed{} = \boxed{}$



b $\boxed{} - \boxed{} = \boxed{}$



- 3 Would you use the counting back strategy to solve this problem? Why or why not?

$$25 - 7 = \boxed{}$$

Subtraction – counting on and counting back

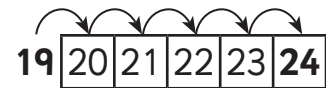
We know that addition and subtraction do up and undo each other. This means we can use the addition strategy of **counting on** to solve subtraction problems.

We use counting on when the difference between the numbers is small.

We count on from the smaller number of **19** until we get to **24**.

We counted 5 more numbers.

$$24 - 19 = \boxed{?}$$



$$24 - 19 = 5$$

1 Solve these problems. Circle the smaller number. Count on until you get to the bigger number. How many numbers did you count?

a $28 - 23 = \square$

b $19 - 14 = \square$

c $23 - 20 = \square$

d $30 - 26 = \square$

e $18 - 14 = \square$

f $31 - 28 = \square$

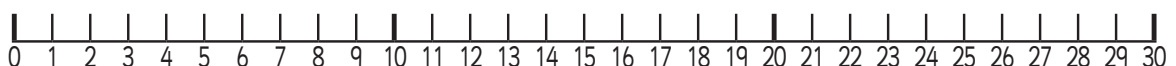
2 Use counting on to solve these problems. Write the number facts.

a Jackson saved £27. He spent £22 during a trip to the mall. How much money does he have left?

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

b Lara caught 28 fish. She put 26 back. How many did she keep?

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

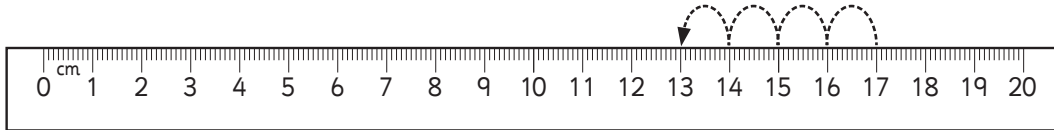


Subtraction – counting on and counting back

Rulers can help us count on and back.

We count the jumps or the spaces between the two numbers.

$$17 - 13 = \boxed{?}$$



$$17 - 13 = 4$$

- 1 Use your ruler to help solve these problems. Decide if it is easier to use counting on or counting back.

a $30 - 3 = \boxed{}$

b $25 - 4 = \boxed{}$

c $27 - 2 = \boxed{}$

d $24 - 20 = \boxed{}$

e $18 - 16 = \boxed{}$

f $12 - 9 = \boxed{}$

- 2 You will need a partner and your ruler. Each choose a different number on the ruler. Write the numbers in a fact box below, and put the bigger number first. Decide if you want to use counting on or back and count the jumps to finish the fact.

$\boxed{}$	-	$\boxed{}$	=	$\boxed{}$
------------------------	---	------------------------	---	------------------------

$\boxed{}$	-	$\boxed{}$	=	$\boxed{}$
------------------------	---	------------------------	---	------------------------

$\boxed{}$	-	$\boxed{}$	=	$\boxed{}$
------------------------	---	------------------------	---	------------------------

$\boxed{}$	-	$\boxed{}$	=	$\boxed{}$
------------------------	---	------------------------	---	------------------------

$\boxed{}$	-	$\boxed{}$	=	$\boxed{}$
------------------------	---	------------------------	---	------------------------

$\boxed{}$	-	$\boxed{}$	=	$\boxed{}$
------------------------	---	------------------------	---	------------------------

Subtraction – counting on and counting back

If we can count back in ones then we can count back in tens.

Look at $65 - 20 = \boxed{?}$

We start at 65 and count back ↑ in tens.

20 is 2 tens.

$65 - 20 = 45$

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70

1 Use the 100 square to help solve these problems.

a $46 - 20 = \boxed{}$

b $61 - 10 = \boxed{}$

c $70 - 30 = \boxed{}$

d $24 - 10 = \boxed{}$

e $34 - 10 = \boxed{}$

f $55 - 20 = \boxed{}$

2 Can you find patterns to help you complete these sets of facts?

a $4 - 1 = \boxed{}$

$40 - 10 = \boxed{}$

$400 - 100 = \boxed{}$

b $5 - 3 = \boxed{}$

$50 - 30 = \boxed{}$

$500 - 300 = \boxed{}$

c $9 - 2 = \boxed{}$

$90 - 20 = \boxed{}$

$900 - 200 = \boxed{}$

Subtraction – counting on and counting back

A 100 square can also help us subtract tens and ones.

$$57 - 32 = \boxed{?}$$

32 is 3 tens and 2 ones.

We make 3 tens jumps and 2 ones jumps **back**. This means we jump \uparrow for the tens jumps and \leftarrow for the ones jumps.

$$57 - 32 = 25$$

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

1 Use the 100 square and the jump strategy to solve these problems.

a $64 - 13 = \boxed{}$
 13 is __ ten \uparrow and __ ones \leftarrow

41	42	43	44	45
51	52	53	54	55
61	62	63	64	65

b $67 - 34 = \boxed{}$
 34 is __ tens \uparrow and __ ones \leftarrow

21	22	23	24	25	26	27	28
31	32	33	34	35	36	37	38
41	42	43	44	45	46	47	48
51	52	53	54	55	56	57	58
61	62	63	64	65	66	67	68

c $58 - 26 = \boxed{}$
 26 is __ tens \uparrow and __ ones \leftarrow

21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60

d $35 - 24 = \boxed{}$
 24 is __ tens \uparrow and __ ones \leftarrow

1	2	3	4	5	6	7
11	12	13	14	15	16	17
21	22	23	24	25	26	27
31	32	33	34	35	36	37

Subtraction – difference

When we subtract, we can compare groups or numbers and ask ourselves, ‘What is the difference?’ Does one group have more than the other? Does one group have less than the other?’

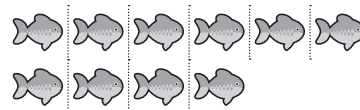
Look at these fish bowls. What is the difference?

This bowl has **6** fish.



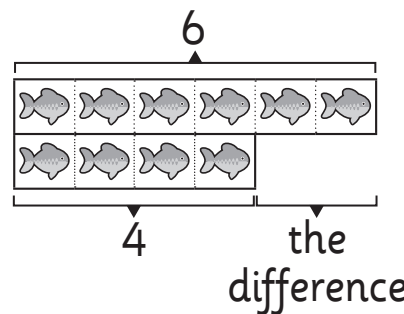
This bowl has only **4**.

We need to compare the number of fish in each bowl. Let’s lay the fish out in two lines, one below the other.



Now it’s easy to see that the difference is 2.

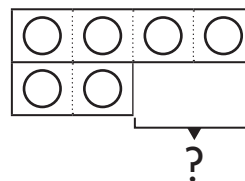
We can record the information in a bar model:



We can write this as a number sentence.

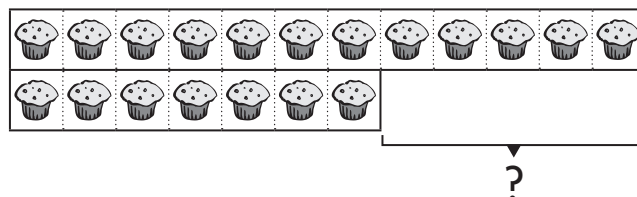
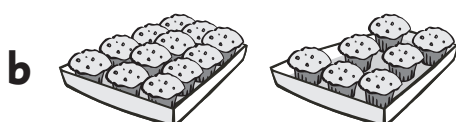
$$6 - 4 = 2$$

- 1 Compare the 2 pictures. Subtract the smaller number from the larger one to find the difference. Write the number fact to match.



The difference is ____.

$$\begin{array}{|c|} \hline 4 \\ \hline \end{array} - \begin{array}{|c|} \hline \\ \hline \end{array} = \begin{array}{|c|} \hline \\ \hline \end{array}$$

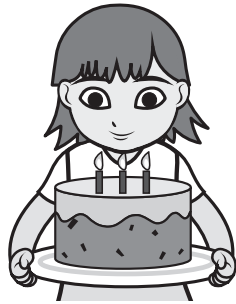


The difference is ____.

$$\begin{array}{|c|} \hline \\ \hline \end{array} - \begin{array}{|c|} \hline 7 \\ \hline \end{array} = \begin{array}{|c|} \hline \\ \hline \end{array}$$

Subtraction – difference

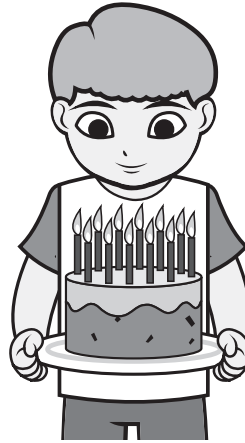
1 These children each have a cake with candles to match their age.



Li

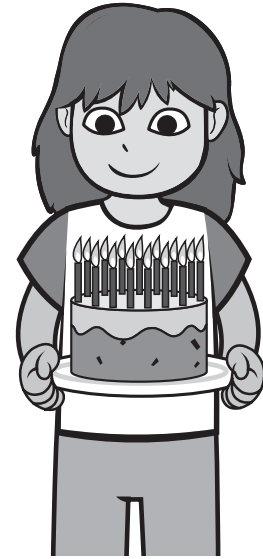


Lucy



12 candles

Liam



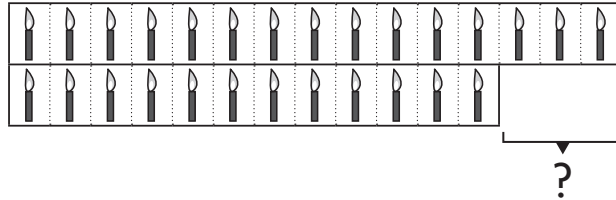
15 candles

Lou

What is the difference in age between:

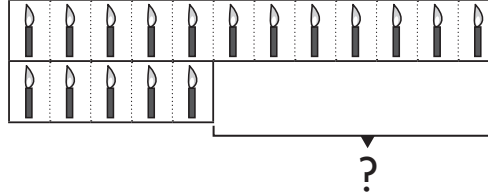
a Lou and Liam?

_____ years



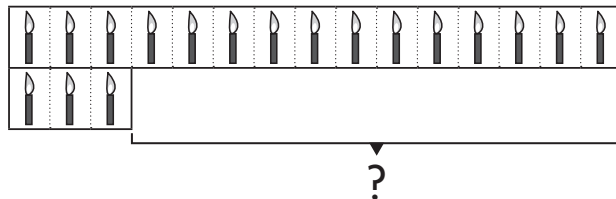
b Liam and Lucy?

_____ years



c Lou and Li?

_____ years



2 How old are you? Draw a bar model to help you find the difference in age between:

a you and Lou? _____ years

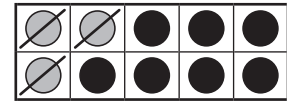
b you and Li? _____ years

c you and Liam? _____ years

Subtraction – relating addition and subtraction

We know that addition and subtraction do up and undo each other. This means we can use our known addition facts to help us solve subtraction facts.

$$10 - 7 = \boxed{?}$$



We know $3 + 7 = 10$ so $10 - 3 = 7$

1 Finish the addition facts and use these to help solve the subtraction facts.

a $4 + \boxed{} = 12$
 $12 - 4 = \boxed{}$

b $7 + \boxed{} = 19$
 $19 - 7 = \boxed{}$

c $14 + \boxed{} = 20$
 $20 - 14 = \boxed{}$

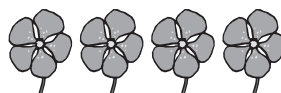
d $9 + \boxed{} = 18$
 $18 - 9 = \boxed{}$

2 Write addition facts that would 'do up' these subtraction facts.

a $23 - 4 = 19$
 $\boxed{} + \boxed{} = 23$

b $19 - 7 = 12$
 $\boxed{} + \boxed{} = \boxed{}$

3 Write some addition and subtraction facts to match this picture.



Subtraction – relating addition and subtraction

Because addition and subtraction are related, we can use our addition strategies to help us solve subtraction problems.

Look at $16 - 8 = \boxed{?}$

We know the doubles fact $8 + 8 = 16$, so we can use it to quickly work out that $16 - 8 = 8$

1 Use your doubles addition strategies to solve these subtraction problems.

a $10 - 5 = \boxed{}$

b $18 - 9 = \boxed{}$

c $22 - 11 = \boxed{}$

$20 - 10 = \boxed{}$

$16 - 8 = \boxed{}$

$40 - 20 = \boxed{}$

$50 - 25 = \boxed{}$

$12 - 6 = \boxed{}$

$30 - 15 = \boxed{}$

$100 - 50 = \boxed{}$

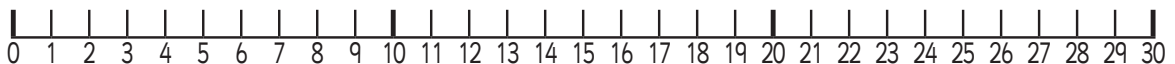
$14 - 7 = \boxed{}$

$32 - 16 = \boxed{}$

2 Solve these.

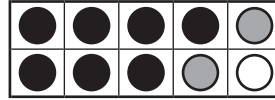
a Lucy is **4** years older than Marcus. Marcus is **4**. How old is Lucy?

b Mohammed ate **14** strawberries. Sara ate **double** that amount. How many more strawberries did Sara eat than Mohammed?



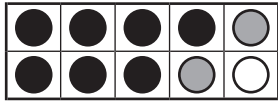
Subtraction – relating addition and subtraction

Here we have 7 black counters
and 2 grey counters.

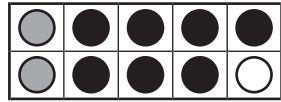


That's 9 counters altogether.

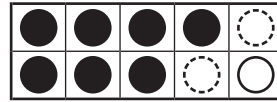
What addition and subtraction facts can we make using 7, 2 and 9?



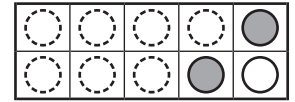
$$7 + 2 = 9$$



$$2 + 7 = 9$$



$$9 - 2 = 7$$



$$9 - 7 = 2$$

We can make 4 facts. This is a fact family.

1 Look at these coloured cubes. Write the fact family.

a



$$\boxed{3} + \boxed{2} = \boxed{}$$

$$\boxed{5} - \boxed{2} = \boxed{}$$

$$\boxed{2} + \boxed{3} = \boxed{}$$

$$\boxed{5} - \boxed{3} = \boxed{}$$

b



$$\boxed{4} + \boxed{1} = \boxed{}$$

$$\boxed{5} - \boxed{} = \boxed{}$$

$$\boxed{1} + \boxed{} = \boxed{}$$

$$\boxed{} - \boxed{} = \boxed{}$$

2 Colour the cubes to match. Finish the fact family.



$$4 + 3 = 7$$

$$7 - 4 = 3$$

$$\boxed{} + \boxed{} = \boxed{}$$

$$\boxed{} - \boxed{} = \boxed{}$$

Subtraction – relating addition and subtraction

You will need:  a partner  10 red and 10 blue counters

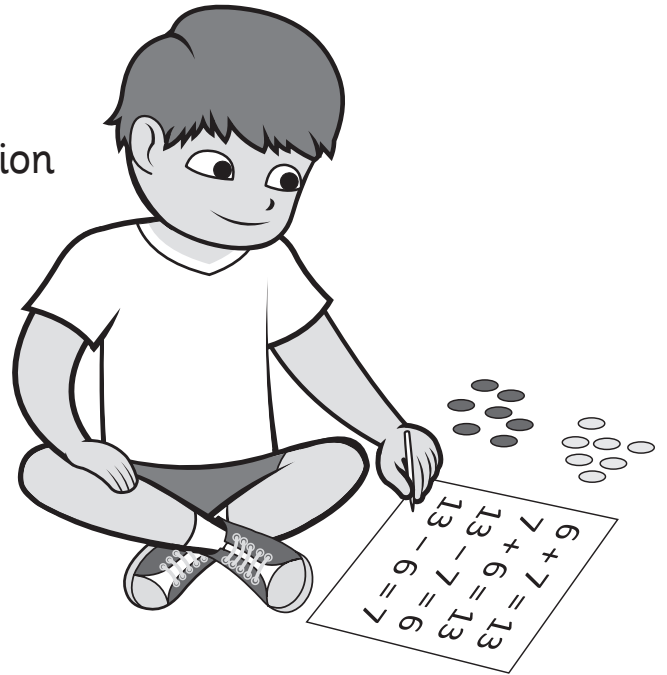
What to do:

Mix up the counters. Without looking, take a handful and work out the addition and subtraction facts you can make with the counters you have chosen.

Record the facts below.

You can work with your partner or race against them.

Make 4 sets of facts.



My facts:

Subtraction – introducing the vertical format

We can write subtraction facts in two ways.

$$8 - 3 = 5 \quad \text{or}$$

They are the same number sentence, just written differently. When we write facts vertically \updownarrow we line up the digits using place value with tens in one column and ones in another.

	tens	ones
		8
-		3
		5

1 Complete these subtraction calculations.

a

	T	O
		9
-		7
		<input type="text"/>

b

	T	O
		6
-		3
		<input type="text"/>

c

	T	O
		7
-		6
		<input type="text"/>

d

	T	O
		8
-		5
		<input type="text"/>

e





	T	O
		3
-		1
		<input type="text"/>

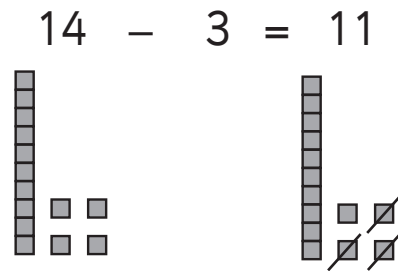
f

	T	O
		5
-		2
		<input type="text"/>

Subtraction – introducing the vertical format

We can use the vertical format for 2-digit numbers as well. We write the place value with **tens** in one column and **ones** in the other.

	tens	ones
	1 	4 
–	0	3
	1 	1 



Step 1: Subtract the ones.

$$4 \text{ ones} - 3 \text{ ones} = 1 \text{ one}$$


Step 2: Subtract the tens

$$1 \text{ tens} - 0 \text{ tens} = 1 \text{ ten}$$

Step 3: Put the tens and ones together.

$$1 \text{ tens} + 1 \text{ one is } 11$$

We write the answer at the bottom of the columns.

You will need:  base-ten blocks

- 1 Use base-ten blocks and the partitioning grid on page 68 to answer to these subtraction calculations. Remember to subtract the ones first and then subtract the tens.

a

	T	O
	1	9
–		6
	<input type="text"/>	<input type="text"/>

b

	T	O
	2	5
–		1
	<input type="text"/>	<input type="text"/>

c

	T	O
	2	6
–		3
	<input type="text"/>	<input type="text"/>

Subtraction – introducing the vertical format

1 d

	T	O
	4	6
-	1	5
	<input type="text"/>	<input type="text"/>

e

	T	O
	3	9
-	2	2
	<input type="text"/>	<input type="text"/>

f

	T	O
	4	8
-	3	3
	<input type="text"/>	<input type="text"/>

g

	T	O
	7	2
-	2	2
	<input type="text"/>	<input type="text"/>

h

	T	O
	5	4
-	5	1
	<input type="text"/>	<input type="text"/>

i

	T	O
	8	4
-	5	4
	<input type="text"/>	<input type="text"/>

j

	T	O
	5	5
-	1	4
	<input type="text"/>	<input type="text"/>

k

	T	O
	6	4
-	2	1
	<input type="text"/>	<input type="text"/>

l

	T	O
	6	9
-	5	3
	<input type="text"/>	<input type="text"/>

m

	T	O
	2	7
-	2	3
	<input type="text"/>	<input type="text"/>

n

	T	O
	7	5
-	5	5
	<input type="text"/>	<input type="text"/>

o

	T	O
	2	9
-	2	2
	<input type="text"/>	<input type="text"/>

Subtraction – subtracting 2-digit numbers

Let's have a look at strategies to subtract two 2-digit numbers. We're going to use what we know about partitioning numbers into tens and ones.

$$32 + 21 = \boxed{?}$$

First we need to build the first number using our straws. We don't need to build the second number because we are taking it away from 32 not adding it.

Step 1 Subtract the ones.

$$2 \text{ ones} - 1 \text{ one} = 1 \text{ one}$$

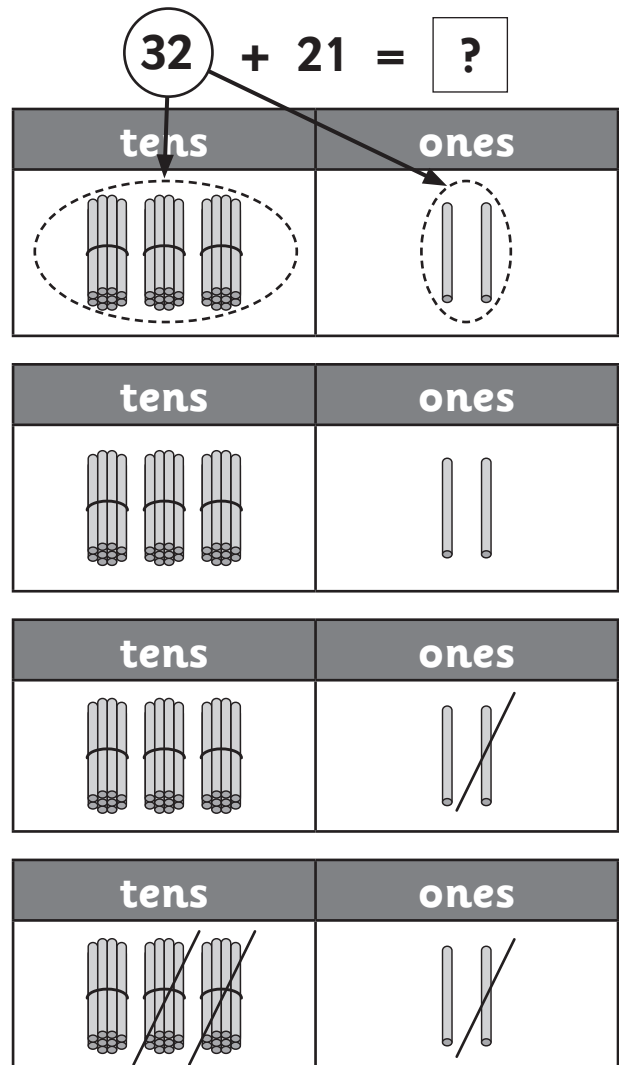
Step 2 Subtract the tens.

$$3 \text{ tens} - 2 \text{ tens} = 1 \text{ ten}$$

Step 3 Count how many we've got left.

$$1 \text{ ten and } 1 \text{ one is } 11$$

So, $32 - 21 = 11$



You will need: straws (some in bundles of ten)

1 Split these numbers into tens and ones.

a 86 is +

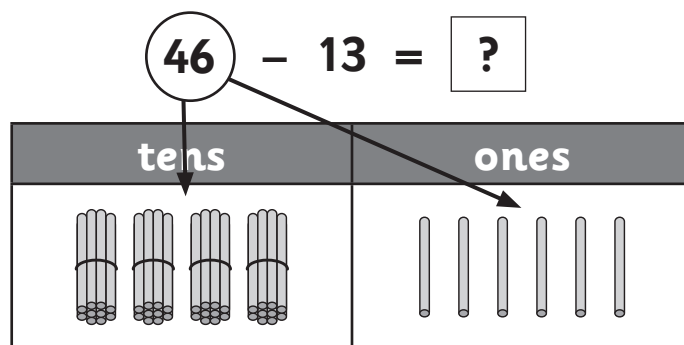
b 27 is +

c 32 is +

d 46 is +

Subtraction – subtracting 2-digit numbers

Let's do this one together. $46 - 13 = \square$?



1. Subtract the ones. ___ ones – ___ ones = ___ ones
2. Subtract the tens. ___ tens – ___ tens = ___ tens
3. Count how many we've got left. ___ tens and ___ ones is ___

I think the answer is 23. Am I right?

yes

no

You will need:  straws (some in bundles of ten)

- 1 Use straws and the tens and ones partitioning grid on the next page to answer these questions.

a $28 - 11 = \square$

b $56 - 41 = \square$

c $31 - 21 = \square$

d $73 - 61 = \square$

e $38 - 7 = \square$

f $45 - 31 = \square$

g $51 - 30 = \square$

h $23 - 20 = \square$

Subtraction – subtracting 2-digit numbers

tens	ones

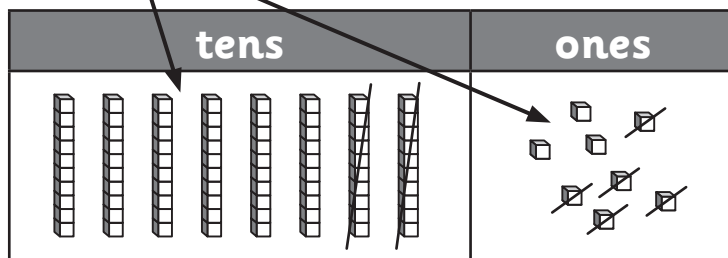
Subtraction – subtracting 2-digit numbers

This time let's use base-ten blocks.

Remember, the long stick represents 10 cubes and each cube represents one. It works in just the same way as using straws.

$$78 - 25 = \boxed{?}$$

$$\textcircled{78} - \textcircled{25} = \boxed{?}$$



The answer is 53.

Remember:

Step 1: Subtract the ones.

Step 2: Subtract the tens.

Step 3: Count how many you've got left.



You will need: a partner base-ten blocks

1 Use base-ten blocks and the partitioning grid on the previous page to write in the answers below:

a $35 - 22 = \boxed{}$

b $54 - 12 = \boxed{}$

c $24 - 22 = \boxed{}$

d $44 - 31 = \boxed{}$

2 Work with a partner. Use base-ten blocks to make correct subtraction sentences.

a $\boxed{3} - \boxed{} = \boxed{3}$

b $\boxed{1} - \boxed{} = \boxed{1}$

c $\boxed{} - \boxed{8} = \boxed{1}$

d $\boxed{5} - \boxed{} = \boxed{5}$

Subtraction – subtracting 2-digit numbers

1 Find the answers to these subtraction sentences.

a $37 - 16 =$

tens	ones

b $65 - 25 =$

tens	ones

d $68 - 25 =$

tens	ones

f $39 - 16 =$

tens	ones

Hint: Draw tens and ones onto the partitioning grid to help you work out the answer.



c $29 - 12 =$

tens	ones

e $47 - 34 =$

tens	ones

g $74 - 52 =$

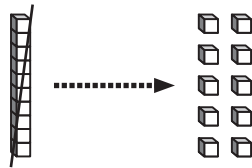
tens	ones

Subtraction – subtracting 2-digit numbers with regrouping

What happens when you try to find the answer to this number sentence using base-ten blocks?

$$34 - 17 = \boxed{?}$$

We need to subtract 7 ones. **We haven't got enough ones!** So we need to **regroup** one of the tens into ones.



We put the ones in the ones box.

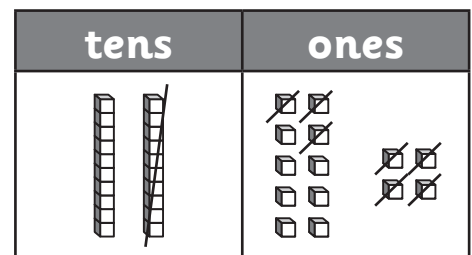
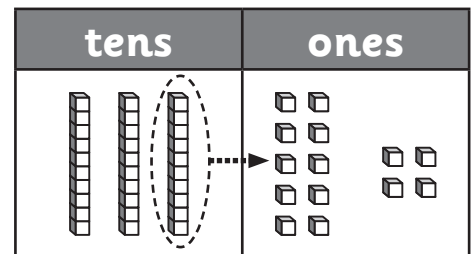
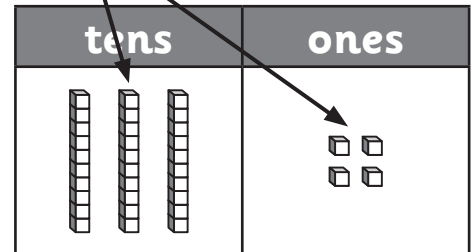
Now we have 2 lots of 10 (which makes 20) and 14 ones.

Now we can subtract the ones and then the tens.

Then we count how many we have left.

So, $34 - 17 = 17$

$$34 - 17 = \boxed{?}$$



1 Regroup a ten into ones and write the total below. The first one has been done for you.

a

tens	ones
22	

b

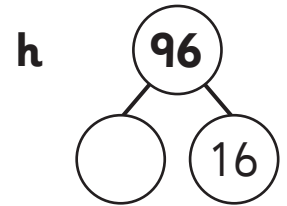
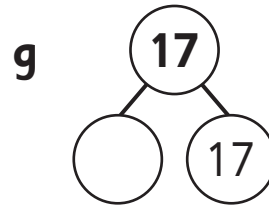
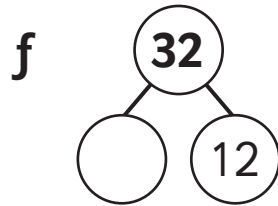
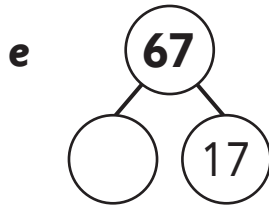
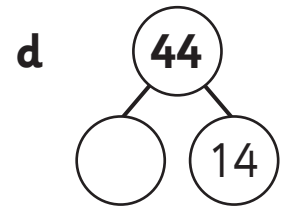
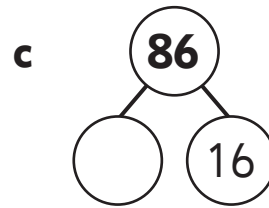
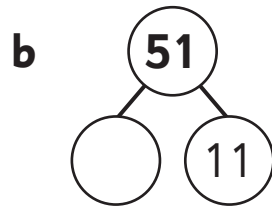
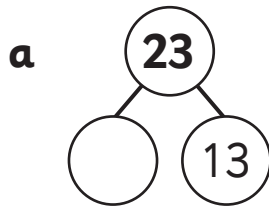
tens	ones

c

tens	ones

Subtraction – subtracting 2-digit numbers with regrouping

1 Practise regrouping these numbers.



2 Look at these subtraction problems. Do you need to regroup a ten? Use base-ten blocks to help you decide. Circle your answer.

a $27 - 13$ yes no

b $46 - 18$ yes no

c $38 - 9$ yes no

d $96 - 37$ yes no

e $86 - 82$ yes no

f When you have to regroup, what do you notice about the ones?

Subtraction – subtracting 2-digit numbers with regrouping

You will need:



a partner



base-ten blocks

1 Use base-ten blocks and a partitioning grid to write in the answers below:

a $42 - 27 =$

b $54 - 16 =$

c $75 - 17 =$

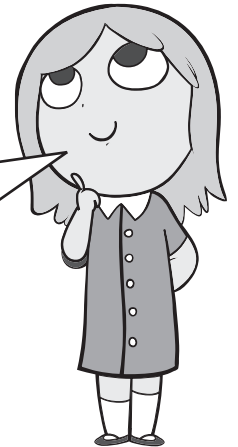
d $64 - 37 =$

Remember:

Step 1: Regroup if you need to and subtract the ones.

Step 2: Subtract the tens.

Step 3: Put the tens and ones together.



2 Work with a partner. Use base-ten blocks to make subtraction sentences

a 4 $-$ $=$ 2

b $-$ 8 $=$ 1

c $-$ 5 $=$ 1

d 5 $-$ $=$ 4

e 3 $-$ $=$ 3

f 4 $-$ $=$ 4

g $-$ 3 $=$ 2

h 6 $-$ $=$ 5

Subtraction – subtracting 2-digit numbers with regrouping

1 Find the answers to these subtraction sentences.

a $32 - 11 =$

tens	ones

Hint: Draw tens and ones onto the partitioning grid to help you work out the answer.



b $76 - 25 =$

tens	ones

c $45 - 29 =$

tens	ones

d $37 - 15 =$

tens	ones

e $88 - 17 =$

tens	ones

f $54 - 24 =$

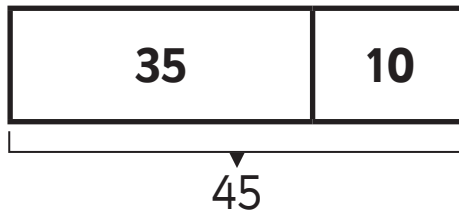
tens	ones

g $67 - 28 =$

tens	ones

Subtraction – bar models

A bar model is a part-whole diagram.



We can write number sentences to go with it.

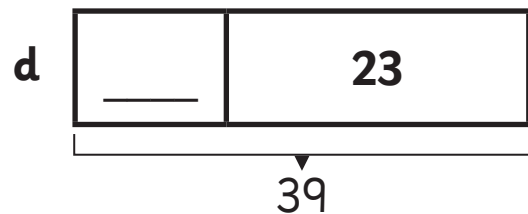
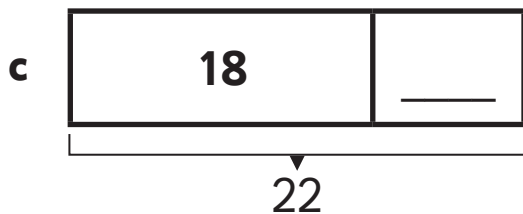
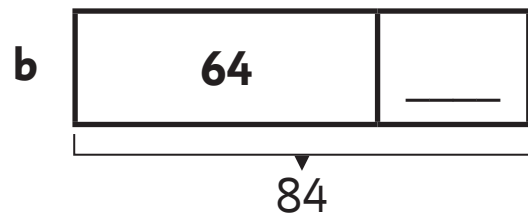
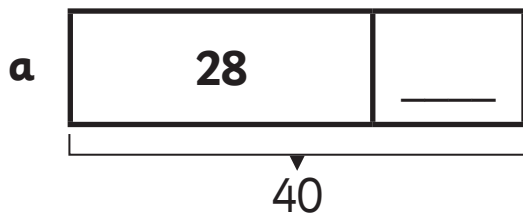
$$35 + 10 = 45$$

$$10 + 35 = 45$$

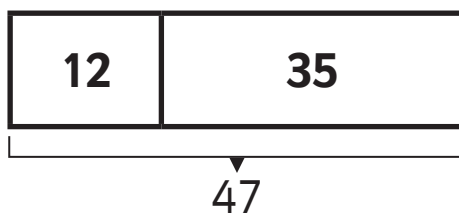
$$45 - 35 = 10$$

$$45 - 10 = 35$$

1 Work out the missing values.



2 Use the bar model to complete the number sentences.



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

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

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

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

Subtraction – word problems

Sometimes in subtraction stories we have to compare two sets. We can use a bar model to do this.

What words might be used in a problem where we have to compare groups or numbers?

I need to compare how many boys and girls there were.

It will be easier to compare the parts if I put the bars one above the other.

Look at this problem.

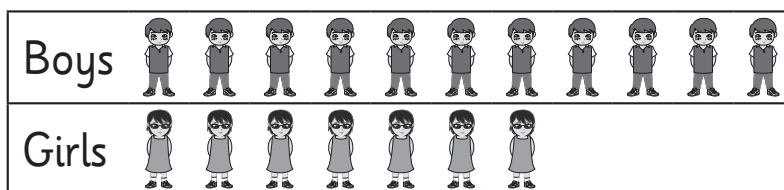
There were 11 boys and 7 girls at the funfair. How many more boys than girls were there?



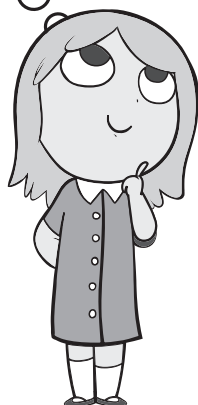
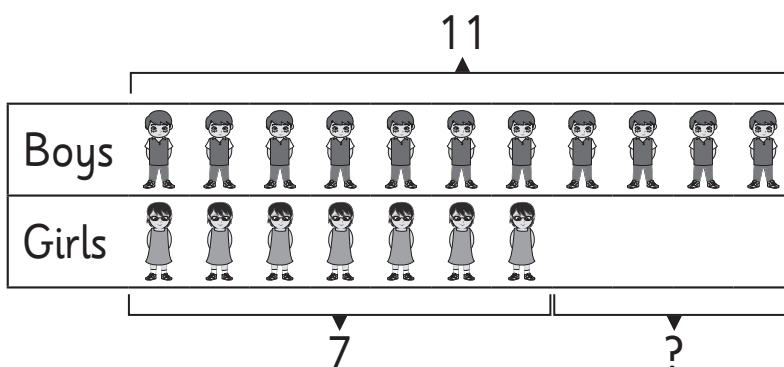
- 1 Describe the problem in your own words. What do you need to find?
- 2 Identify the important numbers.

3 Draw a bar model to show the problem.

There were more boys so the bar will be longer for boys and I will put it on top.



4 Now put the numbers in.



5 We can see that we need to subtract 7 from 11 to find the difference. Choose a method and subtract the numbers.

$$11 - 7 = 4$$

There were 4 more boys than girls.

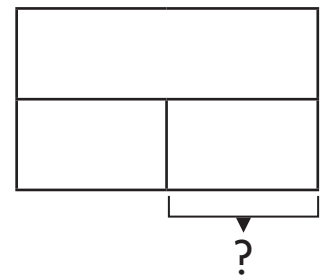
6 Check: Does the answer sound about right?

Subtraction – word problems

1 Use a bar model to solve these word problems.

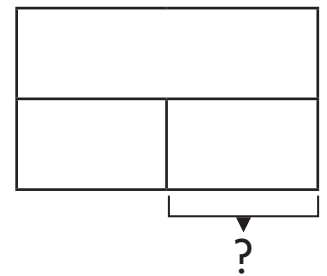
- a** Claire has baked 13 muffins. Tom has baked 8.
How many more muffins did Claire bake?

Claire baked _____ more muffins.



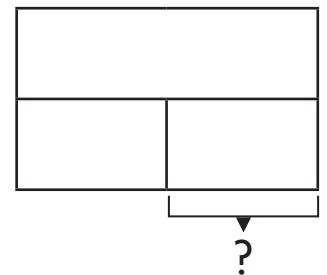
- b** Joe has 24 toy dinosaurs. Lana has 17.
How many fewer dinosaurs does Lana have?

Lana has _____ fewer dinosaurs.



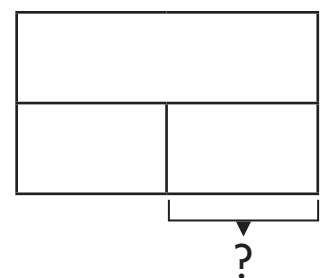
- c** There are 16 girls in the class but only 14 boys.
How many more girls are there?

There are _____ more girls.



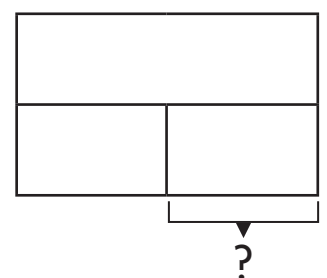
- d** The cats and dogs home has 12 dogs and
18 cats.
How many more cats than dogs are there?

There are _____ more cats.



- e** There are 14 bananas and 24 apples in
the fruit bowl.
How many fewer bananas are there?

There are _____ fewer bananas.



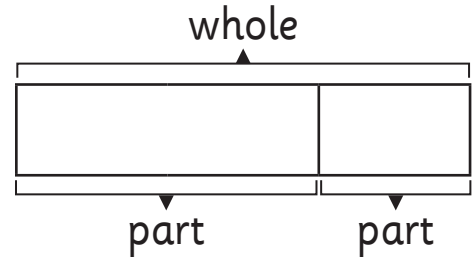
Subtraction – word problems

Look at this story.

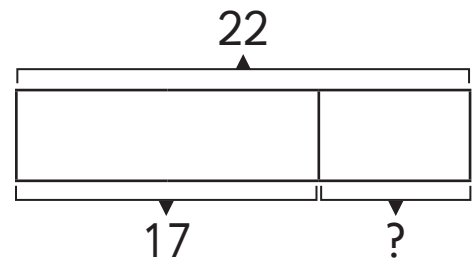
2F had 22 apples. They gave some to 2G. Then they had 17 left.

We know they started with 22 apples. We know they ended up with 17 apples. What we don't know is how many apples they gave to 2G.

We can use a bar model to help us find a solution.



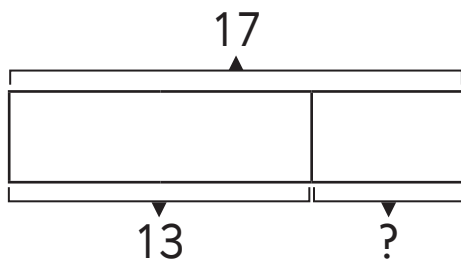
We need to find out how many 'some' is. The bar model shows us that we need to take 17 away from 22.



$$22 - 17 = 5$$

1 Now it's your turn. Use a bar model to solve this problem. Write a number sentence to show which calculation you used.

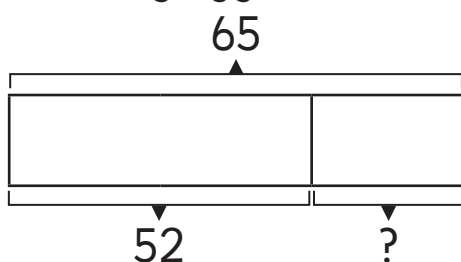
- a Mara buys 17 jelly snakes. She gives some to her friend and then has 13 left. How many did she give to her friend?



$$\underline{\quad} - \underline{\quad} = \underline{\quad}$$

Mara gave $\underline{\quad}$ to her friend.

- b Farmer Joe has 65 chickens. 52 of them lay eggs. How many don't lay eggs?



$$\underline{\quad} - \underline{\quad} = \underline{\quad}$$

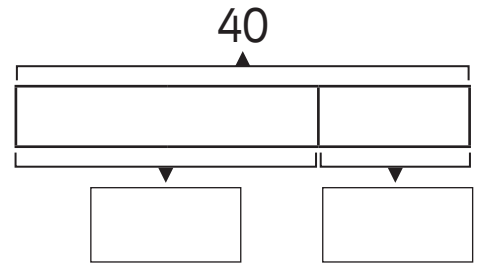
$\underline{\quad}$ don't lay eggs.

Subtraction – word problems

1 Use a bar model to solve these problems.

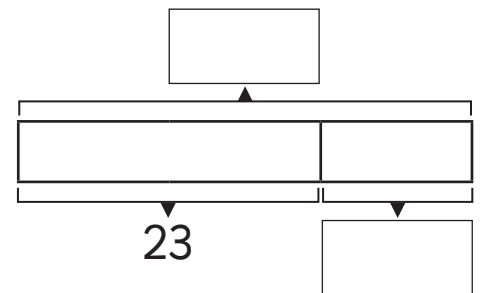
- a Tom has 40 marbles. He loses 25 of them. How many does he have left?

Tom has _____ marbles left.



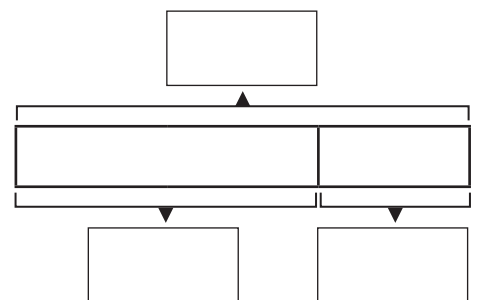
- b There are 67 passengers on the train to Glasgow. 23 people get off at Birmingham. How many passengers are left?

_____ passengers



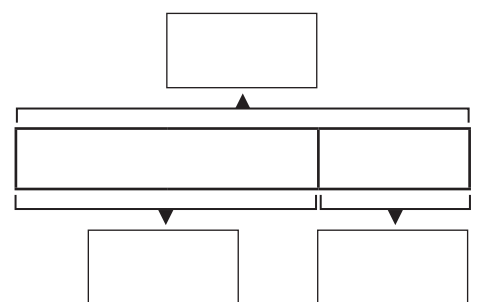
- c 55 children took part in an art competition. 27 were boys. How many girls took part?

_____ girls



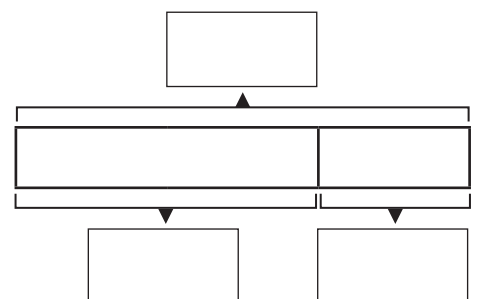
- d Mrs Mars has some tomatoes. 5 were nibbled by bugs so she only has 17 left to eat. How many did she have at the start?

_____ tomatoes



- e Luca has £20. He spends some at the shop and has £14 left. How much did he spend?

£ _____



Subtraction – addition and subtraction word problems

1 Decide whether these word problems are addition or subtraction problems. Circle + or –

a The fairground has come to town. There should be 13 cars on the dodgems but some of them have broken. There are 8 cars working. How many are missing?

+

–

b The toffee apple stall sells 26 toffee apples on the first night and 34 on the second. How many did they sell altogether?

+

–

c Tim went on the rollercoaster 14 times! Lucy went 7 times. How many more times did Tim ride?

+

–

2 Find the answers to these addition and subtraction problems.

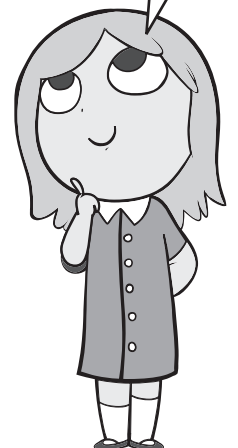
a Lara has 28 beads in one hand and 14 in the other. How many beads does she have altogether?

b Ben has 40 raisins. He gives 15 to Luca. How many does he have left?

c The plum tree has 37 plums on it. 8 of them fall off before they are picked. How many are left on the tree?

d The dinner ladies serve 16 veggie burgers and 12 sausages. How many meals did they serve?

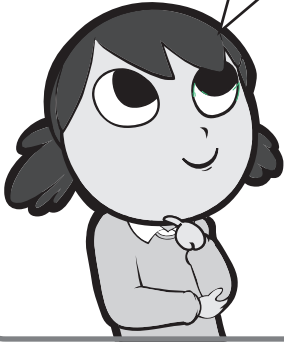
Hint:
Draw a bar model to help you picture the problem.



Multiplication – equal groups

When we count in groups, the groups must be **equal** or **the same**. How many carrots are there? Let's look at these equal groups.

x means multiply



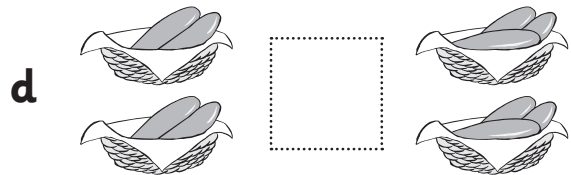
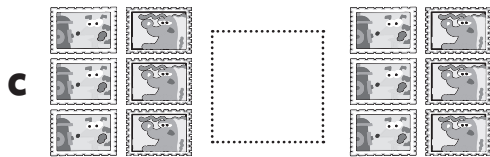
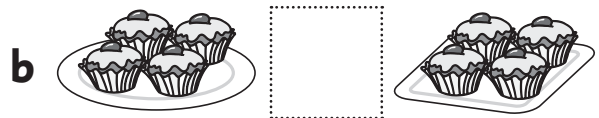
3 bunches of 3  is 9  altogether.

$$3 + 3 + 3 = 9$$

$$3 \times 3 = 9$$

3 groups of 3 is 9

1 Are these groups equal? them if they are and if they are not.



2 How many are there?

a  plates of  is  altogether.



$$5 + 5 = \square$$

$$2 \times 5 = \square$$

b  baskets of  is  altogether.

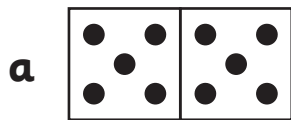


$$2 + 2 + 2 = 6$$

$$\square \times \square = \square$$

Multiplication – equal groups

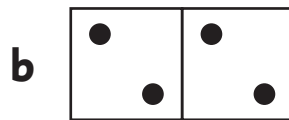
1 Fill in the missing numbers to finish these facts.



groups of =

$5 + 5 = \square$

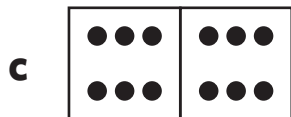
$2 \times 5 = \square$



groups of =

+ =

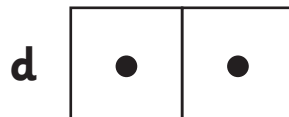
\times =



groups of =

+ =

\times =



groups of =

+ =

\times =

2 Draw dots on the dice to match. Finish the number facts.



4 groups of 3 =

+ + + =

\times =



3 groups of 2 =


+ + =


\times =


Multiplication – equal groups




1 Look at the picture. Help Tony work out the amounts of fruit and vegetables he has in stock.

a  + =
 × =
 groups of is

c  + + =
 × =
 groups of is

e  + + + =
 × =
 groups of is

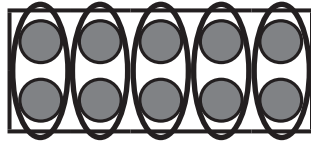
b  rows of is

d  rows of is

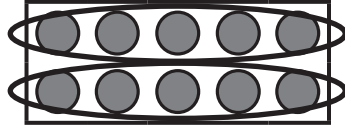
f  rows of is

Multiplication – dot diagrams

When we organise objects like this it can make it easier to work out how many objects there are in a group. We can use skip counting to help.

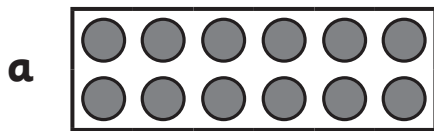


5 groups of 2 is 10

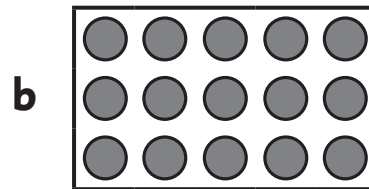


2 groups of 5 is 10

1 How many dots are there?



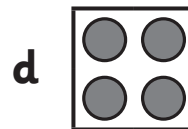
groups of is



groups of is

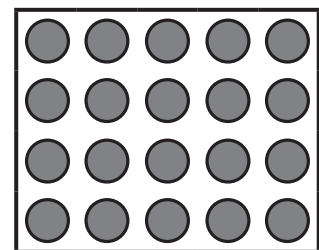


groups of is



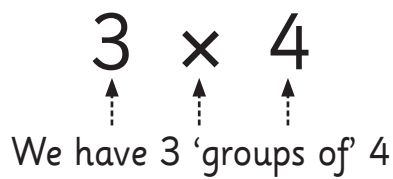
groups of is

2 How many dots are there?



Did you count every dot or did you use a different strategy? Explain how you did it.

Multiplication – dot diagrams



Group 1 ○ ○ ○ ○ ← 4

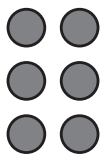
Group 2 ○ ○ ○ ○ ← 4

Group 3 ○ ○ ○ ○ ← 4

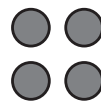
We sometimes say this as '3 times 4' or 'three fours'.

1 Merlin the Multiplication Magician thinks the following. If you think he is right, trace and colour his star.

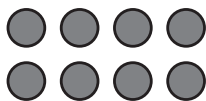
a 3×2 means 3 groups of 2 and $2 + 2 + 2$.
Is he right?



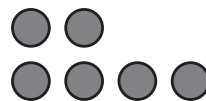
b 2×3 means 2 groups of 2 and $2 + 2$.
Is he right?



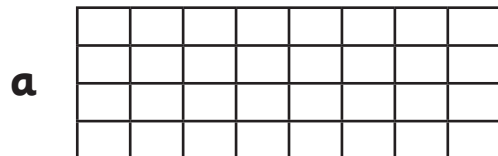
c 2×4 means 2 groups of 4 and $4 + 4$.
Is he right?



d 4×2 means 4 add 2 and $4 + 2$.
Is he right?



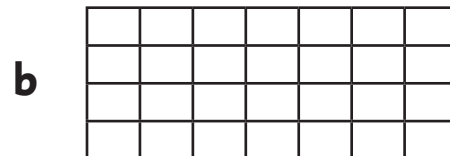
2 Add dots to the grid to show these facts. Finish them.



3 groups of 7 is

$7 + 7 + 7 =$

$3 \times 7 =$



3 groups of 6 is

$6 + 6 + 6 =$

$3 \times 6 =$

Multiplication – dot diagrams

You will need:



a partner



scissors



counters



a lead pencil



copy

What to do:

Look at the pictures. How many legs or arms can you see? Write the matching multiplication fact in the box below. Cut out the pictures and their boxes and spread them out.

What to do next:

Take turns choosing a picture. Don't touch it or tell your partner which one you have chosen. Make a dot diagram using counters to match the picture. Your partner decides which picture matches the dot diagram and places it next to the diagram. Are they right? Talk it through if you disagree.

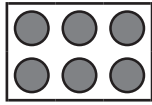
When all the pictures are matched with a dot diagram, show your teacher. Can you score $\frac{6}{6}$?

$2 \times 5 = 10$		

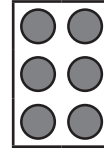
Multiplication – turnarounds

We can make turnarounds when we multiply.

Look at this dot diagram.



We can turn this around to look like:



$$2 \times 3 = 6$$

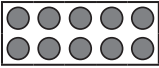
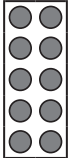
$$3 + 3 = 6$$



$$3 \times 2 = 6$$

$$2 + 2 + 2 = 6$$

Turnarounds help us learn our multiplication facts. If we know 2×3 we also know 3×2 . They are both ways of making 6.

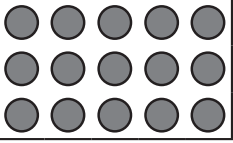
1 Look at the dot diagrams and their turnarounds. Write the facts to match.

a  $2 \times 5 = 10$  $5 \times \square = \square$

b  $4 \times \square = \square$  $\square \times \square = \square$

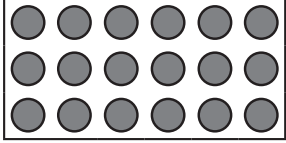
c  $\square \times \square = \square$  $\square \times \square = \square$

2 Can you turn these dot diagrams around in your head? Write both facts.

a 

$$\square \times \square = \square$$

$$\square \times \square = \square$$

b 

$$\square \times \square = \square$$

$$\square \times \square = \square$$

Multiplication – turnarounds

You will need:



a partner



pencils

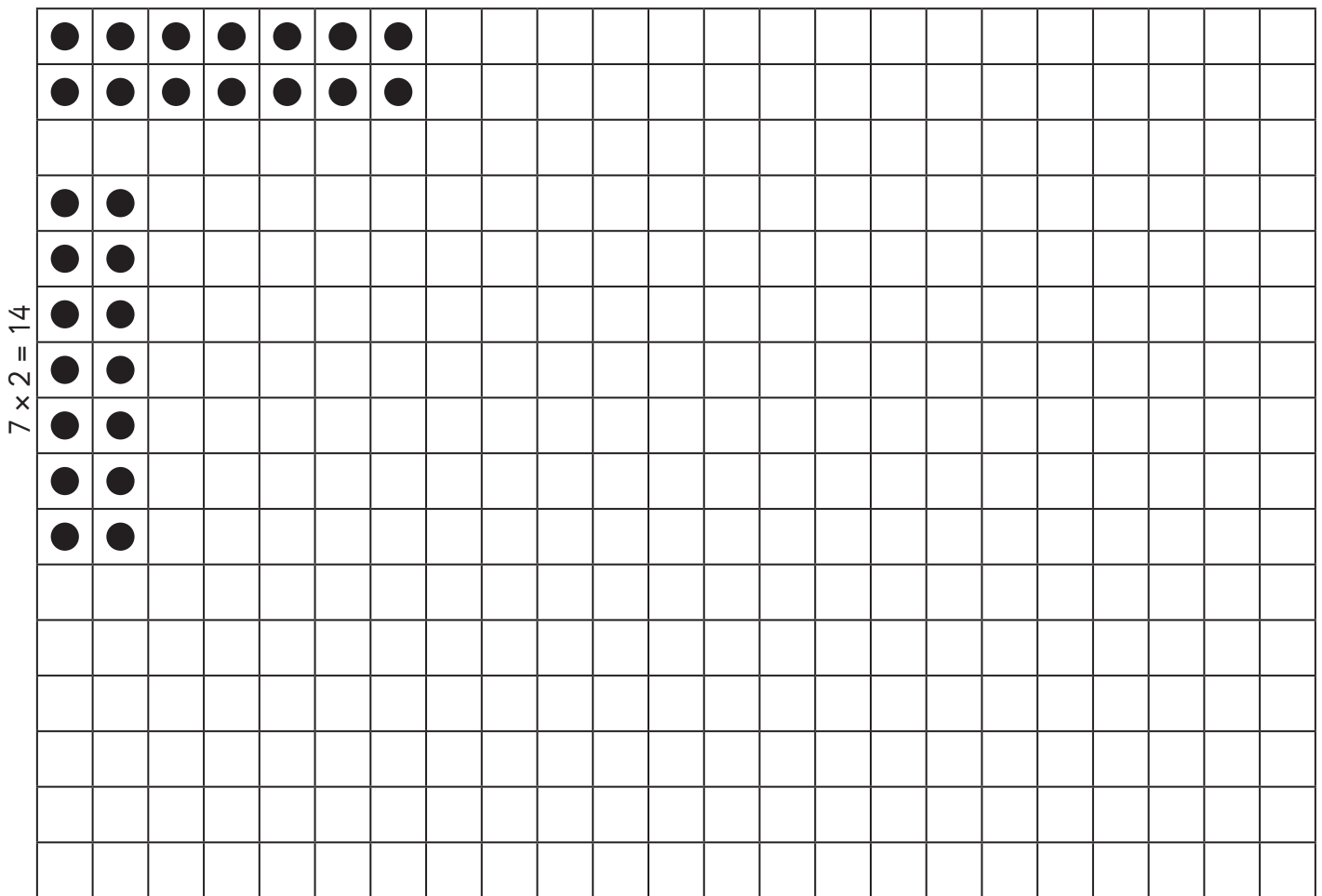


10 counters

What to do:

Take turns adding dots to the squares on the grid to make a dot diagram. Write the number fact in the squares. Ask your partner to colour the matching turnaround and say it loud. If they can do so, give them a counter. Play until you have used all 10 counters.

$$2 \times 7 = 14$$



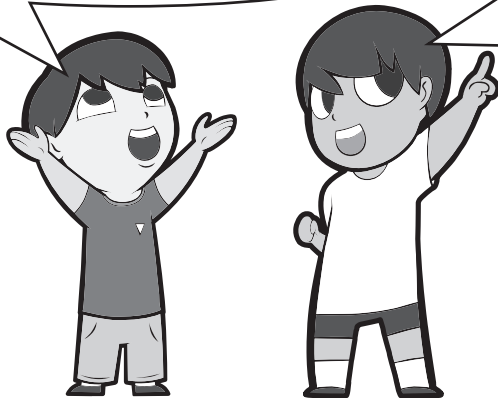
What to do next:

Are there any number facts you can't make turnarounds for? Why do you think this is so?

Multiplication – times table introduction

Times tables are lists of multiplication facts. They help you to multiply quickly and can be used to find other number facts once you know them confidently.

Sing them to a tune or nursery rhyme tune. Or watch the times table toons videos on Mathletics.



Try to visualise the numbers. Make them using a resource like counters.

● ● $1 \times 2 = 2$

● ● ● ● $2 \times 2 = 4$

● ● ● ● ● ● $3 \times 2 = 6$


Use a times table grid to keep track of the times tables facts you know off by heart. Colour the number fact in once you have learnt it.


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


Multiplication – multiplying 2s

Let's look at the pattern we make when we multiply by 2s.

- 1 a How many shoes are there in each row? Complete the number sentences.

 × = 1 group of 2

 × = 2 groups of 2

 × = 3 groups of 2

 × =

 × =

 × =

 × =

 × =

 × =

 × =

- b Write the answers from question 1a in the boxes below.

<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"/>
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- c What is the pattern? _____

Multiplication – multiplying 2s

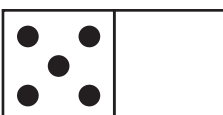
When we double, we are multiplying by 2.

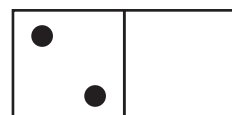
Here is **1** spider.  One spider has **8** legs $1 \times 8 = 8$

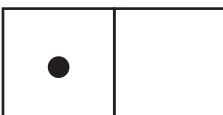
If we double it, we have **2** spiders. 

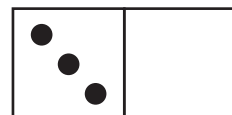
How many legs do they have? $8 + 8$ $2 \times 8 = 16$

1 Draw dots on the other side of the dominoes to create doubles.
Finish the number facts.


a 
 $2 \times 5 = 10$


b 
 $2 \times 2 = \square$


c 
 $\square \times \square = \square$

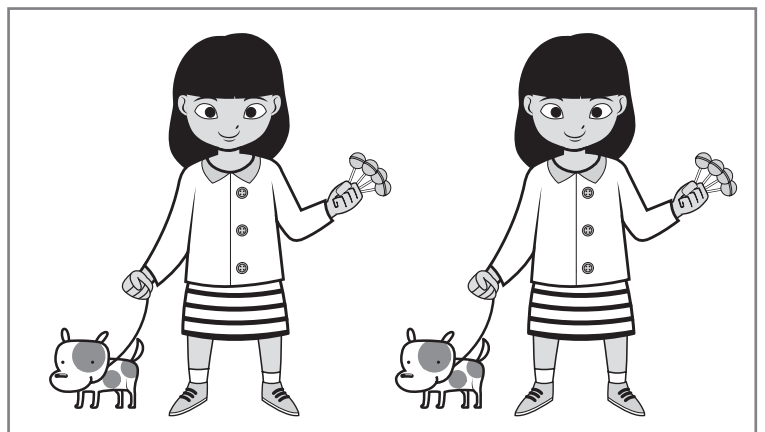
d 
 $\square \times \square = \square$


2 Look at the twins. Write the multiplication facts to match.

a How many  ?
 $\square \times \square = \square$

b How many  ?
 $\square \times \square = \square$

c How many  ?
 $\square \times \square = \square$



d How many  ?
 $\square \times \square = \square$

Multiplication – multiplying 2s

1 Finish the multiplication facts.

$1 \times 2 = \square$

$6 \times 2 = \square$

$2 \times 2 = \square$

$7 \times 2 = \square$

$3 \times 2 = \square$

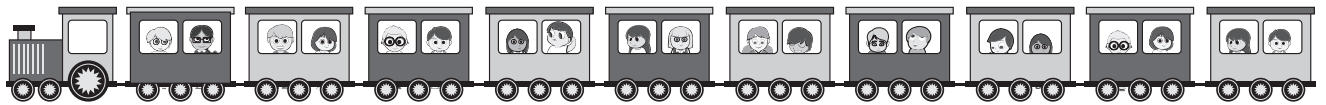
$8 \times 2 = \square$

$4 \times 2 = \square$

$9 \times 2 = \square$

$5 \times 2 = \square$

$10 \times 2 = \square$



2 a There are 10 carriages. There are 2 passengers in each carriage. How many passengers altogether? Count in twos.

There are passengers altogether.

b When we count in twos we are counting the 2 times table. Circle the numbers in the 2 times table as you count them on this number chart.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20

What do you notice?

Multiplication – multiplying 2s

You will need:



a partner



pencils or markers

What to do:

On one side of the box, draw an alien. Give it as many eyes, ears, arms, legs and antennae as you like, but make sure they are easy to count.

Swap your picture with a partner and draw the double for their alien. Remember, it must have the same number of arms and legs and so on.


What to do next:


Swap papers back. Write 5 multiplication facts for your alien pairs.


Multiplication – multiplying 5s


Let's look at the pattern we make when we multiply by 5s.


1 a How many toes are in each row? Finish the number facts.


 × = 1 group of 5

 × = 2 groups of 5

 × = 3 groups of 5

 × =

 × =

 × =

 × =

 × =

 × =

 × =

b Write the answers from question 1a in the boxes below.

<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"/>
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c What is the pattern? _____

Multiplication – multiplying 5s

1 Finish the multiplication facts.

$1 \times 5 = \square$

$6 \times 5 = \square$

$2 \times 5 = \square$

$7 \times 5 = \square$

$3 \times 5 = \square$

$8 \times 5 = \square$

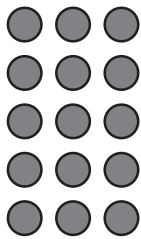
$4 \times 5 = \square$

$9 \times 5 = \square$

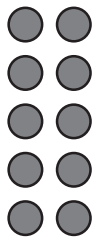
$5 \times 5 = \square$

$10 \times 5 = \square$

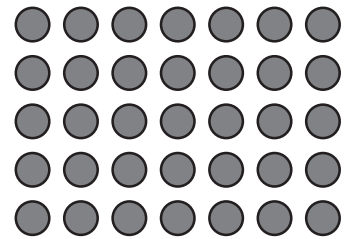
2 Multiply.



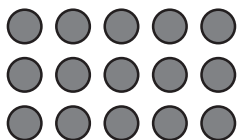
a $5 \times 3 = \square$



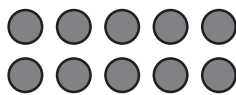
b $5 \times 2 = \square$



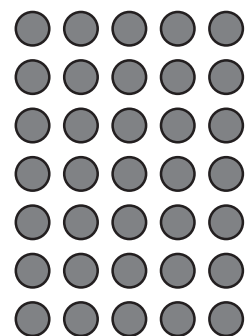
c $5 \times 7 = \square$



$3 \times 5 = \square$



$2 \times 5 = \square$



$7 \times 5 = \square$

Multiplication – multiplying 10s

When we multiply we make number patterns. Look at this grid.



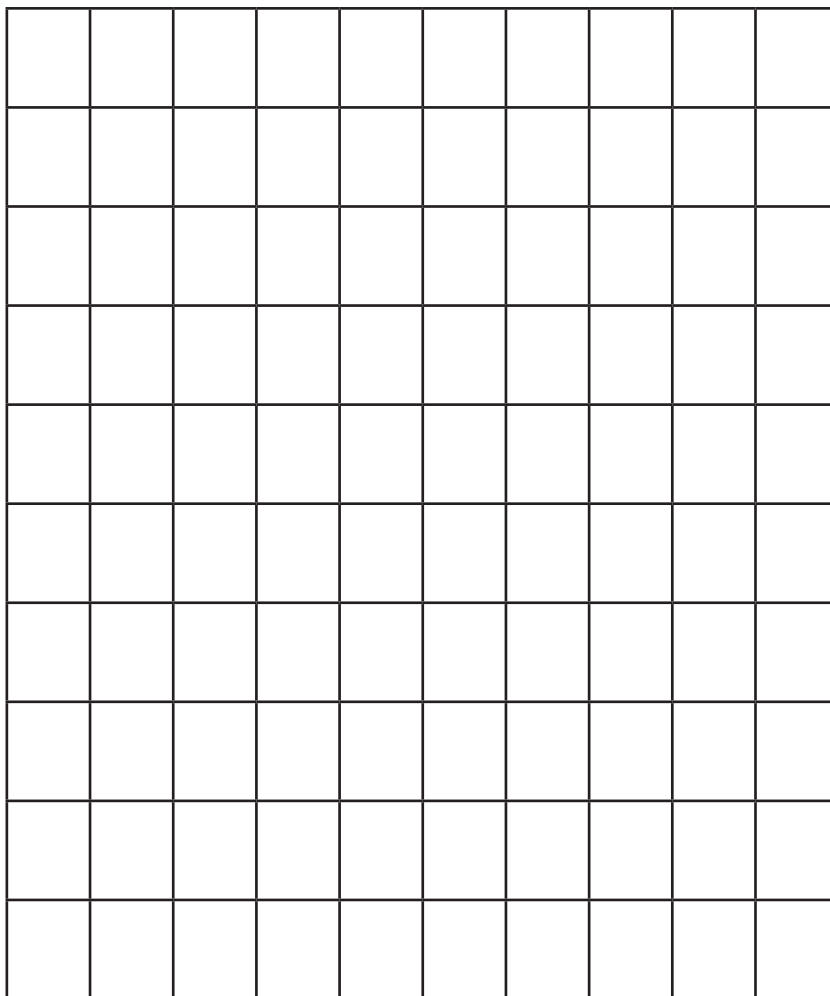
← This is 1 row of 10. We have coloured 10 squares.

$$1 \times 10 = 10$$

← Now we have coloured 2 rows of 10. This is 20 squares.

$$2 \times 10 = 20$$

1 a Colour each row a different colour and finish the facts.



1	×	10	=	
2	×	10	=	
	×	10	=	
	×		=	
	×		=	
	×		=	
	×		=	
	×		=	
	×		=	
	×		=	
	×		=	

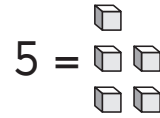
b Write the answers from question **1a** in the boxes below.

10	20								
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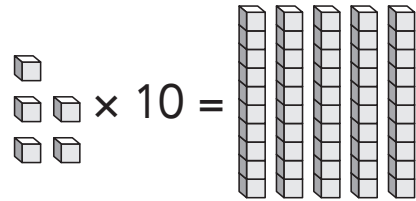
c What do you notice?

Multiplication – multiplying 10s

A single digit number is made up of ones.



When we multiply a number by 10, the ones become ten times bigger so we swap each one for a ten block.



We can also show this using the place value columns. Look at the pattern.

$$5 \times 10 = 50$$

	Tens	Ones
		5
+	5	0


The 5 moves from the ones column to the tens column as it is now 10 times bigger. 0 acts as a place holder.

When a single digit number is multiplied by 10, it moves one place value column. 0 is put in the ones column as a place holder.

1 Show the answer by drawing ten blocks.

a  $\times 10 =$



b  $\times 10 =$



2 Use the pattern to complete these number sentences.

a $2 \times 10 =$

b $4 \times 10 =$

c $7 \times 10 =$

d $1 \times 10 =$

e $3 \times 10 =$

f $8 \times 10 =$

Multiplication – multiplying 10s

1 Finish the multiplication facts.

$10 \times 1 = \square$

$10 \times 6 = \square$

$10 \times 2 = \square$

$10 \times 7 = \square$

$10 \times 3 = \square$

$10 \times 8 = \square$

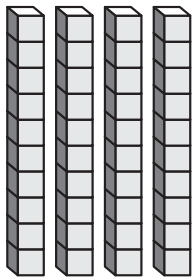
$10 \times 4 = \square$

$10 \times 9 = \square$

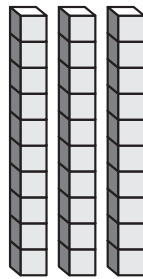
$10 \times 5 = \square$

$10 \times 10 = \square$

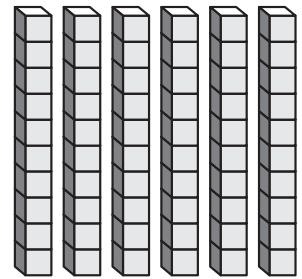
2 Multiply.



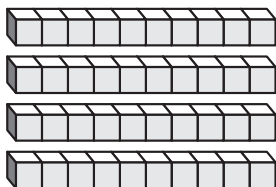
a $10 \times 4 = \square$



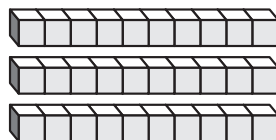
b $10 \times 3 = \square$



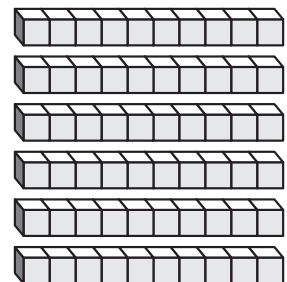
c $10 \times 6 = \square$



$4 \times 10 = \square$



$3 \times 10 = \square$



$6 \times 10 = \square$

Multiplication – multiplying 2s, 5s and 10s

You will need:  pencils

What to do:

Draw diagrams or pictures to help Farmer Joe solve these problems.

a Farmer Joe has 5 sheep in his paddock. Each sheep has 4 legs. How many legs are in his paddock?



b There are 7 chickens in the coop. Each chicken has 2 legs. How many legs are there in the coop?

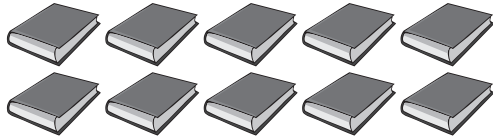
c He plants 3 rows of carrots. Each row has 10 carrots. How many carrots are there?

d Farmer Joe lives in his house with his wife, 3 children and his parrot, Lucky. How many legs are in the house?

Multiplication – multiplying 2s, 5s and 10s

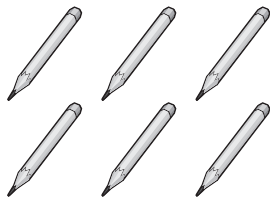
1 Circle the objects in groups and complete the multiplication number sentence.

a Multiply 2 by 5.



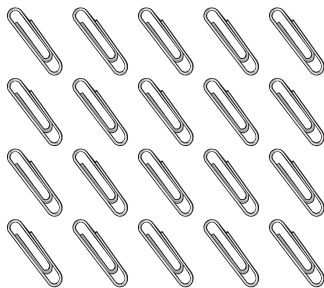
$$\square \times \square = \square$$

b Multiply 2 by 3.



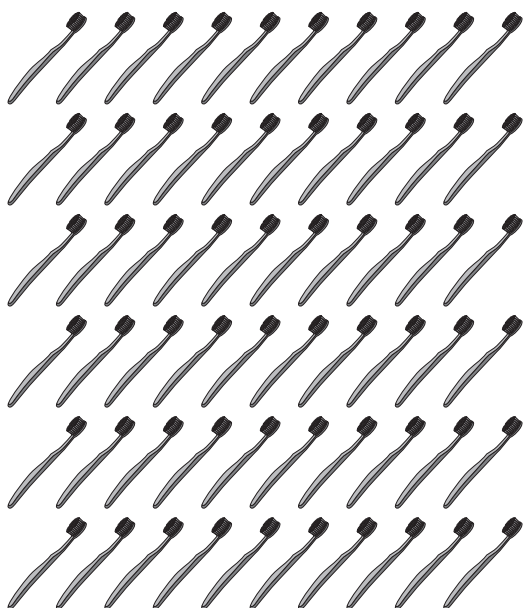
$$\square \times \square = \square$$

c Multiply 4 by 5.



$$\square \times \square = \square$$

d Multiply 6 by 10.



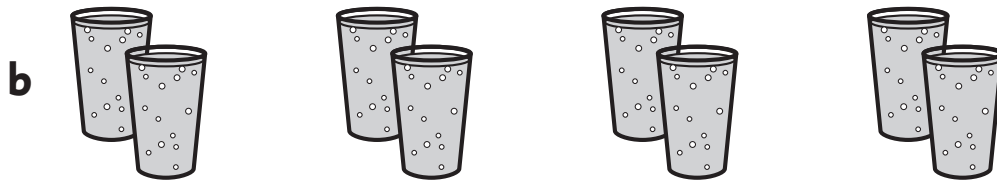
$$\square \times \square = \square$$

Multiplication – multiplying 2s, 5s and 10s

1 Complete the multiplication equations.



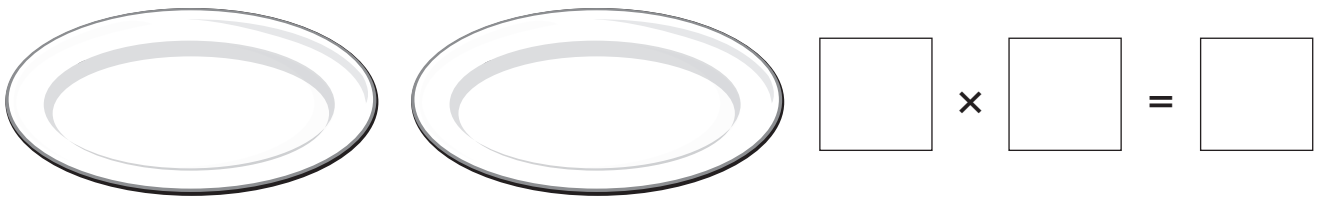
$$\square \times \square = \square$$



$$\square \times \square = \square$$

2 Draw and complete the multiplication equations.

a 10 oranges on each plate.



b 5 buttons on each coat.



$$\square \times \square = \square$$

Multiplication – multiplying 2s, 5s and 10s

1 Multiply.

a



$$\square \times \square = \square$$



$$\square \times \square = \square$$

b

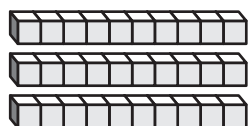


$$\square \times \square = \square$$

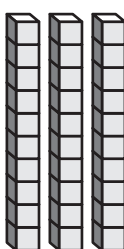


$$\square \times \square = \square$$

c



$$\square \times \square = \square$$



$$\square \times \square = \square$$

Multiplication – multiplying 2s, 5s and 10s

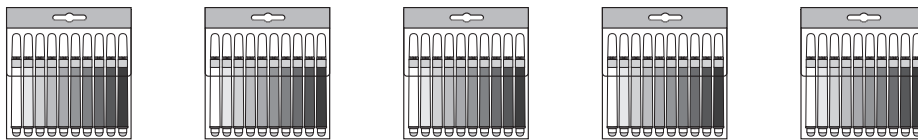
- 1 There are 4 punnets of strawberries. There are 5 strawberries in each punnet. How many strawberries are there altogether?



$$\square \times \square = \square$$

There are _____ strawberries.

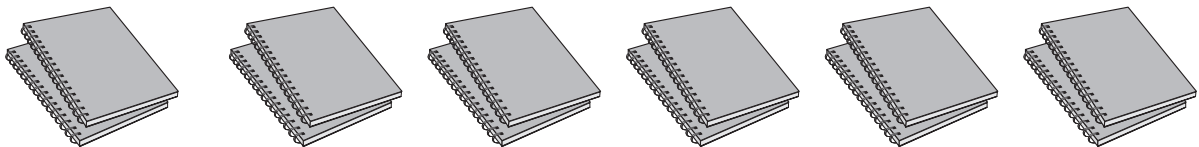
- 2 There are 5 packs of pens. There are 10 pens in each pack. How many pens are there altogether?



$$\square \times \square = \square$$

There are _____ pens.

- 3 There are 6 packets of notebooks. There are 2 notebooks in each packet. How many notebooks are there altogether?



$$\square \times \square = \square$$

There are _____ notebooks.

- 4 There are 5 bunches of bananas. There are 5 bananas in each bunch. How many bananas are there altogether?



$$\square \times \square = \square$$

There are _____ bananas.

Multiplication – explore

You will need:  a partner  24 counters

What to do:

Chef Charlie has 10 cupcakes on some trays in the oven.

There are the same number of cupcakes on each tray.

What are some different ways he can put them on the trays?



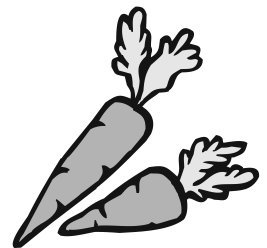
Use 10 counters and work with a partner to find some different options. Show your solutions below.

$$1 \text{ tray of } 10 = 10$$

$$1 \times 10 = 10$$

What to do next:

Farmer Jess has planted rows of carrots. She has planted 20 carrots altogether. What are the different ways she could have planted them?



Use 20 counters and work with a partner to find some different options. Show your solutions below.

Multiplication – explore

You will need:



a partner



counters

What to do:

Work with your partner to find solutions for the following problems. Use counters or draw pictures to help.

- a** Lisa and her 3 friends painted their toenails. How many toenails did they paint altogether?



- b** Here is a bag with 3 jelly snakes in it. How many snakes would there be if there were 5 bags altogether?



- c** Caleb practised kicking goals every day for a week. If he kicked 5 goals a day, how many goals did he kick altogether?



Multiplication – explore

You will need:



a partner



counters

What to do:

The 4 Smith children collect footy cards. They are fighting over who has the most cards and are driving their mum mad! Help her get some peace and quiet by solving their problem. Show your solution.

I have the most cards because I have 2 rows of 12 cards.

Nope, I have the most cards because I have 3 rows of 8 cards!

Nope, I have the most cards because I have 4 rows of 6 cards!

Nope, I have the most cards! I have 1 great big long row of 24 cards.

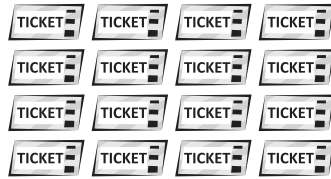
Jack **Ellie** **Tom** **Nick**

Our solution:

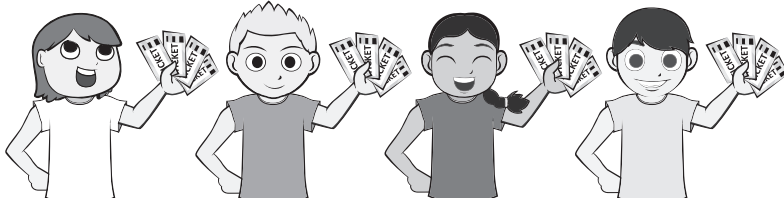
Division – sharing

When we share things into groups evenly, every group is the same or **equal**. We call this process **division**. The symbol for division is \div

Here are **16** show ride tickets. We want to share them between **4** children.



If we share the tickets out evenly, every child gets 4 tickets. Yay!

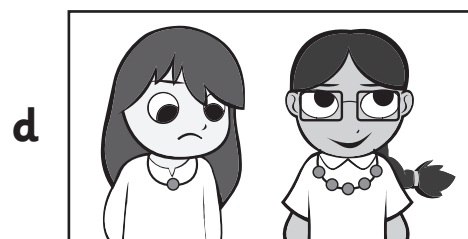
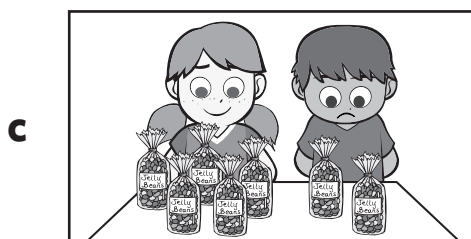
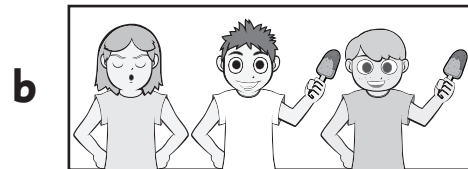
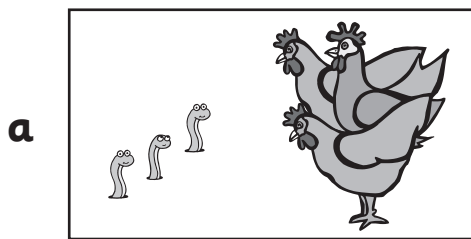


16 divided by 4 is 4

$$16 \div 4 = 4$$

We call these **equal shares** because each part is the same.

- 1 Look at these shares. Are they fair? the fair shares and the ones that are not fair.



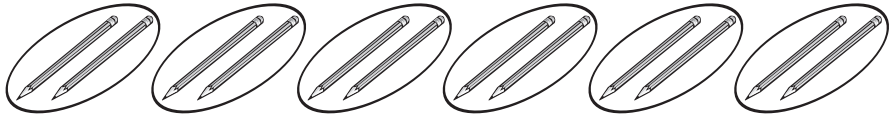
- 2 Draw 16 fish, sharing them between the 4 bowls. Make sure each bowl has the same number of fish.



Division – sharing

What is the sign for division or sharing? \div

12 pencils are shared
between 6 people.

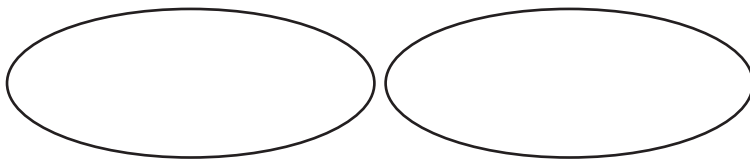


Each person gets 2 pencils.

$$12 \div 6 = 2$$

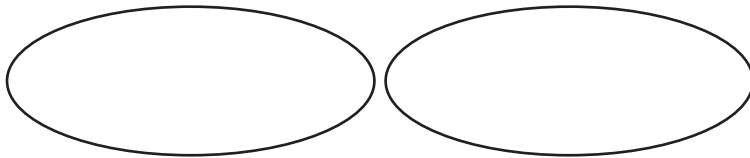
1 Use tally marks or draw pictures to help you solve these problems.
Finish the matching number facts.

a 10 apples shared between 2 people is .



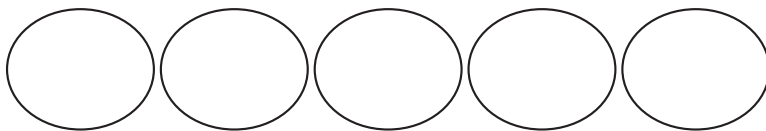
$$10 \div 2 = \square$$

b 12 bananas shared between 2 monkeys is .



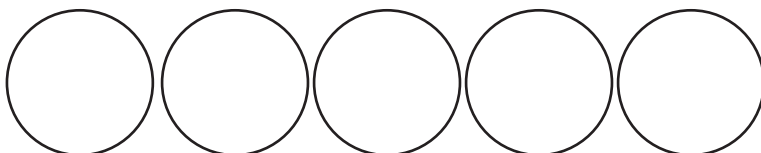
$$12 \div 2 = \square$$

c 15 berries shared between 5 birds is .



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

d 30 fish shared between 5 seals is .



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

Division – sharing

You will need:



a partner



24 plastic animals or counters

What to do:

Make 5 animal pens with lolisticks. They must be big enough to hold some animals or counters.

- a** Share the 30 animals out fairly between the animal pens. How many animals are in each animal pen? Draw your answer.

$$30 \div 5 =$$

- b** Take the animals out and take away 2 animal pens. Share the animals between the 3 animal pens. How many animals are in each animal pen now? Draw your answer.

$$30 \div 3 =$$

- c** What if there are only 2 animal pens. How many animals are in each animal pen? Draw your answer.

$$30 \div 2 =$$

Division – grouping

Each dog needs 2 milk bones for lunch. How many dogs can we feed using 10 bones?

To find out, we share out the bones into groups of 2 to find out how many groups we have.



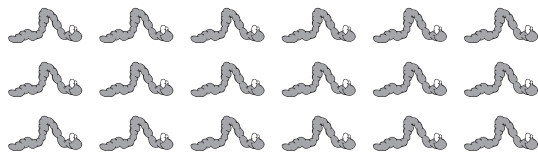
There are 5 groups.

5 lucky dogs are getting yummy milk bones for lunch!



1 Circle the groups to work out how many animals you can feed.

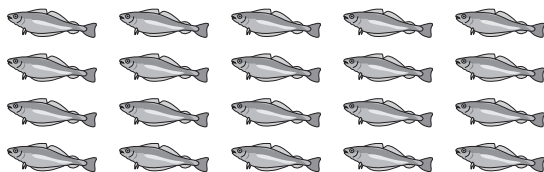
a Each bird needs 2 worms. You have 18 worms. How many groups of 2 can you make?



You can feed _____ birds.

$$18 \div 2 = \square$$

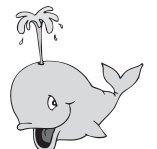
b Each bear needs 5 fish. You have 20 fish. How many groups of 5 can you make?



You can feed _____ bears.

$$20 \div 5 = \square$$

c Each whale needs 10 buckets of plankton. You have 40 buckets. How many groups of 10 can you make?



You can feed _____ whales.

$$40 \div 10 = \square$$

Division – word problems

1 Use tally marks or draw pictures to help you solve these problems. Finish the matching number facts.

- a There are 30 sparklers to be shared between 10 children. How many sparklers does each child get?

$$\boxed{30} \div \boxed{10} = \boxed{}$$

- b The hospital has 18 blankets to donate to some babies. To make sure they stay toasty warm, each baby needs 2 blankets. How many babies will get blankets?

$$\boxed{} \div \boxed{2} = \boxed{}$$

- c For a maths activity, every child needs 5 stickers. The teacher has 25 stickers. How many children can do the maths activity?

$$\boxed{} \div \boxed{} = \boxed{}$$

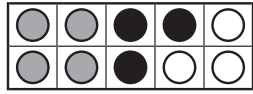
- d Farmer Jess has 40 carrots. She wants to plant them in rows of 10. How many rows can she plant?

$$\boxed{} \div \boxed{} = \boxed{}$$

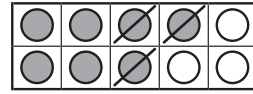
Division – relating multiplication and division

We know that addition and subtraction are related.

$$4 + 3 = 7$$



$$7 - 3 = 4$$



Multiplication and division facts are also related. Let's explore this.

You will need:



a partner



counters

What to do:

Make 3 groups of 5 counters. How many counters altogether?

Let's write this as a multiplication fact.

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

Now put all those counters in 1 group.

Divide the same counters into 3 groups.

How many counters are in each group?

Let's write this as a division fact.

$$\boxed{15} \div \boxed{3} = \boxed{}$$

What to do next:

Make 4 groups of 5 counters.

$$\boxed{} \times \boxed{} = \boxed{}$$

Write this as a multiplication fact.

What do you think the matching division fact will be? Write your prediction here.

$$\boxed{} \div \boxed{} = \boxed{}$$

Now divide the counters into 4 groups.

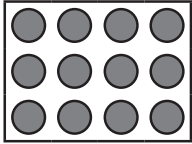
$$\boxed{} \div \boxed{} = \boxed{}$$

Write the division number fact.

Were you right? If not, can you see where you got mixed up?

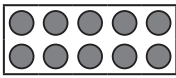
Division – relating multiplication and division

We can use dot diagrams to make families of multiplication and division facts.

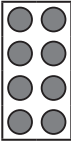
3 groups of 4 is 12  12 counters divided into 3 groups is 4

$3 \times 4 = 12$ AND $12 \div 3 = 4$

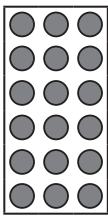
1 Use the dot diagrams to finish the number statements and facts.

a 2 groups of 5 is  10 divided into 2 groups is

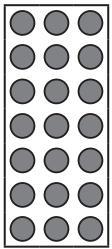
\times = \div =

b 4 groups of 2 is  divided into groups is

\times = \div =

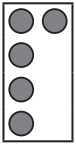

c \times = 

\div =

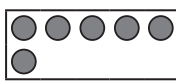

d \times = 

\div =

2 Now you can only see part of the dot diagrams. Can you still finish the facts?

a   \times =

\div =

b  \times  =

\div =

Division – relating multiplication and division

We can use known multiplication facts to help us solve division problems.
Number patterns can also help us.

$$10 \div 2 = \boxed{?}$$

We know that $5 \times 2 = 10$ so $10 \div 2 = 5$

1 Use known multiplication facts (or counters) to help you finish these division facts.

a $1 \times 2 = \boxed{}$

$$\boxed{} \div 1 = \boxed{}$$

b $2 \times 2 = \boxed{}$

$$\boxed{} \div 2 = \boxed{}$$

c $4 \times 2 = \boxed{}$

$$\boxed{} \div \boxed{} = \boxed{}$$

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

$$\boxed{} \div \boxed{} = \boxed{}$$

2 Now use your understanding of number patterns to finish these.

a $10 \times 2 = \boxed{}$

$$\boxed{20} \div 10 = \boxed{}$$

b $20 \times 2 = \boxed{}$

$$\boxed{} \div 20 = \boxed{}$$

c $40 \times 2 = \boxed{}$

$$\boxed{} \div \boxed{} = \boxed{}$$

d $50 \times 2 = \boxed{}$

$$\boxed{} \div \boxed{} = \boxed{}$$

Division – relating multiplication and division

1 Can you finish these facts?

a $1 \times 10 = \square$

$\square \div 1 = \square$

b $2 \times 10 = \square$

$\square \div 2 = \square$

c $3 \times 10 = \square$

$\square \div 3 = \square$

d $4 \times 10 = \square$

$\square \div 4 = \square$

e $5 \times 10 = \square$

$\square \div \square = \square$

f $10 \times 10 = \square$

$\square \div \square = \square$

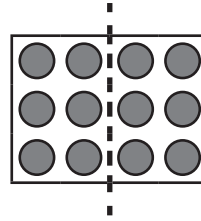
2 Make up 5 of your own multiplication facts and related division facts.

Division – relating division and fractions

When we divide something in half, we are sharing it into **2 equal parts or dividing it by 2.**

$$\frac{1}{2} \text{ of } 12 \text{ is } 6$$

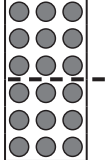
$$12 \div 2 = 6$$



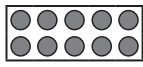
1 Draw lines to divide these dot diagrams into halves. Finish the facts.

a $\frac{1}{2}$ of 8 is 

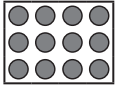
$$\begin{array}{|c|} \hline 8 \\ \hline \end{array} \div \begin{array}{|c|} \hline \\ \hline \end{array} = \begin{array}{|c|} \hline \\ \hline \end{array}$$

b $\frac{1}{2}$ of 18 is 

$$\begin{array}{|c|} \hline 18 \\ \hline \end{array} \div \begin{array}{|c|} \hline \\ \hline \end{array} = \begin{array}{|c|} \hline \\ \hline \end{array}$$

c $\frac{1}{2}$ of 10 is 

$$\begin{array}{|c|} \hline \\ \hline \end{array} \div \begin{array}{|c|} \hline \\ \hline \end{array} = \begin{array}{|c|} \hline \\ \hline \end{array}$$

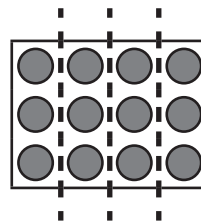
d $\frac{1}{2}$ of 12 is 

$$\begin{array}{|c|} \hline \\ \hline \end{array} \div \begin{array}{|c|} \hline \\ \hline \end{array} = \begin{array}{|c|} \hline \\ \hline \end{array}$$

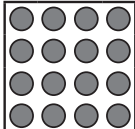
When we divide something into quarters, we are sharing it into **4 equal parts or dividing it by 4.**

$$\frac{1}{4} \text{ of } 12 \text{ is } 3$$

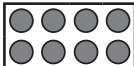
$$12 \div 4 = 3$$



2 Draw lines to divide these dot diagrams into quarters. Finish the facts.

a $\frac{1}{4}$ of 16 is 

$$\begin{array}{|c|} \hline 16 \\ \hline \end{array} \div \begin{array}{|c|} \hline \\ \hline \end{array} = \begin{array}{|c|} \hline \\ \hline \end{array}$$

b $\frac{1}{4}$ of 8 is 

$$\begin{array}{|c|} \hline 8 \\ \hline \end{array} \div \begin{array}{|c|} \hline \\ \hline \end{array} = \begin{array}{|c|} \hline \\ \hline \end{array}$$

Division – explore

You will need:  a partner or you can work alone

 50 counters

What to do:

You and 4 friends have won a prize from the local bakery. There are 50 delicious mini cupcakes available to be shared out.

Would you get more if they said, 'Share these cupcakes evenly among you', or 'Each winner can have 6 cupcakes'.

Work with a partner to solve this problem. Show your working out below.

