Mathletics

Series C Student

Operations with Number

My name

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Series C – Operations with Number

Contents

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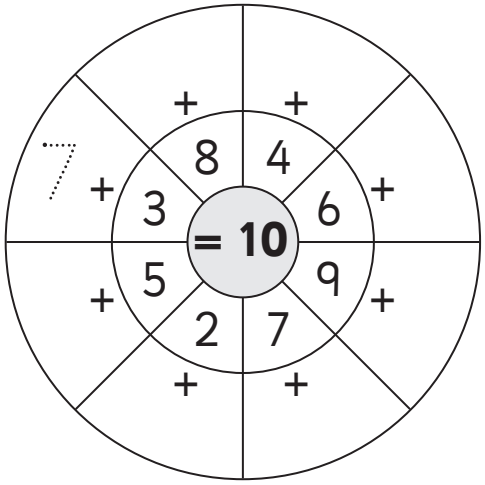
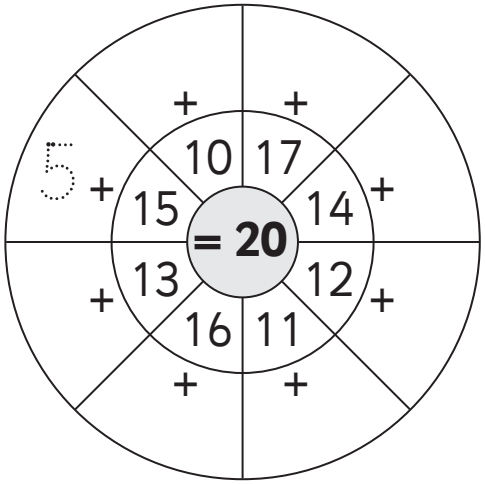
Addition – revising basic number facts

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

1 Finish the addition number wheels.





2 Fill in the missing numbers in these facts.

a 5 + 2 = ☐ **b** 7 + 3 = ☐ **c** ☐ + 5 = 9

d 6 + 7 = ☐ **e** 3 + 9 = ☐ **f** 7 + ☐ = 15

3 Write 4 addition facts for each number.

a

10			
☐	+	☐	= 10
☐	+	☐	= 10
☐	+	☐	= 10
☐	+	☐	= 10

b

20			
☐	+	☐	= 20
☐	+	☐	= 20
☐	+	☐	= 20
☐	+	☐	= 20

Addition – revising basic number facts

1 Finish these number facts.

a 10 + 3 = ☐ **b** 10 + 6 = ☐ **c** 20 + 8 = ☐

d 20 + 7 = ☐ **e** 30 + 9 = ☐ **f** 30 + 2 = ☐

2 Put in the missing numbers or signs to make these facts true.

a 10 + ☐ =15 **b** 7 ☐ 3 = 10 **c** ☐ + 6 = 12

d ☐ + 10 = 17 **e** 10 + ☐ = 18 **f** 5 + 11 ☐ 16

3 Solve these problems. Write the number facts.

a Zahra had **13** goldfish. Her cousin gave her **7** more. How many goldfish did she have altogether?

b Omar had **$5** before his birthday. After his birthday, he had **$20**. How much money was he given? (**Hint:** which part of the problem is missing?)

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 (3) + 5 + (7) = ?

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 is the same as **3 + 5 + 7 = 15**

1 Warm up by practising these make 10 problems.

a 0 + 10 = 10 **b** 3 + ☐ = 10 **c** 1 + ☐ = 10

d 9 + ☐ = 10 **e** 5 + ☐ = 10 **f** 4 + ☐ = 10

g 8 + ☐ = 10 **h** 6 + ☐ = 10 **i** 2 + ☐ = 10

2 Practise turning these addition facts around.

a 2 + 5 = ☐

5 + 2 = ☐

b 1 + 7 = ☐

☐ + ☐ = ☐

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

a (6) 3 (4) = 13 **b** 1 5 5 = ☐

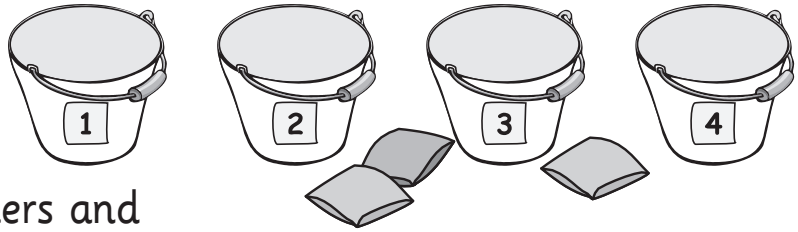
c 9 5 1 = ☐ **d** 7 6 3 = ☐

e 5 6 4 = ☐ **f** 2 1 8 = ☐

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 – counting on

Counting on is a good strategy to choose when adding 1, 2 or 3.

17 + 2 = 19

We start at 17 and count on 2 more.

10	11	12	13	14	15	16	**17**	18	19	20	21	22	23	24	25	26	27	28	29	30

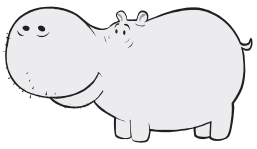
1 Use the number track to help you count on. Finish the facts.

10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30

a 14 + 2 = ☐ **b** 23 + 3 = ☐ **c** 19 + 1 = ☐

d 17 + 3 = ☐ **e** 15 + 1 = ☐ **f** 24 + 2 = ☐

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



+ 1	+ 2	+ 3
12 + 1 =	14 + 2 =	15 + 3 =
16 + 1 =	21 + 2 =	11 + 3 =
13 + 1 =	17 + 2 =	23 + 3 =
20 + 1 =	23 + 2 =	17 + 3 =
22 + 1 =	15 + 2 =	21 + 3 =
Time	**Time**	**Time**

Addition – counting on

You will need:  a partner  counters in 2 different colours

 a die marked 1, 2, 3 only

What to do:

This game is like tic tac toe. Choose a starting number on the grid 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 – counting on

If we can count on by 1, 2 or 3, then we can count on by 10, 20 and 30.

Look at **17 + 20 =** ?

We start at 17 and jump down ↓ the grid by 10s.

20 is 2 tens so we make 2 jumps.

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 by 10s by reading **down** the columns on the grid out loud to a partner. Now try doing it without looking at the grid. Give yourself a tick for each column you can do.

2 Use the number grid to help you count on. Finish the facts.

a 14 + 10 = ☐ **b** 34 + 20 = ☐ **c** 27 + 10 = ☐

d 25 + 30 = ☐ **e** 46 + 20 = ☐ **f** 35 + 30 = ☐

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 ☐ + 20 = ☐ **b** ☐ + 10 = ☐

c ☐ + 10 = ☐ **d** ☐ + 30 = ☐

Addition – counting on

You will need:  a partner  scissors  a 100 grid

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 grid 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

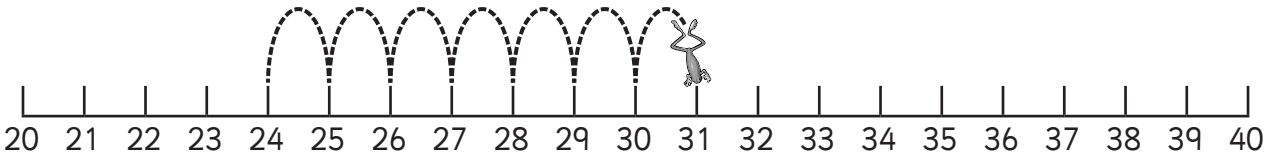
1	10
2	20
3	30
1	10
2	20
3	30

Addition – using number lines

Number lines are handy tools to use when adding.

Look at **24 + 7 =** ?

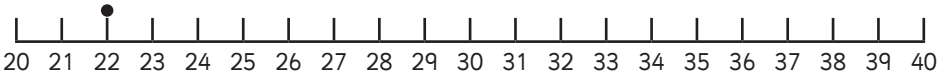
We start at 24 and jump 7 spaces. It's important to remember to count the jumps or spaces, not the numbers!



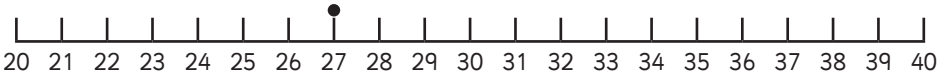
24 + 7 = 31

1 Jump along the number lines and finish each number fact.

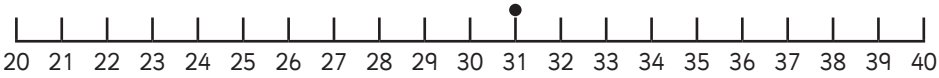
a 22 + 9 = ☐



b 27 + 7 = ☐

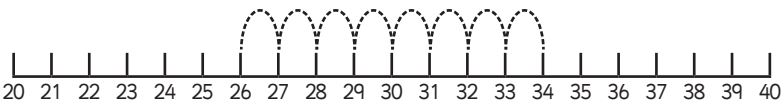


c 31 + 8 = ☐

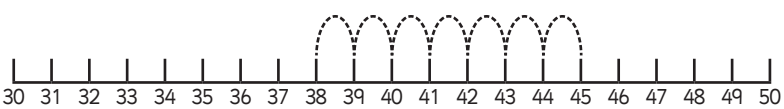


2 Trace the jumps and finish the facts.

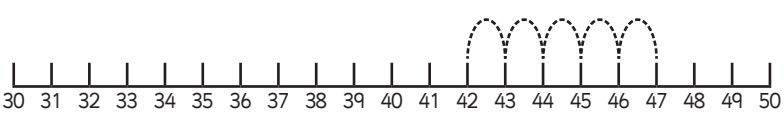
a ☐ + ☐ = ☐



b ☐ + ☐ = ☐

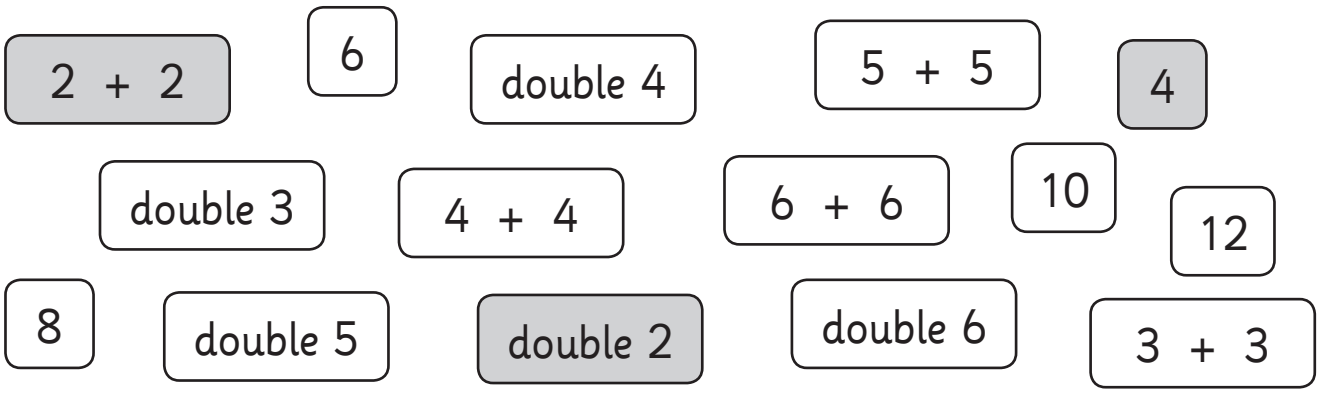


c ☐ + ☐ = ☐



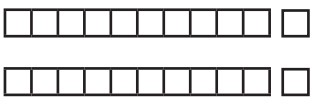
Addition – doubling

1 Warm up by colour matching these doubles facts. How quickly can you do it? The first one has been done for you.



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

a

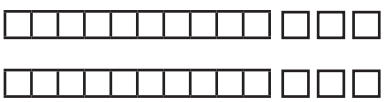


11 + 11 = ☐

b

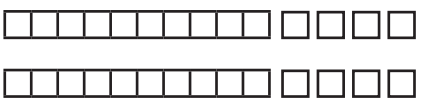
12 + 12 = ☐

c



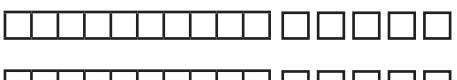
13 + 13 = ☐

d



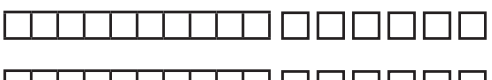
14 + 14 = ☐

e



15 + 15 = ☐

f



16 + 16 = ☐

g

17 + 17 = ☐

h

18 + 18 = ☐

Addition – doubling

You will need: a partner

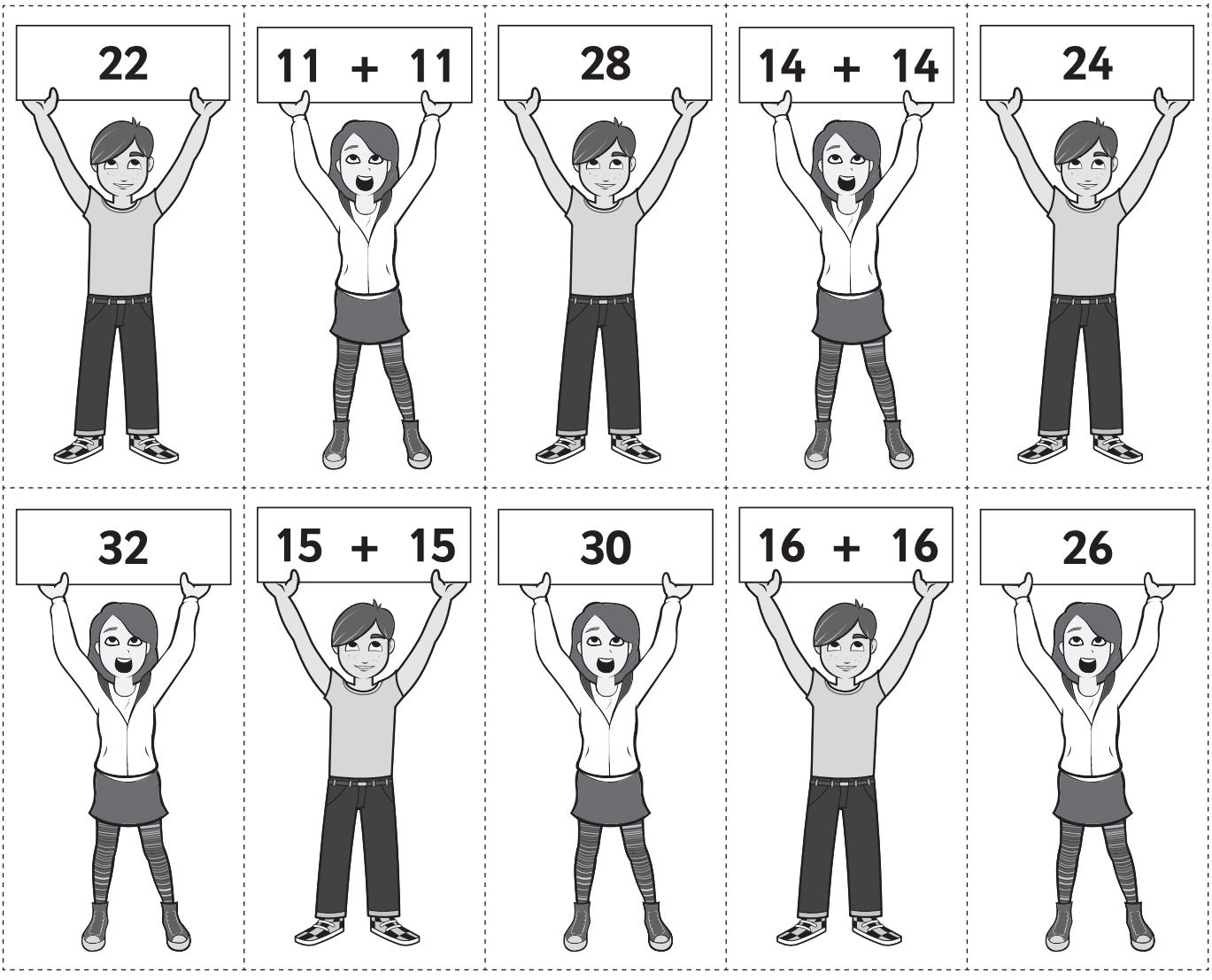
copy

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 – 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	

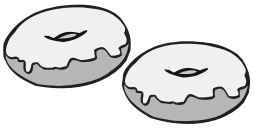
e

Double	5	50	500
			1000

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?

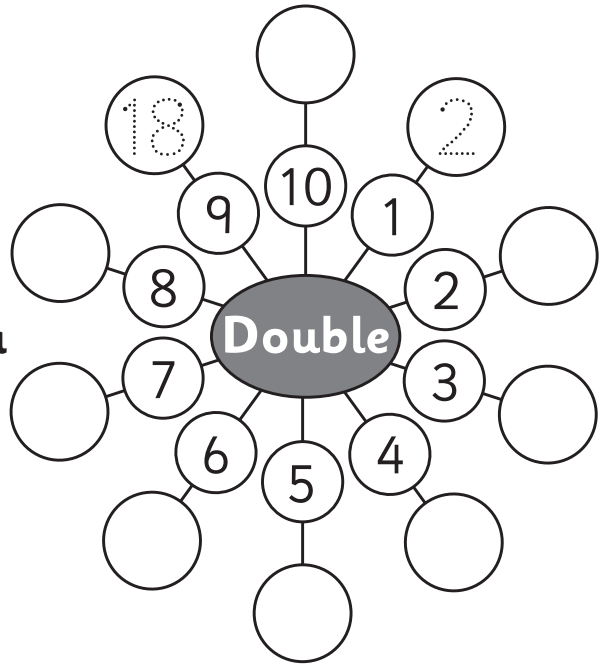
b Liam ate 5 donuts. Mark ate **double-double** that amount. How many donuts did Mark eat?



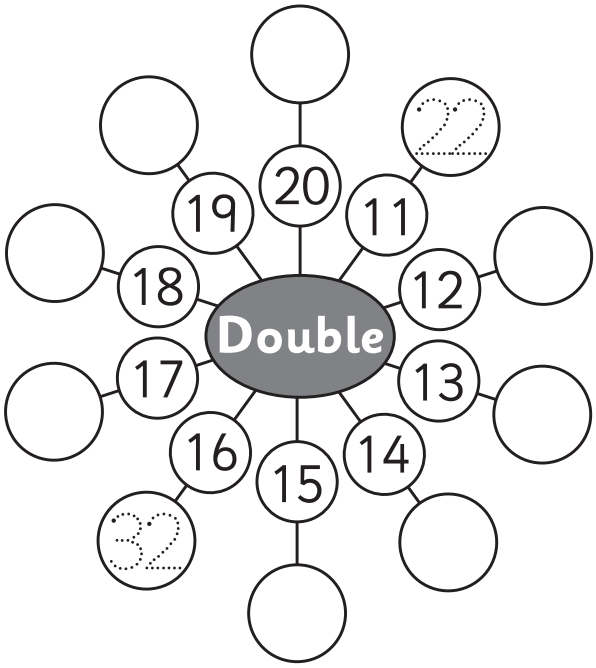
Addition – doubling

1 Finish these doubles facts.

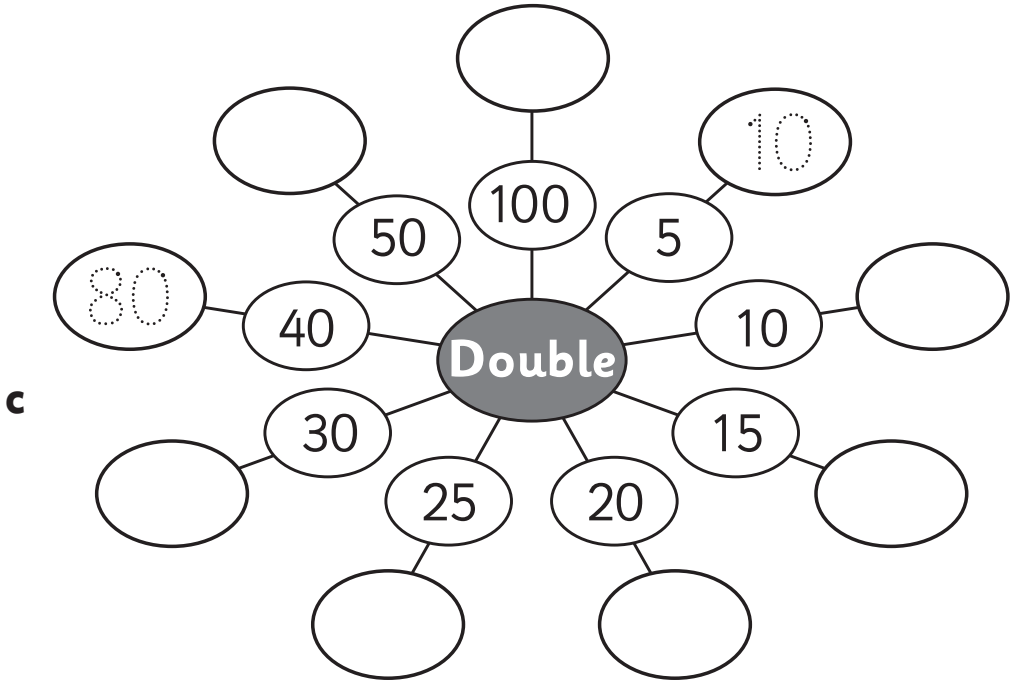
a



b



c



Addition – near doubles

Once we know our doubles we can learn the near-doubles strategy.

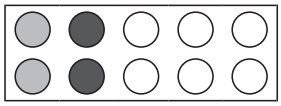
6 + 7 = ?

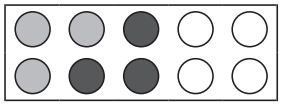
We know that 6 + 6 = 12

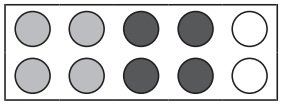
7 is 1 more than 6 so we count on 1 more.

6 + 7 = 13

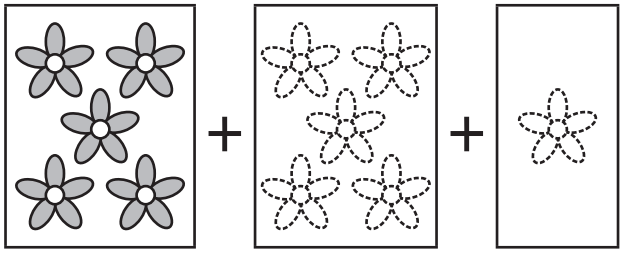
1 Colour 1 more counter on each tens frame. Complete the number facts.

a  2 + 3 = ☐ | 2 + 2 + 1 = ☐

b  3 + 4 = ☐ | ☐ + ☐ + ☐ = ☐

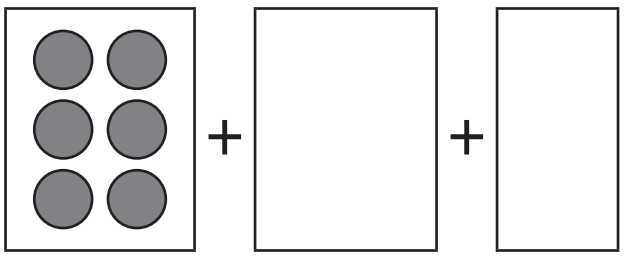
c  4 + 5 = ☐ | ☐ + ☐ + ☐ = ☐

2 Complete the double plus 1 pictures and number facts.

a 

5 + 6 = ☐

5 + 5 + 1 = ☐

b 

6 + 7 = ☐

☐ + ☐ + ☐ = ☐

Addition – near doubles

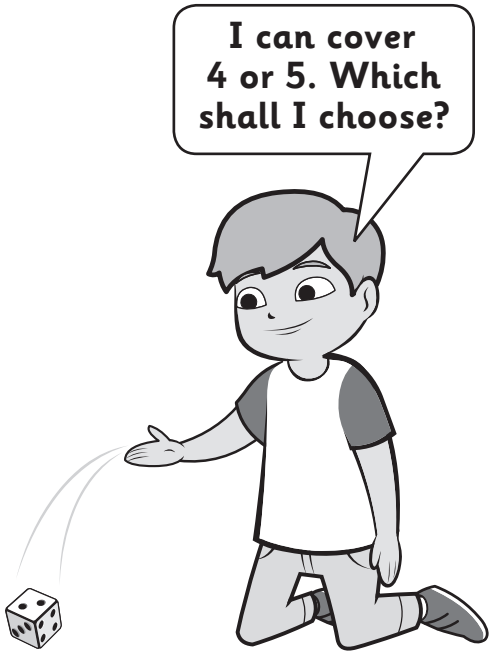
You will need: a partner, counters in 2 different colours, a die

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



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.

Look at **7 + 8 =** ?

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 = ☐	4 + 4 – 1 = ☐
3 + 4 = ☐	6 + 6 – 1 = ☐
6 + 5 = ☐	7 + 7 – 1 = ☐
7 + 6 = ☐	5 + 5 – 1 = ☐

2 Use near doubles to solve these.

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

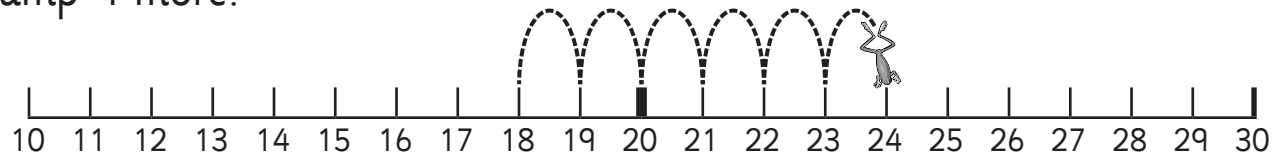
b Cameron buys **4** books. Then he buys **5** more books. How many books does Cameron have now?

Addition – bridge to 10

Number lines can help us to bridge tens.

Look at **18 + 6 =** ?

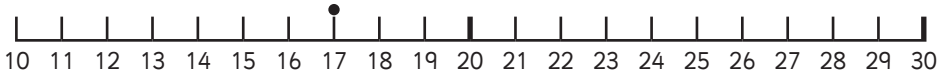
We take 2 jumps to the nearest ten. This is 20. Now we need to jump 4 more.



18 + 6 = 24

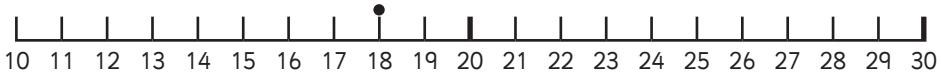
1 Jump along these number lines. Finish the statements.

a 17 + 6 = ☐



I jumped 3 to get to 20. Then I jumped 3 more.

b 18 + 8 = ☐



I jumped ☐ to get to 20. Then I jumped ☐ more.

c 16 + 7 = ☐

I jumped ☐ to get to 20. Then I jumped ☐ more.

d 19 + 4 = ☐

I jumped ☐ to get to 20. Then I jumped ☐ more.

Addition – bridge to 10

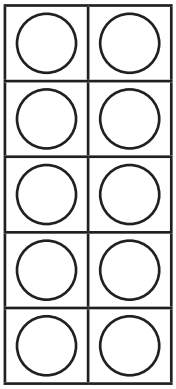
You will need:  a partner  a die  10 counters

What to do:

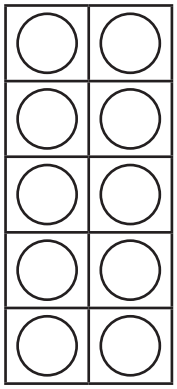
Player 1, roll the die. Colour that number of counters on your first tens frame on your own page. Player 2, do the same on your first tens frame.

Player 1, roll again. Add the 2 numbers in the frame until it is filled. Write the addition fact you have made below. Player 2, do the same.

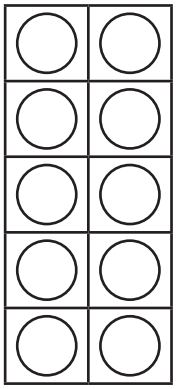
Each time you fill a frame and bridge a ten, take a counter. The first person to fill 5 frames and get 5 counters wins!



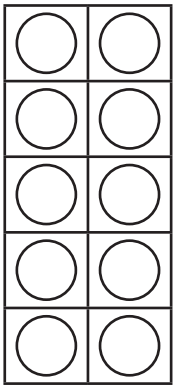
1 ten
10



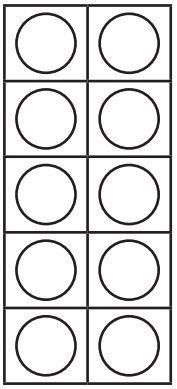
2 tens
20



3 tens
30



4 tens
40



5 tens
50

My addition facts:

Addition – introducing the vertical format

We can write addition facts in 2 ways.

$7 + 9 = 16$ **or**

	Tens	Ones
		7
+		9
	1	6

They are the same fact, just set up differently.

When we write facts vertically ↕ we line up the place values with tens in one column and ones in the other.

1 Finish these addition facts.

a

	T	O
		2
+		3

b

	T	O
		4
+		4

c

	T	O
		3
+		6

d

	T	O
		6
+		8
	1	

e

	T	O
		7
+		3
	1	

f

	T	O
		9
+		2
	1	

Addition – introducing the vertical format

1 Finish these addition facts in two ways.

a

	T	O
	1	2
+		2

12 + 2 = ☐

b

	T	O
	1	5
+		4

15 + 4 = ☐

c

	T	O
	1	0
+		6

10 + 6 = ☐

d

	T	O
		2
+	1	4

2 + 14 = ☐

e

	T	O
	2	1
+		4
	2	

21 + 4 = ☐

f

	T	O
	3	2
+		3
	3	

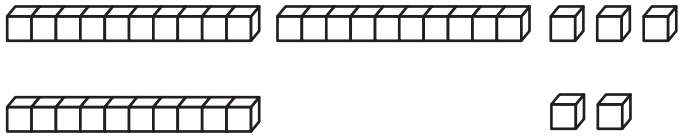
32 + 3 = ☐

Addition – adding 2-digit numbers, no regrouping

How do we solve a problem like **23 + 12 =** ?

We can split the numbers into tens and ones and add them separately.

23
\+
12

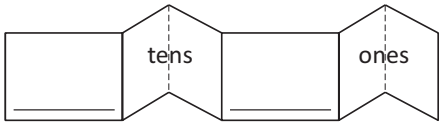


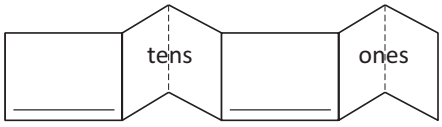
2 tens **3** ones
\+
1 ten **2** ones
3 tens **5** ones

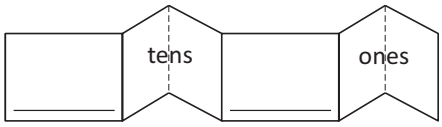
3 tens and **5** ones is **35**.

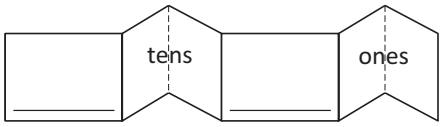
23 + 12 = 35

1 Warm up by splitting these numbers into tens and ones.

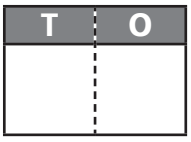
a 34 is 

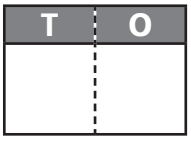
b 26 is 

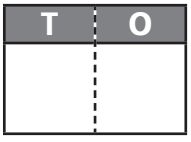
c 15 is 

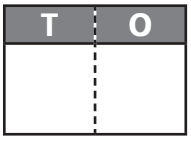
d 50 is 

2 Add the tens and ones separately to finish these facts.

a 22 + 17 = 22 + 17 = 

b 34 + 13 = 34 + 13 = 

c 26 + 11 = 26 + 11 = 

d 14 + 15 = 14 + 15 = 

Addition – adding 2-digit numbers, no regrouping

Writing problems vertically ↕ helps us work with the tens and ones separately. We add the ones first in case we end up with more than 9 ones.

3 ones + **1** one = **4** ones

2 tens + **3** tens = **5** tens

5 tens and **4** ones is **54**.

23 + 31 = 54

	Tens	Ones
	2	3
+	3	1
	5	4

1 Finish these addition problems. Remember to start with the ones and then add the tens

a

	T	O
	4	2
+	2	6

b

	T	O
	3	1
+	5	2

c

	T	O
	4	3
+	3	3

2 Set up these problems vertically and solve.

a 23 + 16 = ☐

	T	O
+		

b 42 + 13 = ☐

	T	O
+		

c 12 + 51 = ☐

	T	O
+		

Addition – adding 2-digit numbers, no regrouping

We can also use hundred grids to help us add tens and ones.
We count **down** the grid to add the tens and **across** to the right to add the ones.

25 + 23 = ?

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

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

We make 2 jumps of 10 ↓ **down** the grid.

Then we make 3 jumps of one **across** → the grid.

25 + 23 = 48

1 Use the hundred grid to help you solve these problems.

a 33 + 21 = ☐ **b** 17 + 13 = ☐ **c** 1 + 21 = ☐

d 52 + 24 = ☐ **e** 67 + 23 = ☐ **f** 71 + 12 = ☐

2 Solve.

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

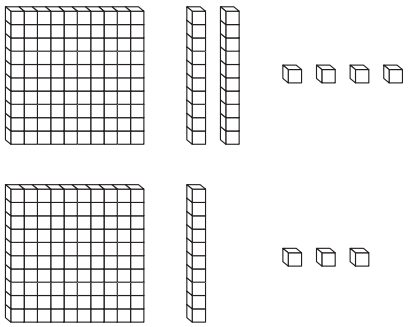
b You start at 54. You make 4 tens jumps down and 4 ones jumps across. Which number do you land on? ☐

Addition – adding 3-digit numbers, no regrouping

Once we know how to add 2-digit numbers we can also add 3-digit numbers.

124 + 113 = ?

124 + 113



1 hundred **2** tens **4** ones

+

1 hundred **1** ten **3** ones

2 hundreds **3** tens **7** ones

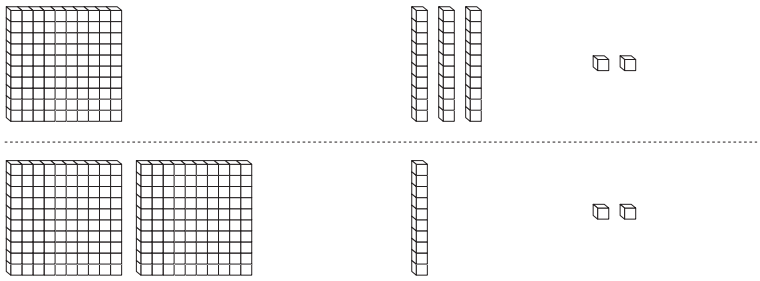
2 hundreds and **3** tens and **7** ones is **237**.

124 + 113 = 237

1 Add the hundreds, tens and ones separately to finish these facts.

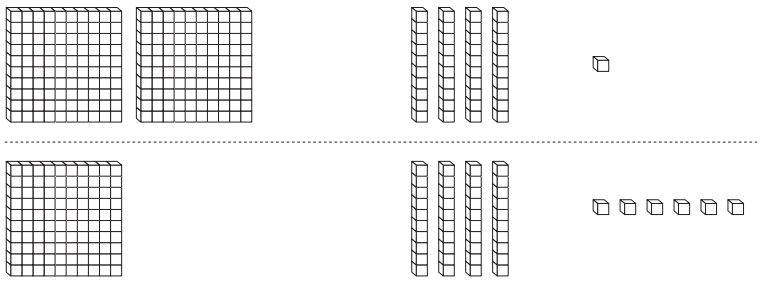
a 132 + 212 = ☐

132 + 212



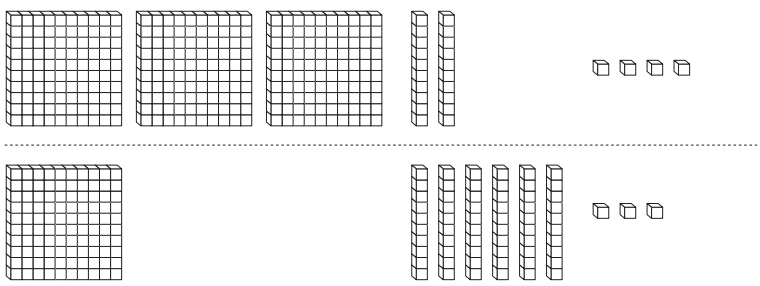
b 241 + 146 = ☐

241 + 146



c 324 + 163 = ☐

324 + 163



Addition – adding 3-digit numbers, no regrouping

We can write these problems vertically too. This helps us to work with the hundreds, tens and ones separately.

We start with the ones. 4 ones + 2 ones = **6** ones

Then we add the tens. 3 tens + 5 tens = **8** tens

Then we add the hundreds 2 hundreds + 1 hundred = **3** hundreds

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

1 Finish these addition problems. Remember to start with the ones and then add the tens.

a

	H	T	O
	1	4	2
+	1	3	3

b

	H	T	O
	3	3	3
+	2	1	4

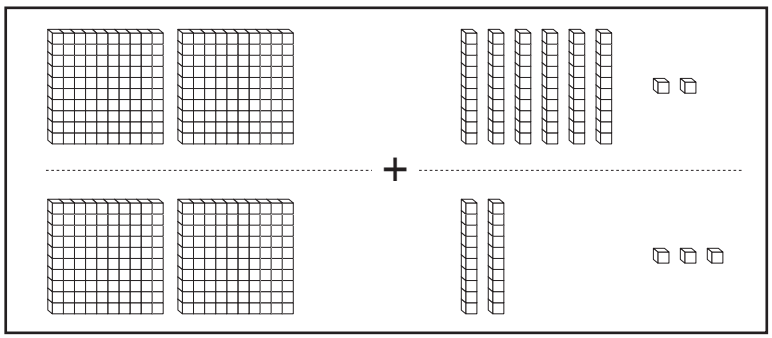
c

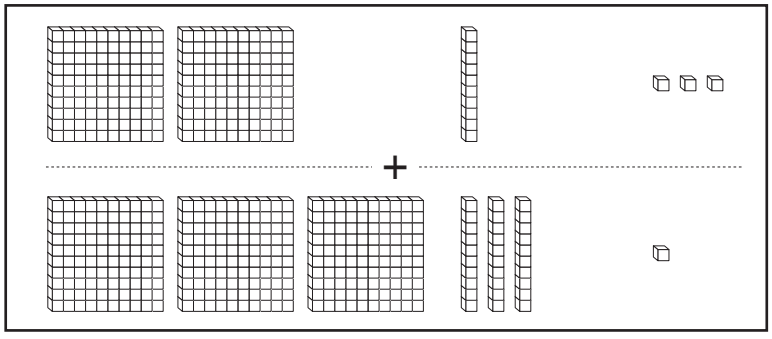
	H	T	O
	1	8	6
+	7	1	2

2 Draw lines to match the problems with their sets of blocks.

	H	T	O
	2	1	3
+	3	3	1
	5	4	4

	H	T	O
	2	6	2
+	2	2	3
	4	8	5





Subtraction – facts to 10 revision

1 Finish these number facts.

a 5 – 2 = ☐

5 – 4 = ☐

5 – 1 = ☐

5 – 0 = ☐

b 10 – 3 = ☐

10 – 6 = ☐

10 – 9 = ☐

10 – 8 = ☐

c 7 – 3 = ☐

8 – 5 = ☐

3 – 2 = ☐

9 – 6 = ☐

2 Add the missing numbers to make these number facts true.

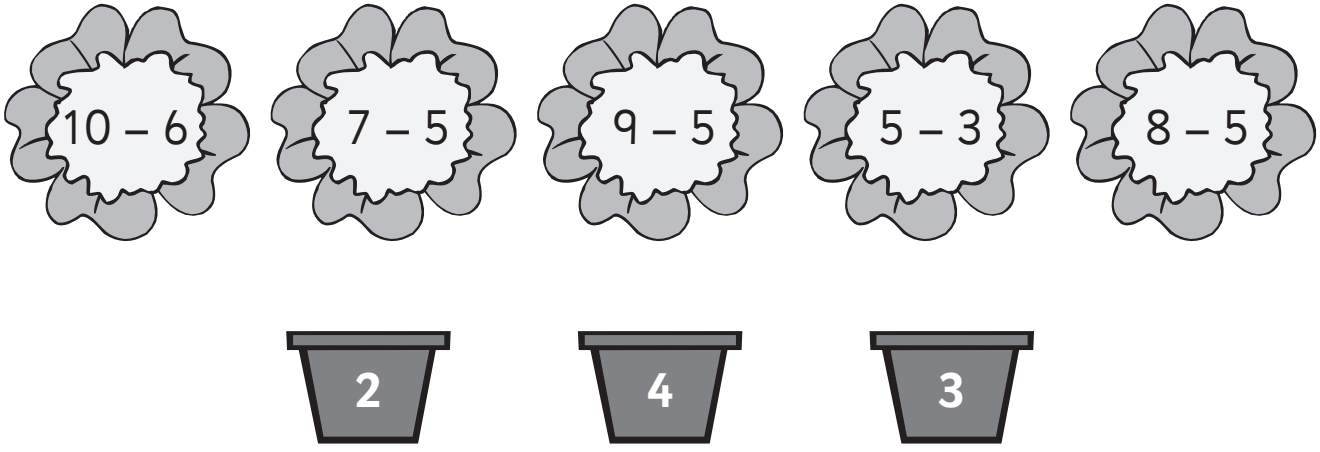
a 8 – ☐ = 4

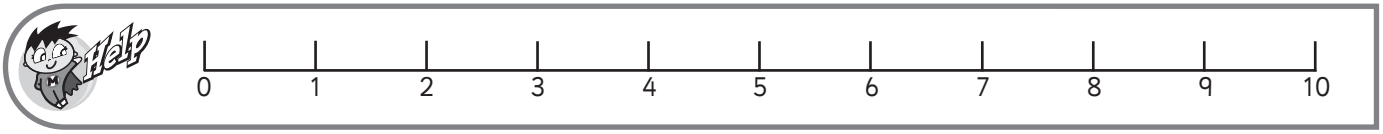
b 10 – ☐ = 6

c ☐ – 3 = 5

d ☐ – 9 = 1

3 Draw stems to match the flowers to the correct pots.





Subtraction – take away

When we subtract, we 'take away' one number or amount from another.

Look at this subtraction story.

The Smiths' cat had 7 kittens. They gave 5 away.
How many kittens did they have left? They had 2 left.

We write this number fact as **7 – 5 = 2**

1 We use a number of different words for subtract.

Work with a partner and see if you can finish these subtraction words.

m	t	find the d

2 Write the number fact to match the story and picture.

Star cooked 8 muffins. She gave 4 to her friend. How many muffins did Star have left?

[ ] – [ ] = [ ]

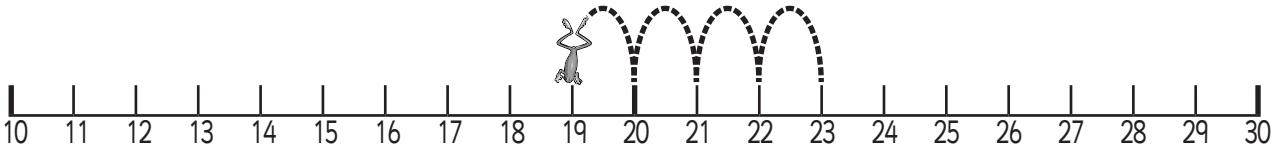
3 Write a subtraction story that would fit this picture story. Finish the matching number fact.

[ ] – [ ] = [ ]

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 =** ?



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

23 – 4 = 19

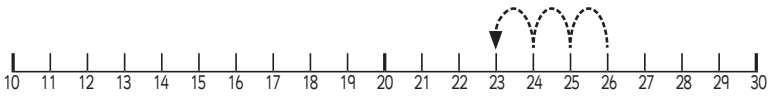
1 Use the number line above and count back to solve these subtraction problems.

a 17 – 4 = ☐ **b** 18 – 2 = ☐ **c** 19 – 5 = ☐

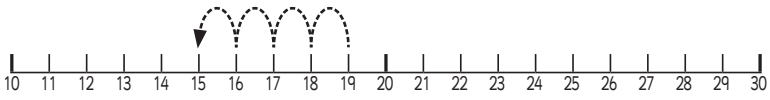
d 25 – 2 = ☐ **e** 30 – 4 = ☐ **f** 21 – 2 = ☐

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

a ☐ – ☐ = ☐



b ☐ – ☐ = ☐



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

25 – 22 = ☐

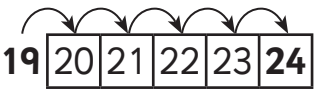
Subtraction – counting on and counting back

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.

24 – 19 = ?

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



We counted 5 more numbers.

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) = ☐

b 19 – 14 = ☐

c 23 – 20 = ☐

d 30 – 26 = ☐

e 18 – 14 = ☐

f 31 – 28 = ☐

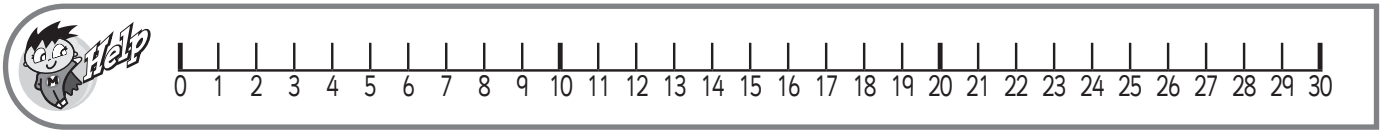
2 Use counting on to solve these problems. Write the number facts.

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

☐ – ☐ = ☐

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

☐ – ☐ = ☐

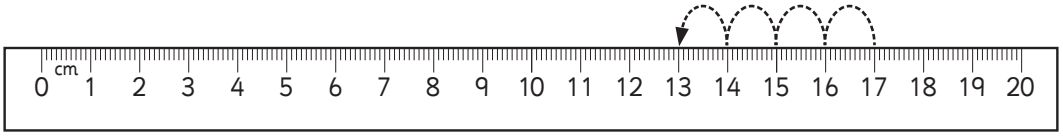


Subtraction – counting on and counting back

Rulers can help us count on and back.

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

17 – 13 = ?



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 = ☐ **b** 25 – 4 = ☐ **c** 27 – 2 = ☐

d 24 – 20 = ☐ **e** 18 – 16 = ☐ **f** 12 – 9 = ☐

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.

☐ – ☐ = ☐ ☐ – ☐ = ☐

☐ – ☐ = ☐ ☐ – ☐ = ☐

☐ – ☐ = ☐ ☐ – ☐ = ☐

Subtraction – counting on and counting back

If we can count back by 1, 2 or 3, then we can count back by 10, 20 and 30.

Look at **65 – 20 =** ?

We start at 65 and count back ↑ by 10s.

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 number grid to help solve these problems.

a 46 – 20 = ☐ **b** 61 – 10 = ☐ **c** 70 – 30 = ☐

d 24 – 10 = ☐ **e** 34 – 10 = ☐ **f** 55 – 20 = ☐

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

a 4 – 1 = ☐ 40 – 10 = ☐ 400 – 100 = ☐

b 5 – 3 = ☐ 50 – 30 = ☐ 500 – 300 = ☐

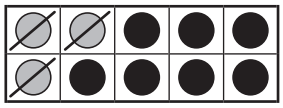
c 9 – 2 = ☐ 90 – 20 = ☐ 900 – 200 = ☐

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 = ?

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 + ☐ = 12

12 – 4 = ☐

b 7 + ☐ = 19

19 – 7 = ☐

c 14 + ☐ = 20

20 – 14 = ☐

d 9 + ☐ = 18

18 – 9 = ☐

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

a 23 – 4 = 19

☐ + ☐ = 23

b 19 – 7 = 12

☐ + ☐ = ☐

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 =** ?

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

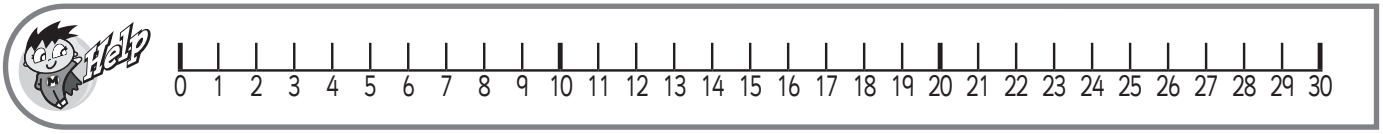
1 Use your doubles addition strategies to solve these subtraction problems.

a 10 – 5 =	**b** 18 – 9 =	**c** 22 – 11 =
20 – 10 =	16 – 8 =	40 – 20 =
50 – 25 =	12 – 6 =	30 – 15 =
100 – 50 =	14 – 7 =	32 – 16 =

2 Solve these.

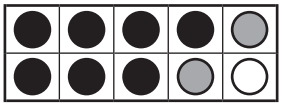
a Lucy is **4** years older than Marcus. Marcus is **4**. How old is Lucy?

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

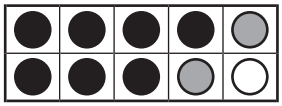


Subtraction – relating addition and subtraction

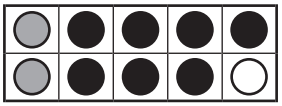
Here we have 7 black counters
and 2 grey counters.
That's 9 counters altogether.



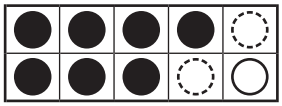
What addition and subtraction facts can we make using 7, 2 and 9?



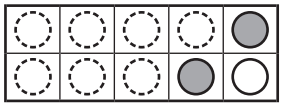
7 + 2 = 9



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

3 + 2 = ☐ 5 – 2 = ☐

2 + 3 = ☐ 5 – 3 = ☐

b

4 + 1 = ☐ 5 – ☐ = ☐

1 + ☐ = ☐ ☐ – ☐ = ☐

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

4 + 3 = 7 7 – 4 = 3

☐ + ☐ = ☐ ☐ – ☐ = ☐

Subtraction – relating addition and subtraction

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

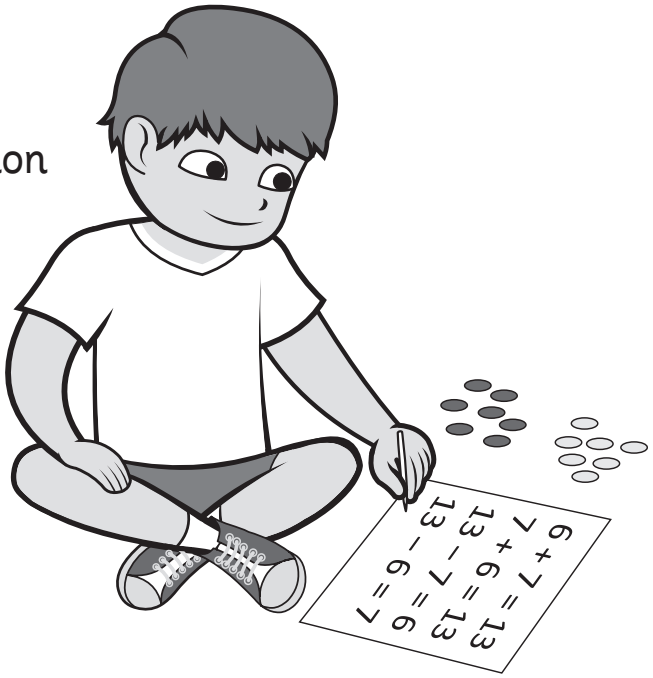
What to do:

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 – 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**.

If they both had **6** fish, they would be the same.

If they both had **4** fish, they would be the same.

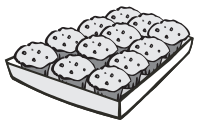
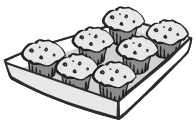
The difference is **2** fish.

To work out the difference, we subtract the smaller number from the larger number. **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.

a   4 – ☐ = ☐

b   8 – ☐ = ☐

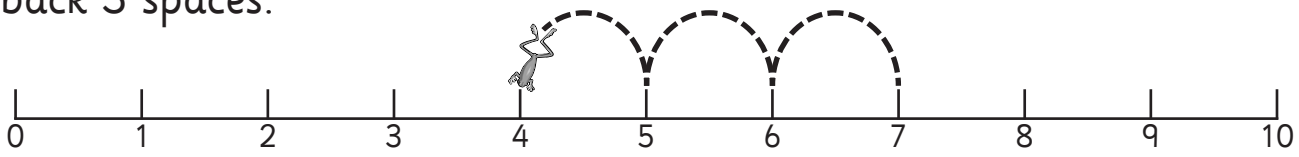
c   ☐ – 7 = ☐

2 Draw flowers in the vases so that the difference between them is 2 flowers. This means 1 vase has 2 more flowers than the other.

Subtraction – difference

'I am thinking of 2 numbers. They have a difference of **3**. The **bigger** number is **7**.'

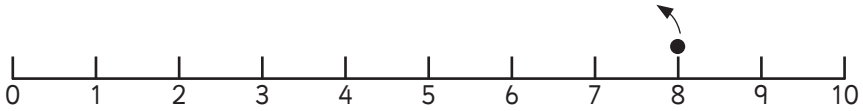
We know the bigger number is 7. To find the difference we jump back 3 spaces.



7 – 3 = 4

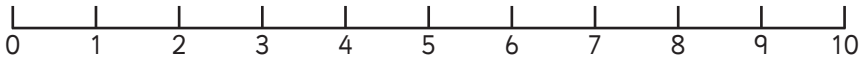
1 Show the jumps and solve the problem.

a I am thinking of 2 numbers. They have a difference of **5**. The **bigger** number is **8**.



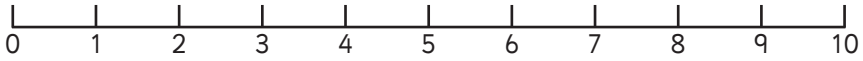
I start on [8]. I jump back [5]. 8 – 5 = [ ]

b I am thinking of 2 numbers. They have a difference of **2**. The **bigger** number is **4**.



I start on [ ]. I jump back [ ]. [ ] – [ ] = [ ]

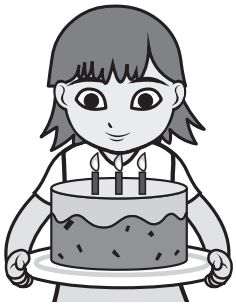
c I am thinking of 2 numbers. They have a difference of **3**. The **bigger** number is **7**.



I start on [ ]. I jump back [ ]. [ ] – [ ] = [ ]

Subtraction – difference

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

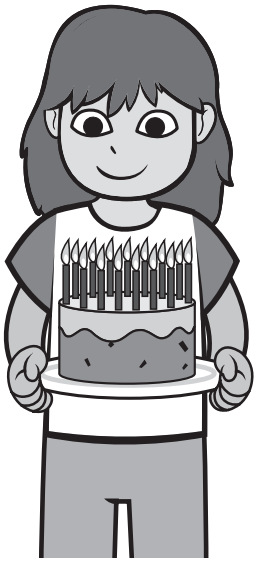


Li

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 cake with candles to match your age.

What is the difference in age between:

a you and Lou? _____ years

b you and Li? _____ years

c you and Liam? _____ years

3 How old is your teacher or mum or dad? Find the difference between your age and their age. Write the number fact to match.

Subtraction – exploring subtraction problems

Sometimes in subtraction stories, we know the ending but we don't know all of the problem. Look at this story.

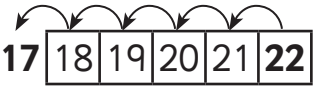
2F had 22 skipping ropes. They gave some to 2G.
Then they had 17 left.

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

22 – ☐ = 17

Counting back is a good strategy to use here because the difference between the numbers is small.

We count back from 22 to 17.



We counted back 5. **22 – 5 = 17**

1 Solve using a strategy of your choice.

a Mara buys 17 lolly snakes. She gives some to her friend and then has 13 left.

17 – ☐ = 13

b Luca has $20. He spends some at the shop and has $14 left.

$☐ – $☐ = $☐

Subtraction – exploring subtraction problems

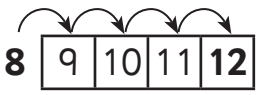
Sometimes we know the ending and the middle but we don't know the start of the problem. Look at this story.

Mrs Luke had some cows. She sold 4 at the market. She had 8 left.

We know she sold 4 cows. **We know** she ended up with 8. **What we don't know** is how many cows she started with.

$$\square - 4 = 8$$

A good way to solve this is to count on.
We count on 4 more starting at 8.



Let's put in 12 and see if the fact makes sense.

$$12 - 4 = 8$$

Yes, it does.

1 Solve.

a Mr Mars has some tomatoes. 5 were nibbled by bugs so he only has 7 left to eat. How many did he have at the start?

$$\square - 5 = 7$$

b Tia took her pocket money to the shop. She spent $14 and went home with $3. How much pocket money did she have at the start?

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

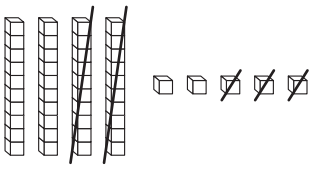
Subtraction – subtracting 2-digit numbers

Look at **45 – 23 =** ?

How do we solve this? It helps to think of the numbers as tens and ones.

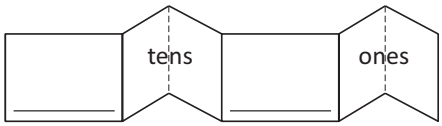
45 is **4** tens and **5** ones. 23 is **2** tens and **3** ones.

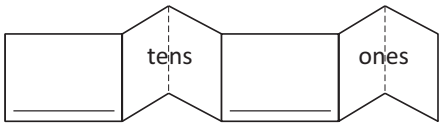
We subtract **2** tens and **3** ones from 45.

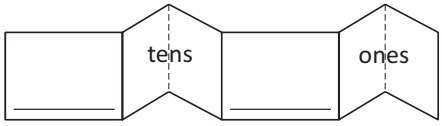


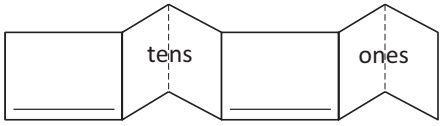
45 – 23 = 22

1 Warm up by splitting these numbers into tens and ones.

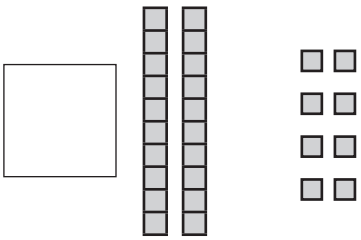
a 27 is 

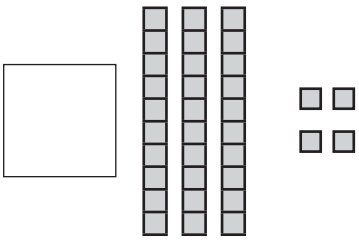
b 98 is 

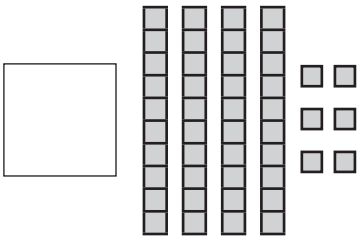
c 12 is 

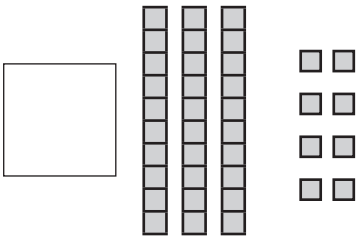
d 75 is 

2 Cross off the tens and ones blocks to help solve these problems.

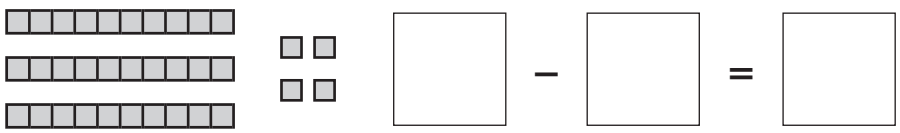
a 28 – 17 = 

b 34 – 13 = 

c 46 – 12 = 

d 38 – 25 = 

3 Write the number fact to match.

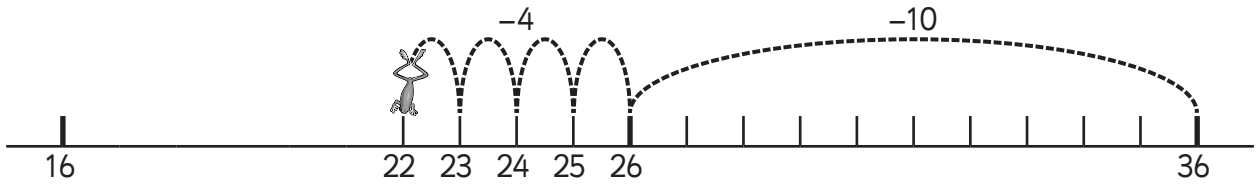


Subtraction – jump strategy

We can also use number lines to help us subtract 2-digit numbers.

36 – 14 = ?

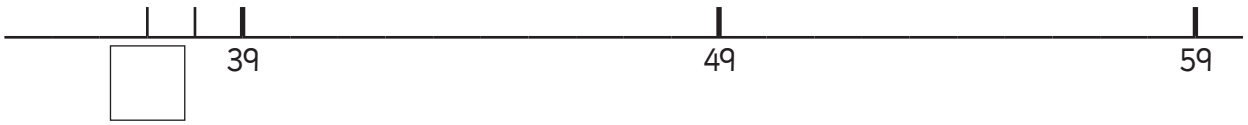
14 is 1 ten and 4 ones. We jump back 1 ten, then 4 ones.



36 – 14 = 22

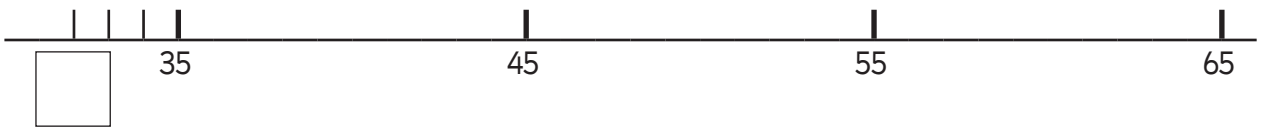
1 Use the jump strategy to solve these problems. Show the jumps and fill in the missing numbers on the number lines.

a 59 – 22 = ☐ 22 is _____ tens and _____ ones



b 38 – 21 = ☐ 21 is _____ tens and _____ one

c 65 – 33 = ☐ 33 is _____ tens and _____ ones



Subtraction – jump strategy

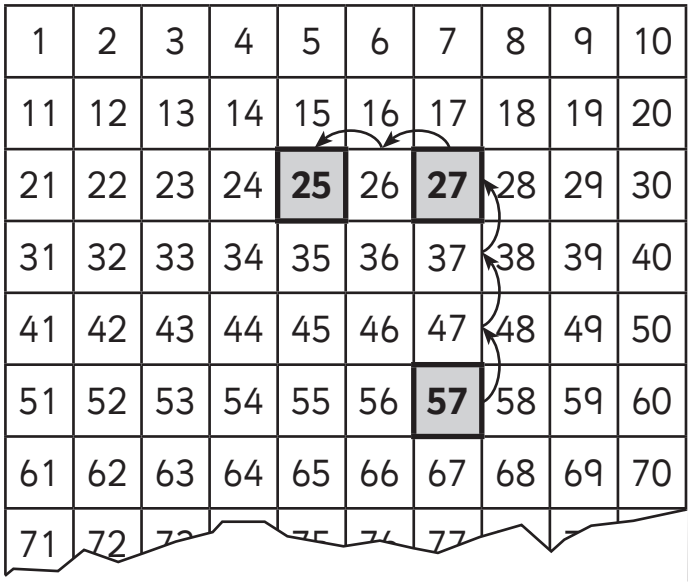
Number grids can also help us subtract using the jump strategy.

57 – 32 = ?

32 is 3 tens and 2 ones.

We make 3 tens jumps and 2 ones jumps **back**. This means we jump ↑ for the tens jumps and ← 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								

1 Use the number grid and the jump strategy to solve these problems.

a 64 – 13 = ☐

13 is __ ten ↑ and __ ones ←

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

b 67 – 34 = ☐

34 is __ tens ↑ and __ ones ←

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 = ☐

26 is __ tens ↑ and __ ones ←

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 = ☐

24 is __ tens ↑ and __ ones ←

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 – written methods, no regrouping

Sometimes we use a written format to help us solve subtraction problems. We set up problems vertically ↕ as this helps us work with the tens and ones separately.

When we work problems out this way, we subtract the ones first, then the tens.

4 ones – **1** one = **3** ones

3 tens – **2** tens = **1** ten

1 ten and **3** ones is **13**

34 – 21 = 13

	T	O
	3	4
–	2	1
	1	3

1 Finish these subtraction problems. Remember to subtract the ones and then subtract the tens.

a

	T	O
	4	6
–	1	5

b

	T	O
	3	9
–	2	2

c

	T	O
	4	8
–	3	3

d

	T	O
	5	5
–	1	4

e

	T	O
	6	4
–	2	1

f

	T	O
	6	9
–	5	3

Subtraction – written methods, no regrouping

1 Solve these problems. If there are no ones in the answer, we write 0. If there are no tens in the answer, we leave the box blank.

a

	T	O
	7	2
–	2	2

b

	T	O
	5	4
–	5	1

c

	T	O
	8	4
–	5	4

d

	T	O
	2	7
–	2	3

e

	T	O
	7	5
–	5	5

f

	T	O
	2	9
–	2	2

2 Set up these problems vertically and solve.

a 34 – 12 = ☐

	T	O
–		

b 42 – 21 = ☐

	T	O
–		

c 58 – 42 = ☐

	T	O
–		

Subtraction – written methods, no regrouping

1 Solve these word problems. Show the number facts both ways.

a 2G raised $96 towards new sports gear. They spent $34 on a new cricket set. How much do they have left to spend?

☐ – ☐ = ☐

	T	O
	☐	☐
–	☐	☐
$	☐	☐

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

☐ – ☐ = ☐

	T	O
	☐	☐
–	☐	☐
	☐	☐

c Danny is given $53 for his birthday. He spends $31. How much does he have left?

☐ – ☐ = ☐

	T	O
	☐	☐
–	☐	☐
$	☐	☐

Subtraction – explore

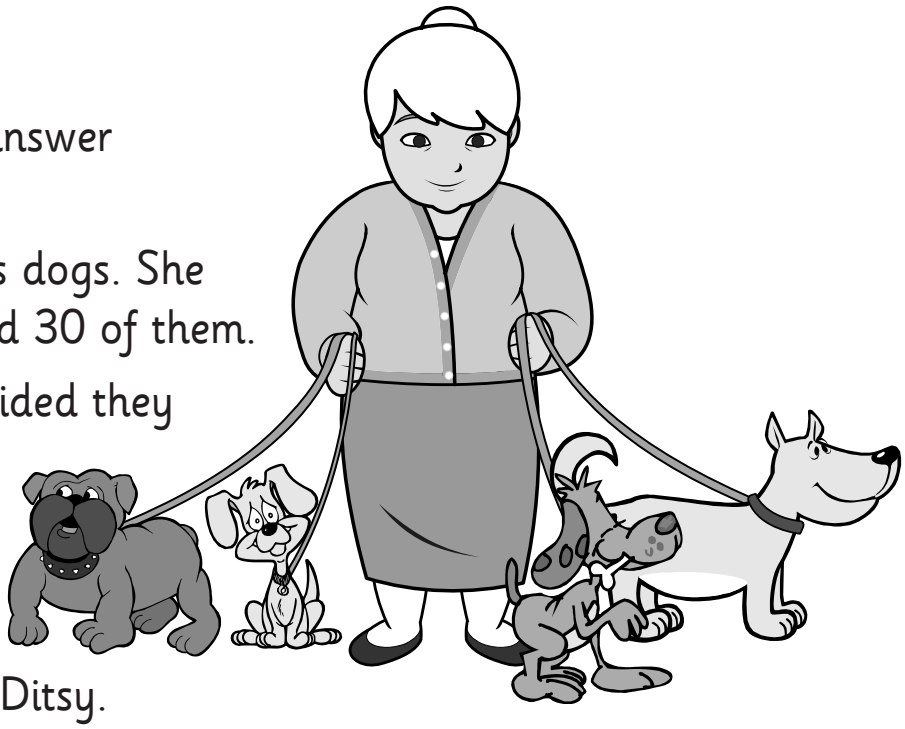
You will need: a partner

What to do:

Work with a partner to answer this problem.

Dana the Dog Lady loves dogs. She once had between 20 and 30 of them.

As she got older, she decided they were too much for her and gave some away to families. She kept 4 trusty old friends: Daisy, Duke, Dahlia and Ditsy.



How many dogs did she start with? How many did she give away?

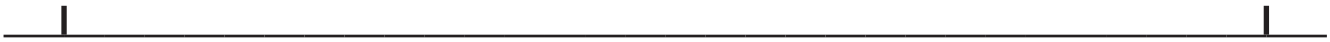
Work with a partner to think of some options. Record them as number facts below. How many options can you come up with?

Subtraction – explore

You will need: a partner

What to do:

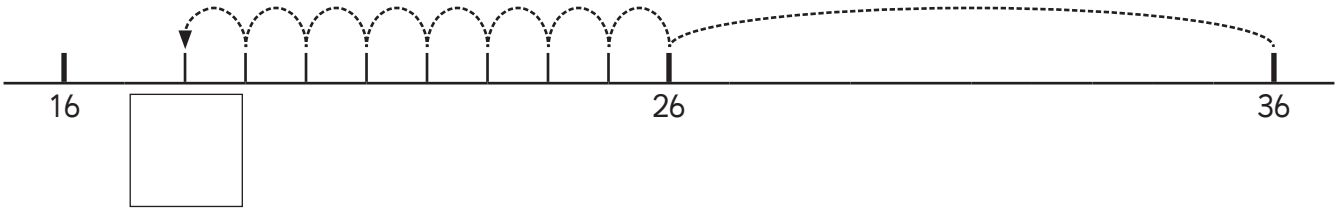
Show 46 – 23 on this blank number line. Write the number fact.



□ – □ = □

What to do next:

Write the number fact and a subtraction story to match this number line.



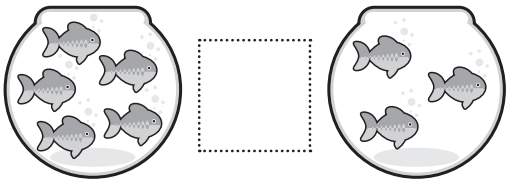
□ – □ = □

Multiplication – equal groups

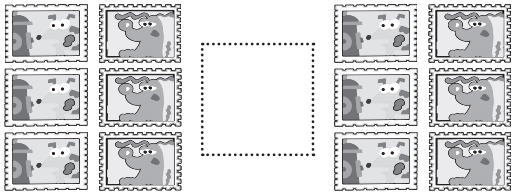
When we count in groups, the groups must be **equal** or **the same**.
How many carrots are there? Let's look at these equal groups.

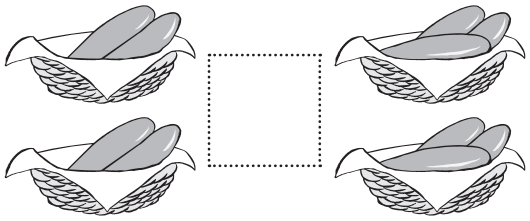
3 bunches of **3** is **9** altogether.

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

a 

b 

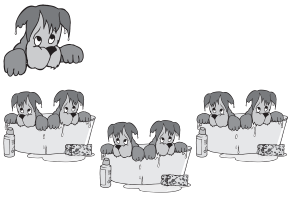
c 

d 

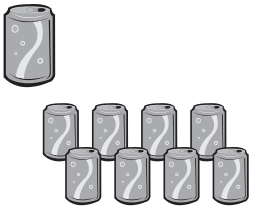
2 How many are there?

a 

2 plates of ☐  is ☐  altogether.

b 

☐ baskets of ☐  is ☐  altogether.

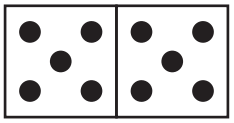
c 

☐ rows of ☐  is ☐  altogether.

Multiplication – equal groups

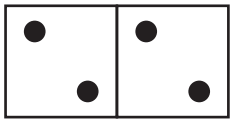
1 Fill in the missing numbers to finish these facts.

a



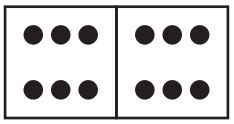
2 groups of 5 = ☐

b



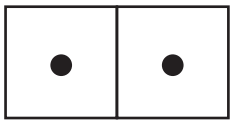
☐ groups of ☐ = ☐

c



☐ groups of ☐ = ☐

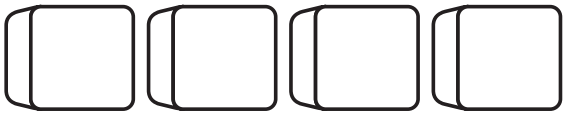
d



☐ groups of ☐ = ☐

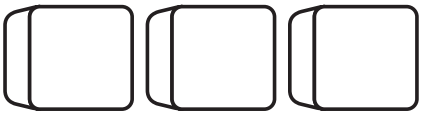
2 Draw dots on the dice to match. Finish the number facts.

a



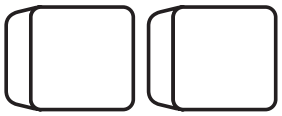
4 groups of 3 = ☐

b



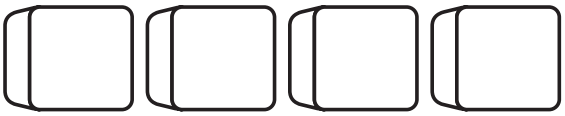
3 groups of 2 = ☐

c



2 groups of 5 = ☐

d

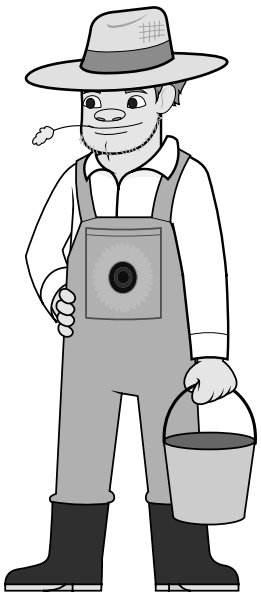


4 groups of 4 = ☐

3 Xiang had 5 lolly bags. She put 4 lollies in each bag. How many lollies did she use? Draw or use counters to help you solve the problem. Show your solution.

Multiplication – equal groups

You will need:  pencils



What to do:

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

a Farmer Joe has 6 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?

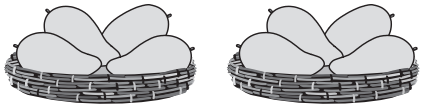
c He plants 3 rows of carrots. Each row has 8 carrots. How many carrots are there?

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

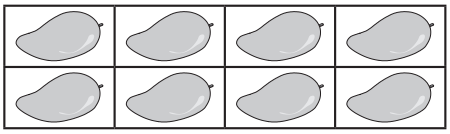
Multiplication – groups and arrays

We can arrange objects into **groups** or into **rows and columns**.

This is **2** groups of **4** mangoes.
There are **8** mangoes altogether.



This is **2** rows of **4** mangoes.
There are **8** mangoes altogether.



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

a 

☐ groups of ☐ is ☐

b 

☐ groups of ☐ is ☐

c 

☐ groups of ☐ is ☐

d 

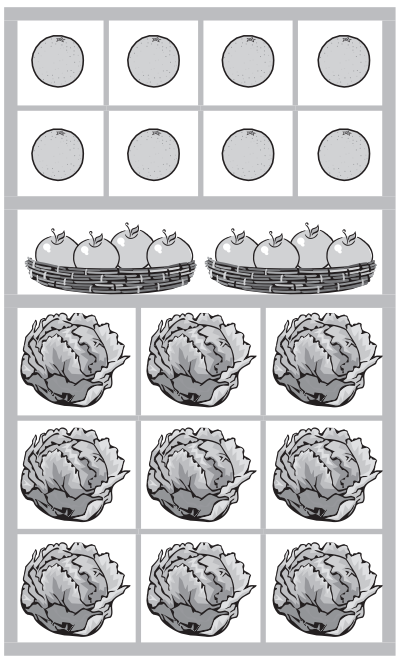
☐ rows of ☐ is ☐

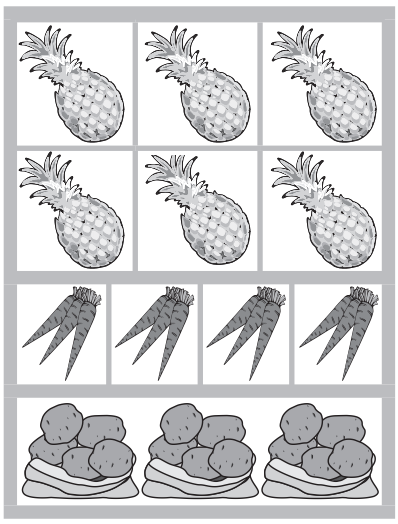
e 

☐ rows of ☐ is ☐

f 

☐ rows of ☐ is ☐

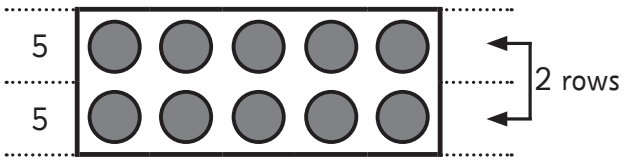




Multiplication – groups and arrays

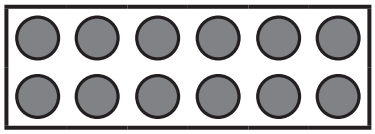
When we put objects into rows and columns like this we call it an **array**. Arrays can make it easier to work out how many objects there are in a group. We can use skip counting to help.

2 rows of **5** is **10**



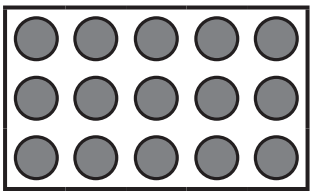
1 How many dots are in the arrays?

a



☐ rows of ☐ is ☐

b

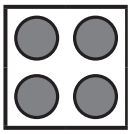


☐ rows of ☐ is ☐

c

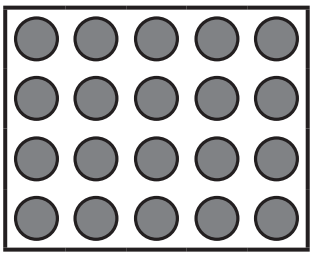
☐ row of ☐ is ☐

d



☐ rows of ☐ is ☐

2 How many dots are there? ☐



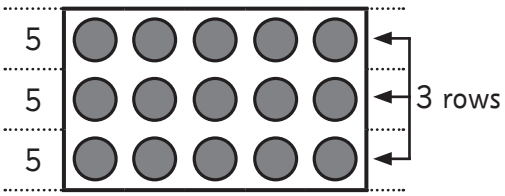
Did you count every dot or did you use a different strategy? Explain how you did it.

Multiplication – repeated addition

One way to describe multiplication is **repeated addition**. Look at this array.

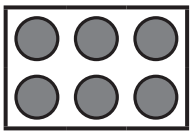
There are 3 rows. There are 5 dots in each row. We can think of this as:

5 + 5 + 5 = 15



1 How many dots are in the array?

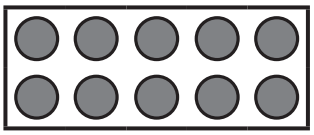
a



☐ rows of ☐ is ☐

☐ + ☐ = ☐

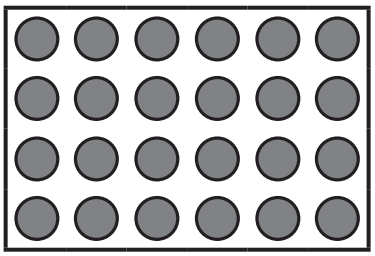
b



☐ rows of ☐ is ☐

☐ + ☐ = ☐

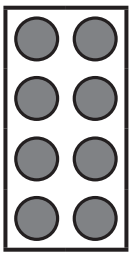
c



☐ rows of ☐ is ☐

☐ + ☐ + ☐ + ☐ = ☐

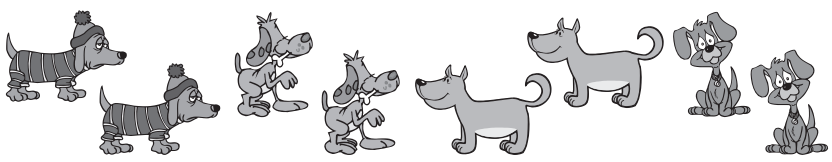
d



☐ rows of ☐ is ☐

☐ + ☐ + ☐ + ☐ = ☐

2 How many dogs are here? Record using repeated addition.



Multiplication – the × symbol

We know that …

+ means add or join **–** means subtract **=** means the same as

What does **×** mean? It means 'of'.

$$2 \times 5$$

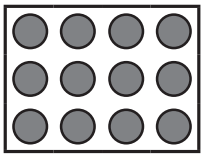
We have 2 rows of 5

Row 1  ← 5 butterflies

Row 2  ← 5 butterflies

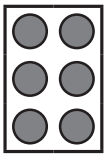
2 rows of 5 is 10 altogether. We write this as **2 × 5 = 10**

1 How many dots are in the array? Write the number facts.

a 

3 rows of 4 is ☐

☐ × ☐ = ☐

b 

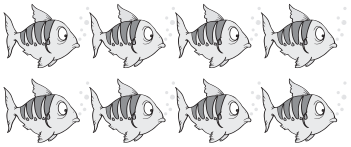
☐ rows of ☐ is ☐

☐ × ☐ = ☐

c 

☐ rows of ☐ is ☐

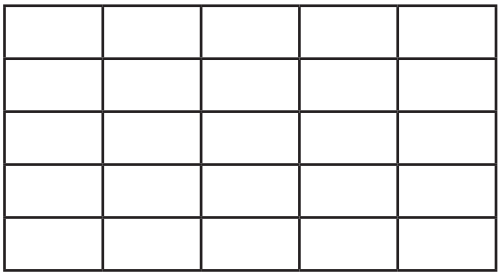
☐ × ☐ = ☐

d 

☐ rows of ☐ is ☐

☐ × ☐ = ☐

2 Colour the right number of squares to match the facts.



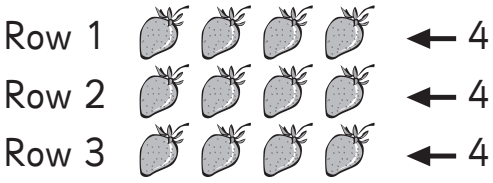
2 rows of 5 is 10

2 × 5 = 10

Multiplication – the × symbol

3×4

We have 3 rows of 4

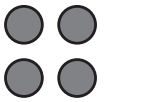


We sometimes say this as '3 times 4' or 'three fours'.

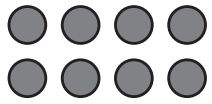
1 Merlin the Multiplication Magician thinks the following. If you think he is right, trace and colour his star.

a 3 × 2 means 3 rows of 2. Is he right?

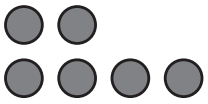
b 2 × 3 means 2 rows of 2. Is he right?



c 2 × 4 means 2 rows of 4. Is he right?

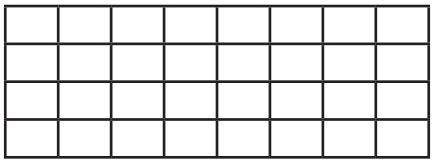


d 4 × 2 means 4 add 2. Is he right?



2 Colour the squares in the grid to show these facts. Finish them.

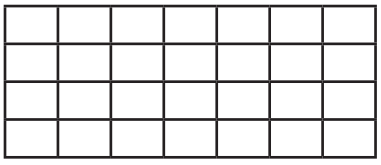
a



3 rows of 7 is ☐

3 × 7 = ☐

b



3 rows of 6 is ☐

3 × 6 = ☐

Multiplication – the × symbol

You will need: a partner, scissors, counters, a lead pencil

C copy

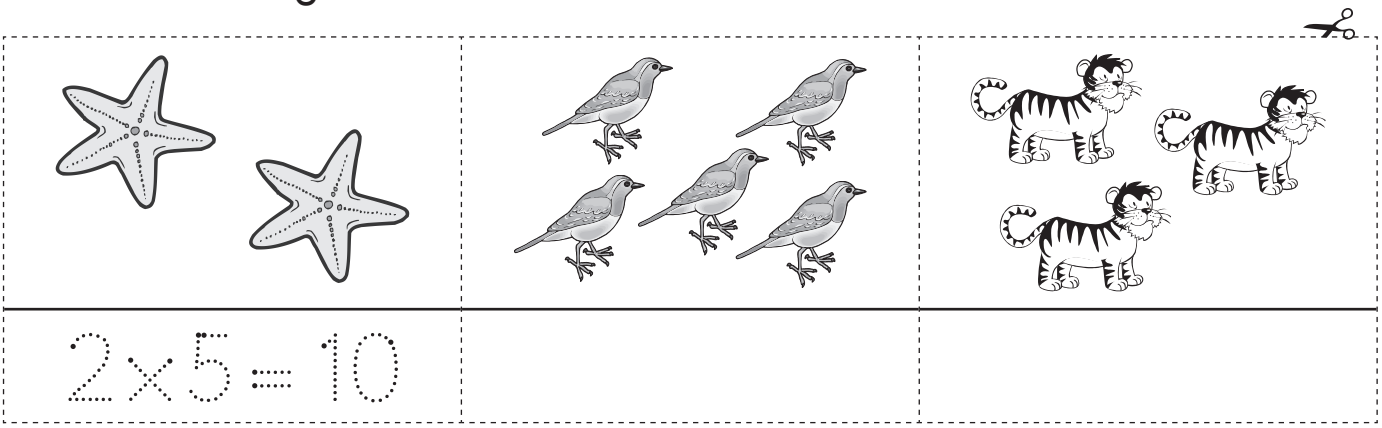
What to do:

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.

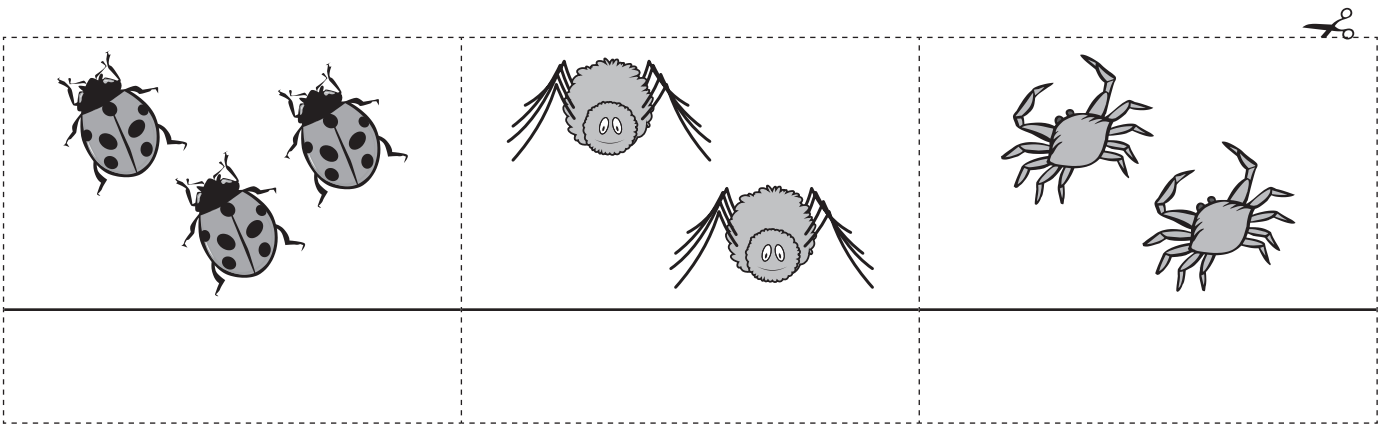
What to do next:

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

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



2 × 5 = 10



Multiplication – doubles

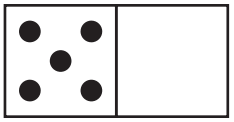
When we double, we are multiplying by 2.

Here is **1** spider.  One spider has **8** legs **1 × 8 = 8**

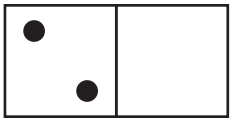
If we double it, we have **2** spiders. 

How many legs do they have? 8 + 8 **2 × 8 = 16**

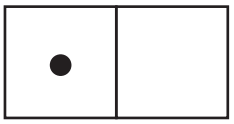
1 Draw dots on the other side of the dominoes to create doubles. Finish the number facts.

a 

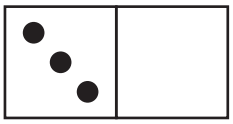
2 × 5 = 10

b 

2 × 2 = ☐

c 

☐ × ☐ = ☐

d 

☐ × ☐ = ☐

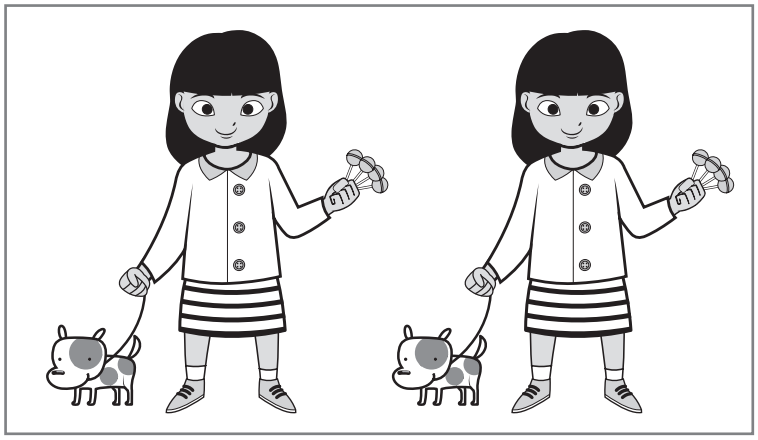
2 Look at the twins. Write the multiplication facts to match.

a How many  ?

☐ × ☐ = ☐

b How many  ?

☐ × ☐ = ☐



c How many  ?

☐ × ☐ = ☐

d How many  ?

☐ × ☐ = ☐

Multiplication – doubles

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.

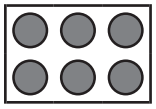
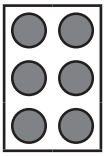
What to do next:

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

Multiplication – turnarounds

We can make turnarounds when we multiply.

Look at this array.

 We can turn this around to look like: 

2 rows of 3 is 6

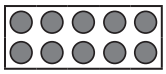
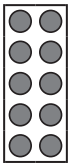
2 × 3 = 6

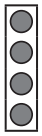
Now we have 3 rows of 2.
There are still 6 counters.

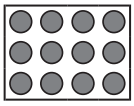
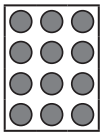
3 × 2 = 6

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

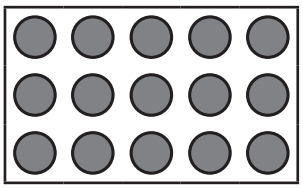
1 Look at the arrays and their turnarounds. Write the facts to match.

a  2 × 5 = 10  5 × ☐ = ☐

b  4 × ☐ = ☐  ☐ × ☐ = ☐

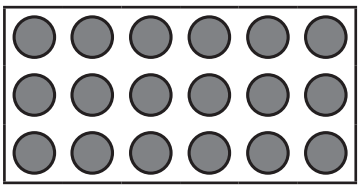
c  ☐ × ☐ = ☐  ☐ × ☐ = ☐

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

a 

☐ × ☐ = ☐

☐ × ☐ = ☐

b 

☐ × ☐ = ☐

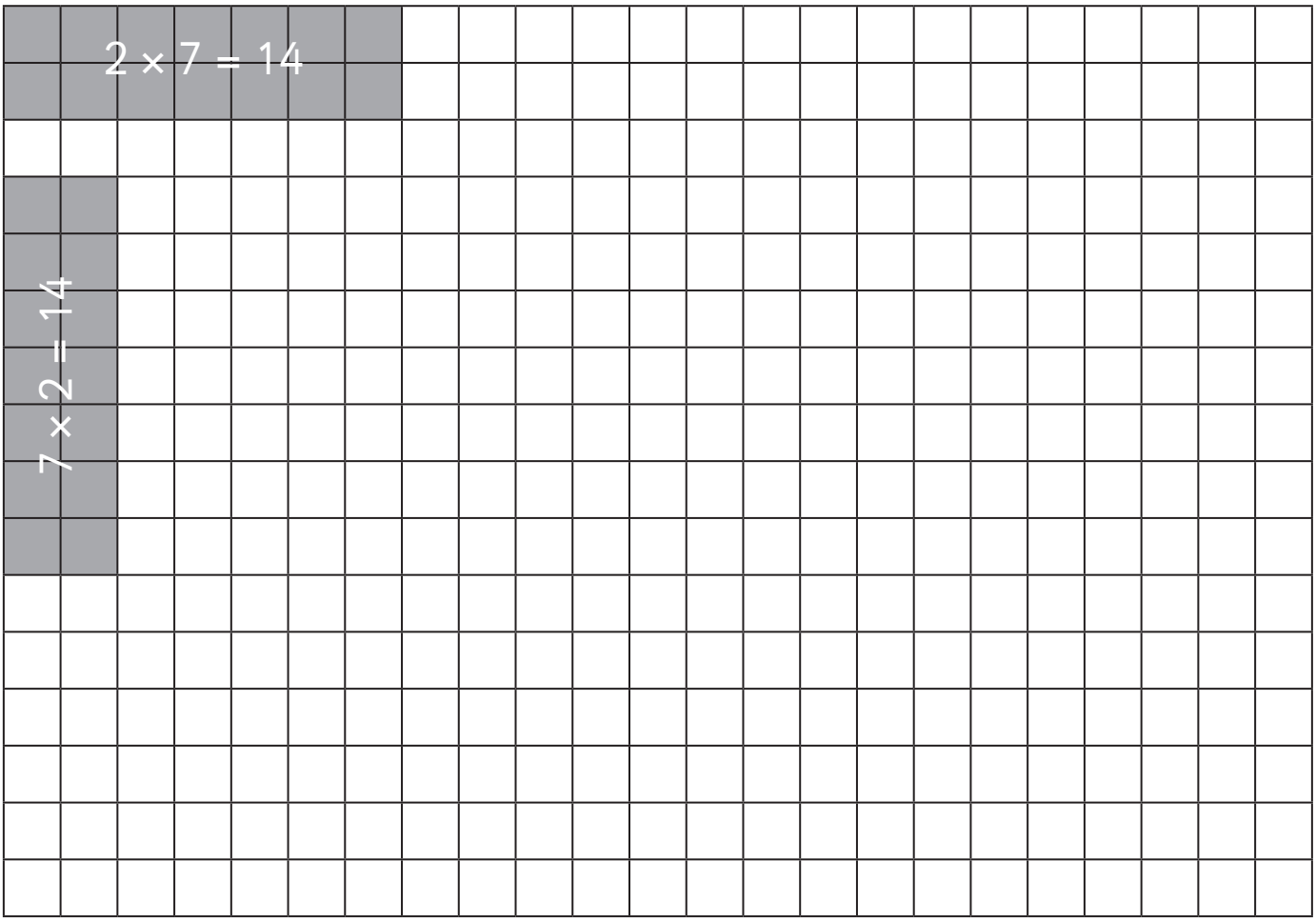
☐ × ☐ = ☐

Multiplication – turnarounds

You will need:  a partner  pencils  10 counters

What to do:

Take turns colouring squares on the grid to make an array. 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.



What to do next:

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

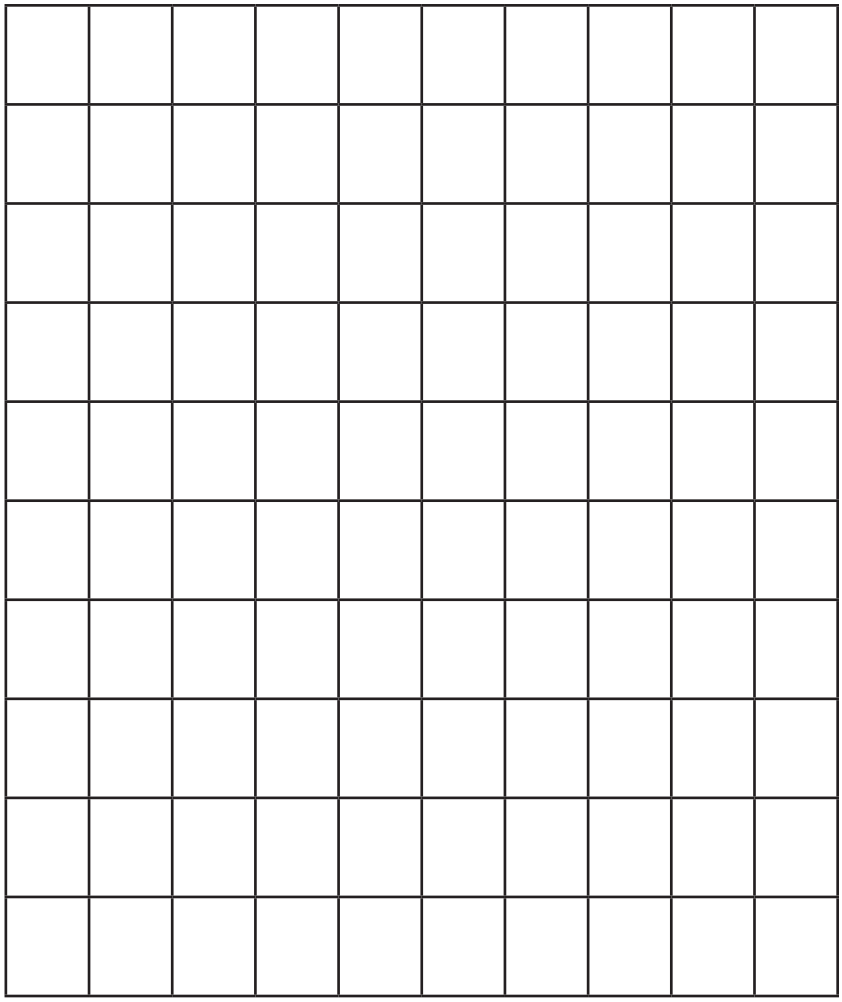
Multiplication – multiplying 10s

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

This is 1 row of 10. We have coloured 10 squares. **1 × 10 = 10**

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

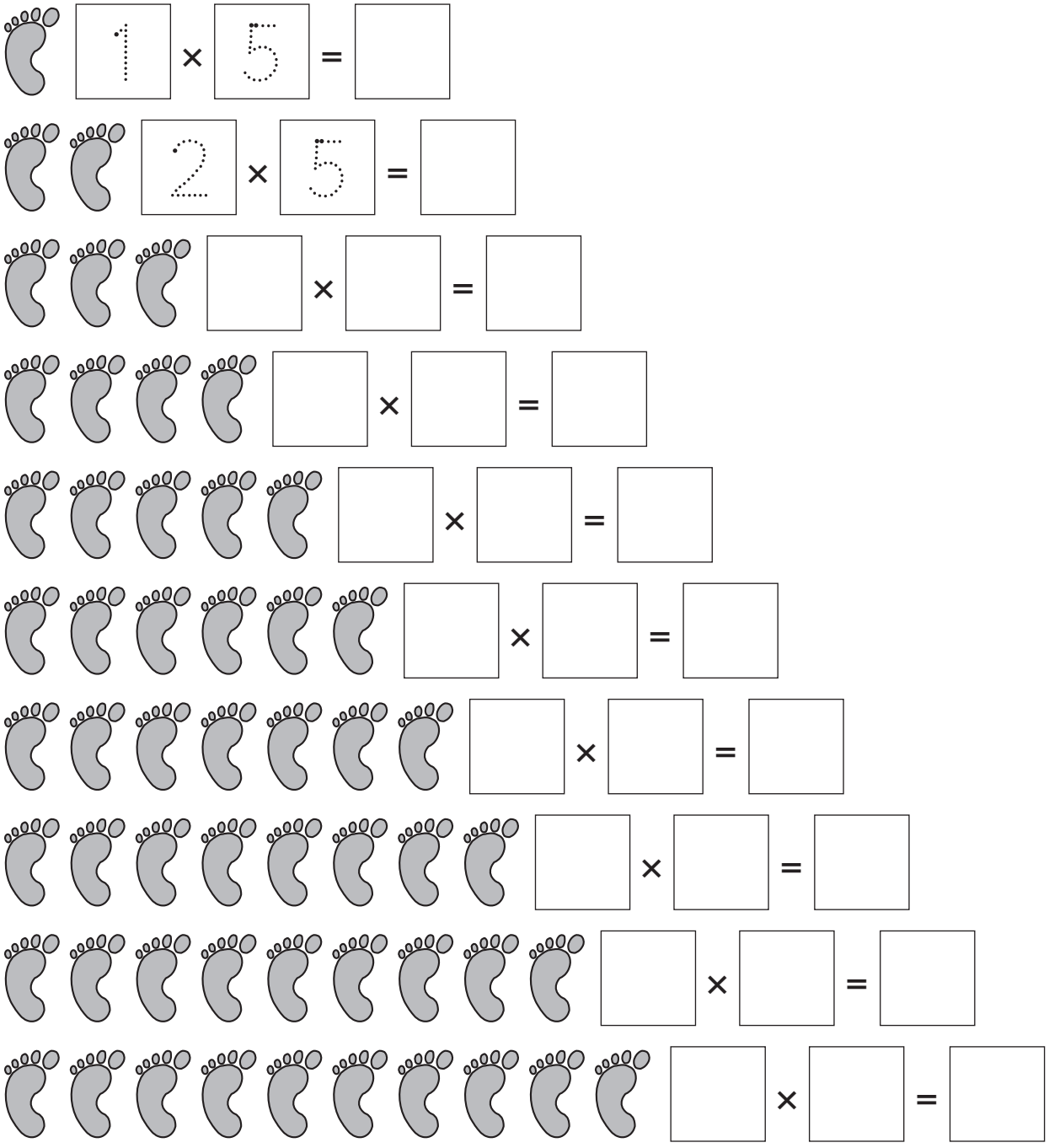
10	20								

c What do you notice?

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.



b Write the answers from question 1a in the boxes below. What is the pattern?

Multiplication – explore

You will need: a partner 24 counters

What to do:

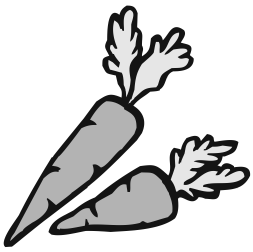
Chef Charlie has 12 cupcakes on some trays in the oven.
There are the same number of cupcakes on each tray.
What are some different ways he can put them on the trays?

Use 12 counters and work with a partner to find some different options.
Show your solutions below.

1 tray of 12 = 12

1 × 12 = 12

What to do next:



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

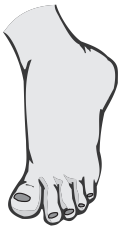
Use 20 counters and work with a partner to find some different options.
Show your solutions below.

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 lolly snakes in it. How many lolly snakes would there be if there were 9 bags altogether?

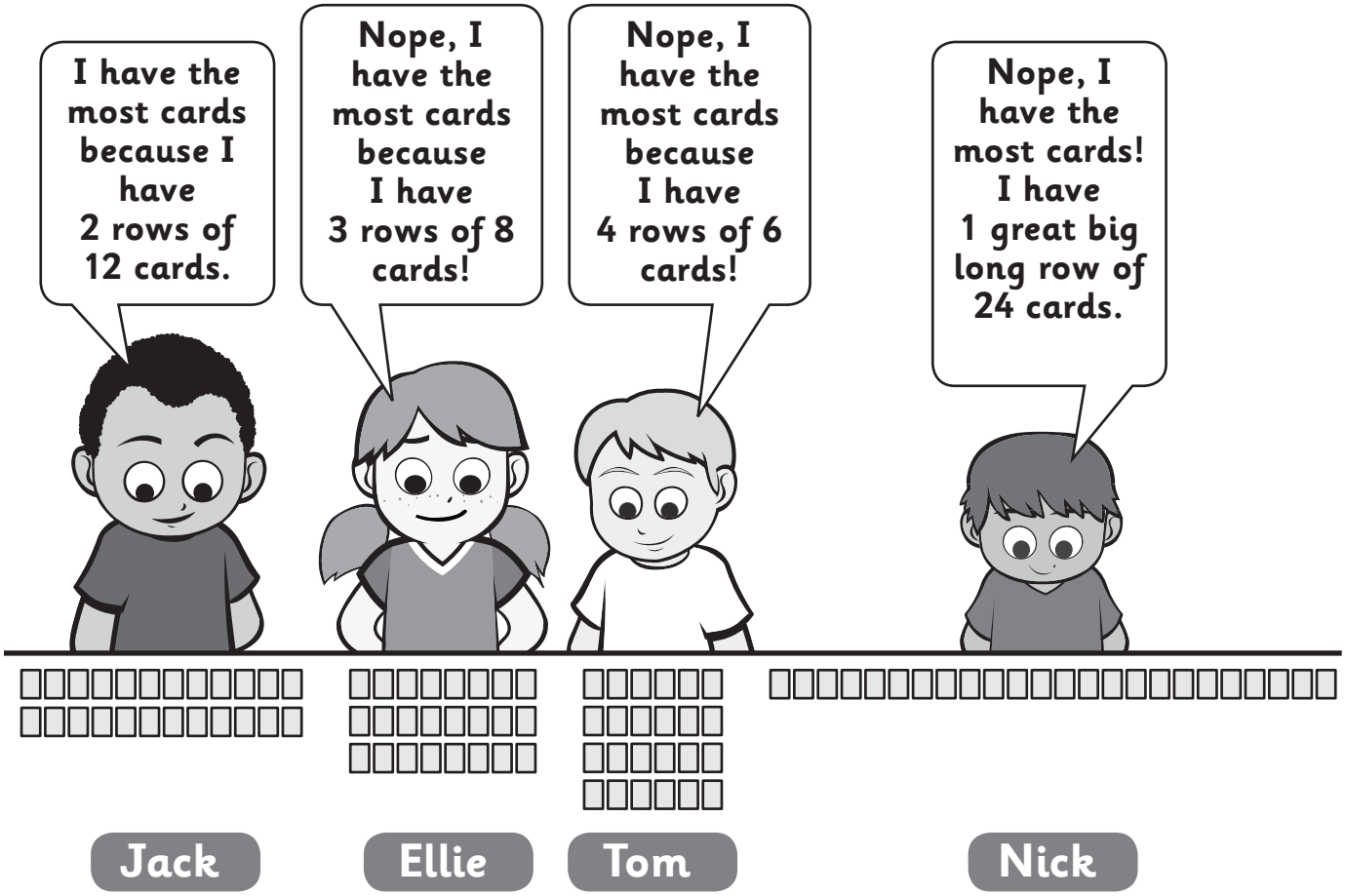
c Caleb practised kicking goals every day for a week. If he kicked 5 goals a day, how many goals did he kick altogether?

Multiplication – explore

You will need: a partner counters

What to do:

The 4 Smith kids 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.

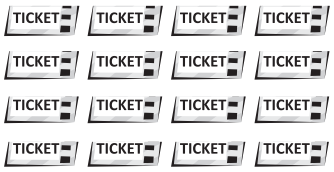


Our solution:

Division – sharing (partition)

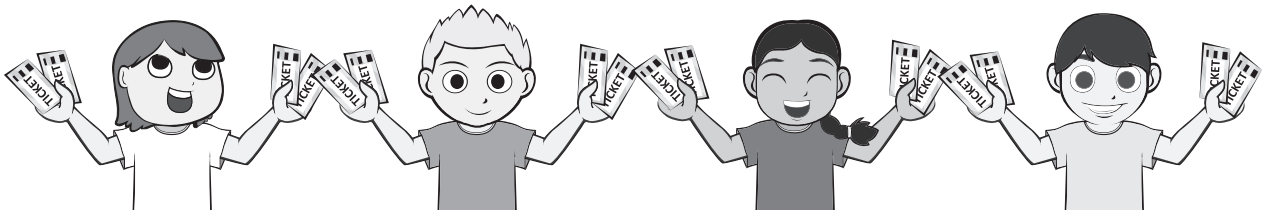
When we share things into groups evenly, every group is the same or **equal**. We call this process **division**.

Here are **16** show ride tickets.



We want to share them between **4** children.

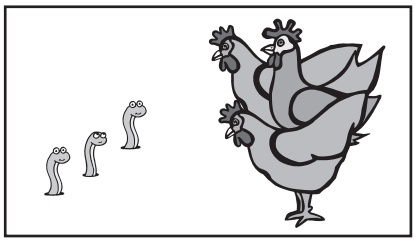
If we share the tickets out evenly, every child gets 4 tickets. Yay!



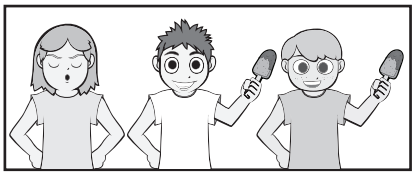
We call these ***fair shares*** because each share is equal.

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

a



b



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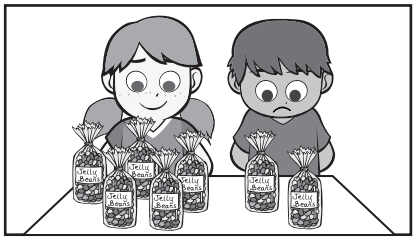
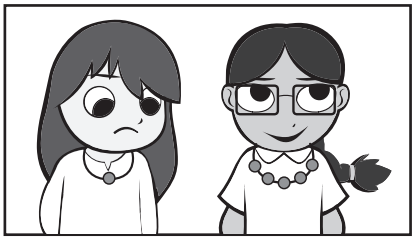
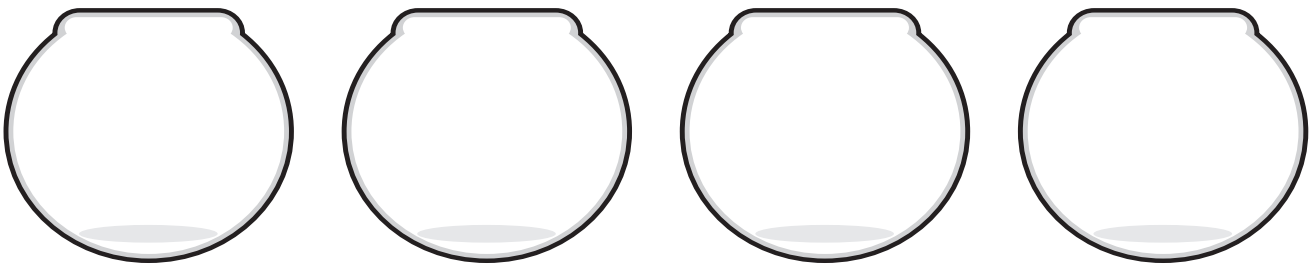


d



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



Division – sharing (partition)

You will need:  a partner  24 plastic animals or counters

What to do:

Make 4 yards with popsticks. They must be big enough to hold some animals or counters.

a Share the 24 animals out fairly between the yards. How many animals are in each yard? Draw your answer.

b Take the animals out and take away a yard. Share the animals between the 3 yards. How many animals are in each yard now? Draw your answer.

c What if there are only 2 yards. How many animals are in each yard? Draw your answer.

Division – remainders

Sometimes when we try to make fair shares, we have leftovers. We call the leftover amount the **remainder**.

You will need:  a partner  counters or blocks

What to do:

Share the counters to answer these questions. Every person must get a fair share and you might have remainders.

a Share **8** counters between you.

How many counters do you each get? ☐

Is there any remainder? How many? ☐

b Share **9** counters between you.

How many counters do you each get? ☐

Is there any remainder? How many? ☐

c Share **10** counters between you.

How many counters do you each get? ☐

Is there any remainder? How many? ☐

d Share **11** counters between you.

How many counters do you each get? ☐

Is there any remainder? How many? ☐

What to do next:

What do you predict will happen if you share 12 counters? Will there be a remainder? Explain your thinking.

Division – remainders

You will need:  a partner or you can work alone  counters

What to do:

Take a handful of counters. It can be any amount.

a Share the counters into 2 equal groups. Record the number in each group and the remainder (if there is one).

b Now you are going to share the same counters into 3 equal groups. Will there be more or fewer counters in each group? Write your prediction.

c Share the counters. Record the number in each group and the remainder (if there is one). Was your prediction correct?

d Now share the same counters into 4 equal groups. Record the number in each group and the remainder (if there is one).

e Keep going until you can't make equal groups.

What to do next:

Did you find any patterns to help you?

Division – grouping (quotition)

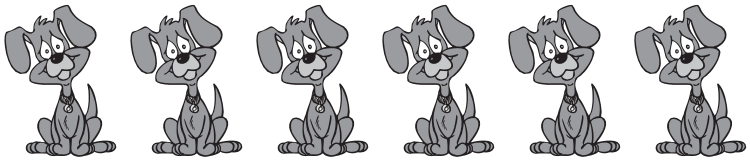
Sometimes we know how many things we want in a group but we don't know how many groups we can make. Look at this problem.

Each dog needs 2 milk bones for lunch. How many dogs can we feed using 12 bones?

To find out, we share out the bones into groups of 2.

There are 6 groups.

6 lucky dogs are getting yummy milk bones for lunch!



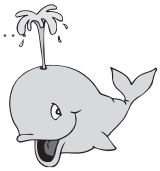
1 Work out how many animals you can feed. Use counters or draw pictures to help you solve the problems.

a Each bird needs 3 worms. You have 18 worms. How many birds can you feed?

b Each bear needs 6 fish. You have 24 fish. How many bears can you feed?

c Each monkey needs 5 bananas. You have 25 bananas. How many monkeys can you feed?

d Each whale needs 10 buckets of plankton. You have 40 buckets. How many whales can you feed?



Division – grouping (quotition)

You will need: a partner or you can work alone 48 counters

What to do:

You and 3 friends have won a prize from the local bakery. There are 48 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.'

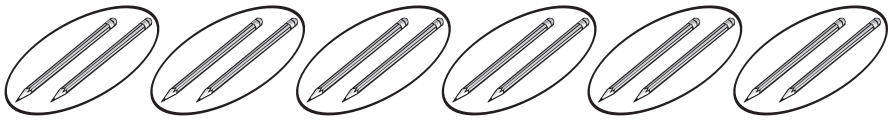
Work with a partner to solve this problem. Show your working out below.

Division – the ÷ symbol

+ means add, **–** means subtract, **×** means multiply.

What is the sign for division or sharing? **÷**

12 pencils are shared between 6 people.

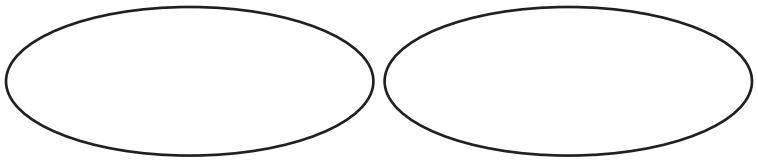


Each person gets 2 pencils.

As a number fact, we write this as **12 ÷ 6 = 2**

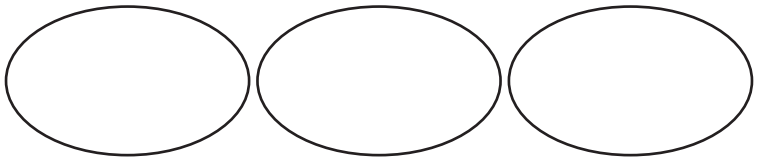
1 Use tally marks or draw pictures to help you solve these problems. Finish the matching number facts.

a 10 apples shared between 2 people is ☐.



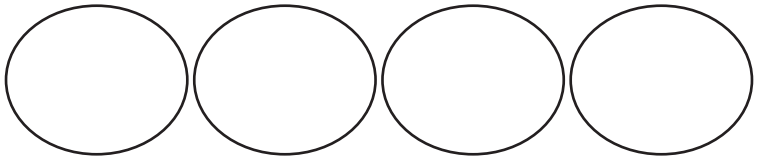
10 ÷ 2 = ☐

b 12 bananas shared between 3 monkeys is ☐.



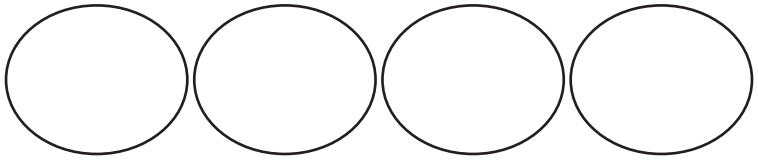
12 ÷ 3 = ☐

c 16 berries shared between 4 birds is ☐.



16 ÷ ☐ = ☐

d 28 fish shared between 4 seals is ☐.



☐ ÷ ☐ = ☐

Division – the ÷ symbol

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

a There are 16 sparklers to be shared between 8 children. How many sparklers does each child get?

16 ÷ 8 = ☐

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?

☐ ÷ 2 = ☐

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

☐ ÷ ☐ = ☐

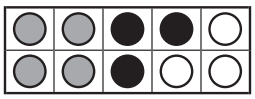
d Farmer Jess has 36 carrots. She wants to plant them in rows of 9. How many rows can she plant?

☐ ÷ ☐ = ☐

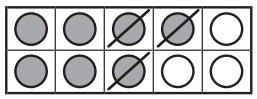
Division – relating multiplication and division

We know that addition and subtraction do up and undo each other.

4 + 3 = 7



7 – 3 = 4



Multiplication and division also do up and undo each other.
Let's explore this.

You will need: a partner counters

What to do:

Make 3 groups of 4 counters. How many counters altogether? ☐

Let's write this as a multiplication fact. 3 × 4 = ☐

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. 12 ÷ 3 = ☐

What to do next:

Make 4 groups of 5 counters.
Write this as a multiplication fact. ☐ × ☐ = ☐

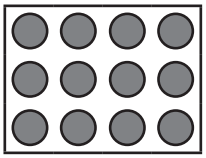
What do you think the matching division fact will be? Write your prediction here. ☐ ÷ ☐ = ☐

Now divide the counters into 4 groups.
Write the division number fact. ☐ ÷ ☐ = ☐

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

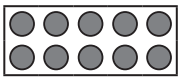
Division – relating multiplication and division

We can use the same arrays to make multiplication and division facts. This array shows:

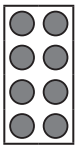
3 rows of 4 is 12  12 counters divided into 3 rows is 4

3 × 4 = 12 AND **12 ÷ 3 = 4**

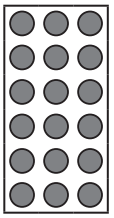
1 Use the arrays to finish the number statements and facts.

a 2 rows of 5 is ☐  10 divided into 2 rows is ☐

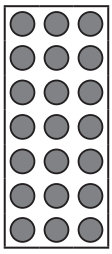
☐ × ☐ = ☐ ☐ ÷ ☐ = ☐

b 4 rows of 2 is ☐  ☐ divided into ☐ rows is ☐

☐ × ☐ = ☐ ☐ ÷ ☐ = ☐

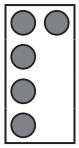
c ☐ × ☐ = ☐ 

☐ ÷ ☐ = ☐

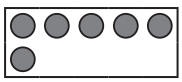
d ☐ × ☐ = ☐ 

☐ ÷ ☐ = ☐

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

a  4 × ☐ = ☐

☐ ÷ ☐ = ☐

b  ☐ × 5 = ☐

☐ ÷ ☐ = ☐

Division – relating multiplication and division

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

10 ÷ 2 = ?

We know that **5 × 2 = 10** so **10 ÷ 2 = 5**

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

a 1 × 2 = ☐

☐ ÷ 1 = ☐

b 2 × 2 = ☐

☐ ÷ 2 = ☐

c 4 × 2 = ☐

☐ ÷ ☐ = ☐

d 5 × 2 = ☐

☐ ÷ ☐ = ☐

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

a 10 × 2 = ☐

20 ÷ 10 = ☐

b 20 × 2 = ☐

☐ ÷ 20 = ☐

c 40 × 2 = ☐

☐ ÷ ☐ = ☐

d 50 × 2 = ☐

☐ ÷ ☐ = ☐

Division – relating multiplication and division

1 Can you finish these facts?

a 1 × 10 = ☐

☐ ÷ 1 = ☐

b 2 × 10 = ☐

☐ ÷ 2 = ☐

c 3 × 10 = ☐

☐ ÷ 3 = ☐

d 4 × 10 = ☐

☐ ÷ 4 = ☐

e 5 × 10 = ☐

☐ ÷ ☐ = ☐

f 10 × 10 = ☐

☐ ÷ ☐ = ☐

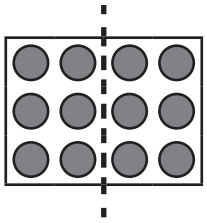
2 Now give yourself a pat on the back for being so smart and have a rest. Draw a picture.

Division – relating division and fractions

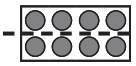
When we divide something in half, we are sharing it into **2 equal parts.**

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

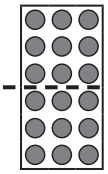
12 ÷ 2 = 6



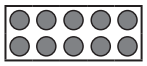
1 Draw lines to divide these arrays into halves. Finish the facts.

a $\frac{1}{2}$ of 8 is ☐ 

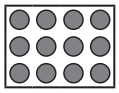
8 ÷ ☐ = ☐

b $\frac{1}{2}$ of 18 is ☐ 

18 ÷ ☐ = ☐

c $\frac{1}{2}$ of 10 is ☐ 

☐ ÷ ☐ = ☐

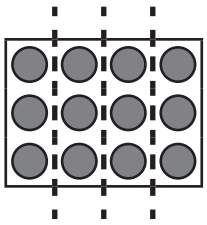
d $\frac{1}{2}$ of 12 is ☐ 

☐ ÷ ☐ = ☐

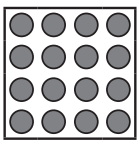
When we divide something into quarters, we are sharing it into **4 equal parts**.

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

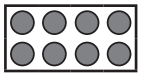
12 ÷ 4 = 3



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

a $\frac{1}{4}$ of 16 is ☐ 

16 ÷ ☐ = ☐

b $\frac{1}{4}$ of 8 is ☐ 

8 ÷ ☐ = ☐