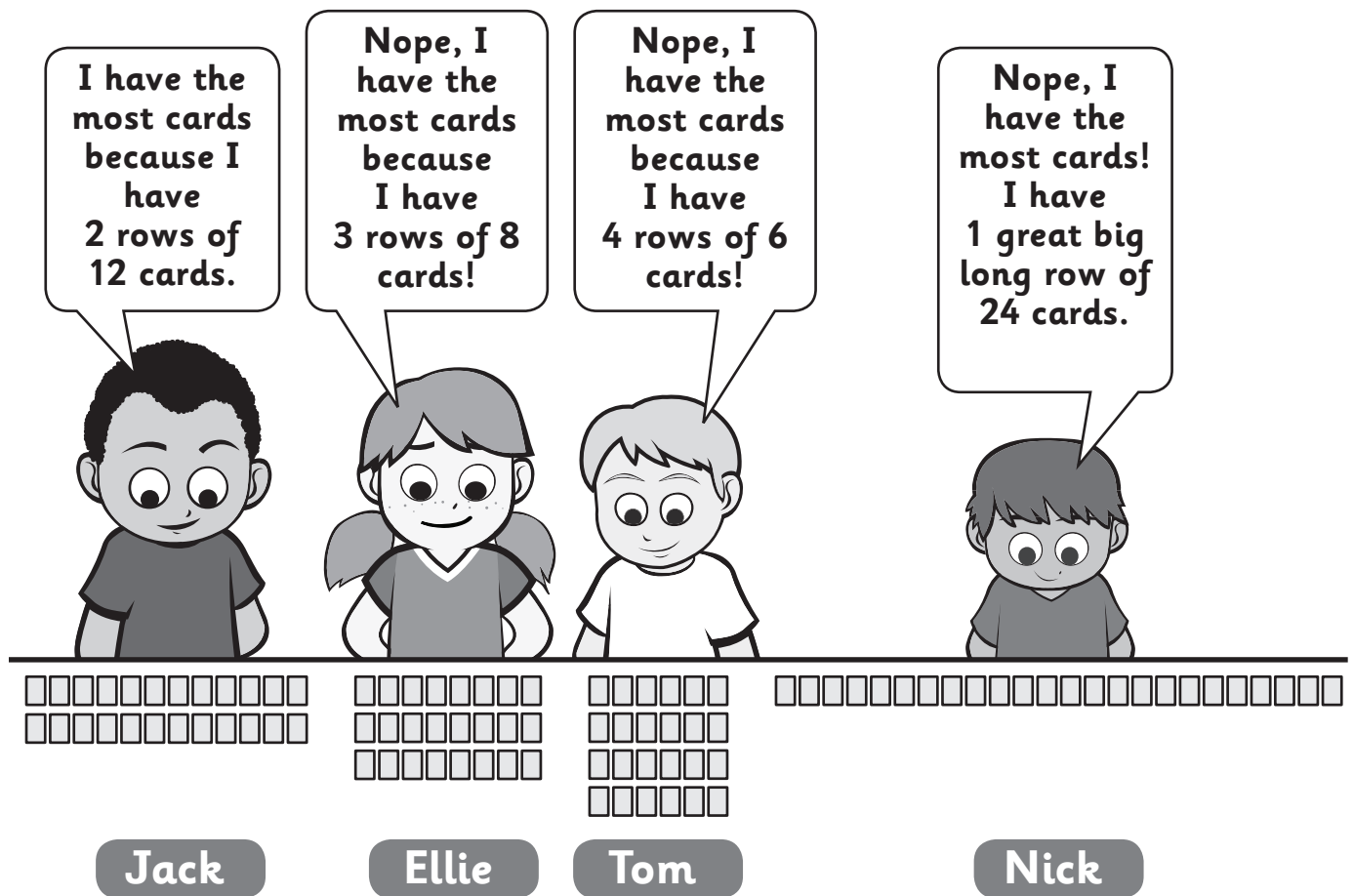


# Multiplication – explore

**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.



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

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

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

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

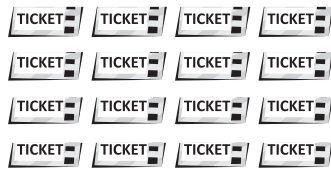
**Jack**      **Ellie**      **Tom**      **Nick**

Our solution:

# Division – sharing (partition)

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

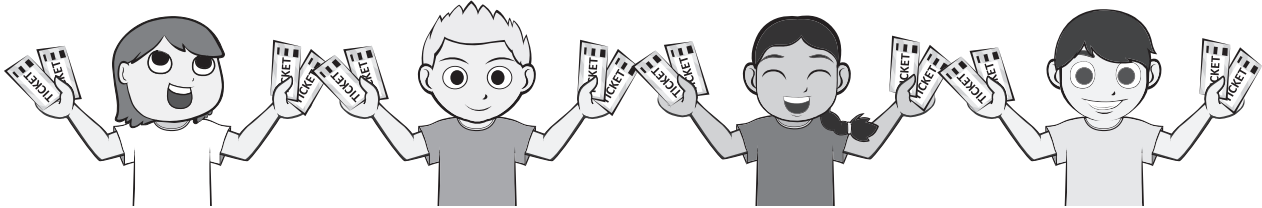
Here are **16**



show ride tickets.

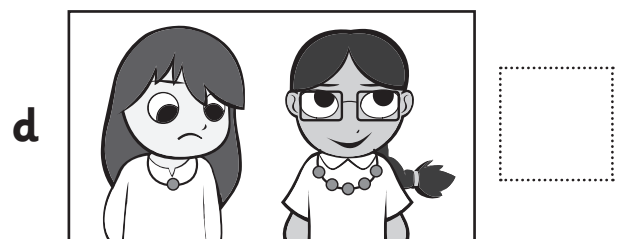
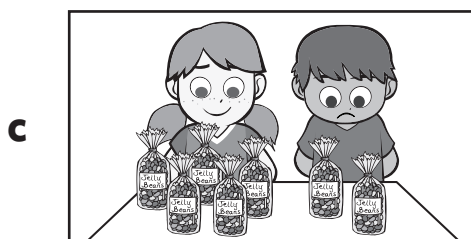
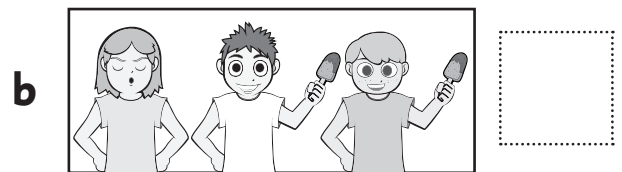
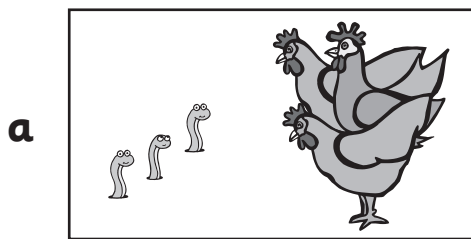
We want to share them between **4** children.

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

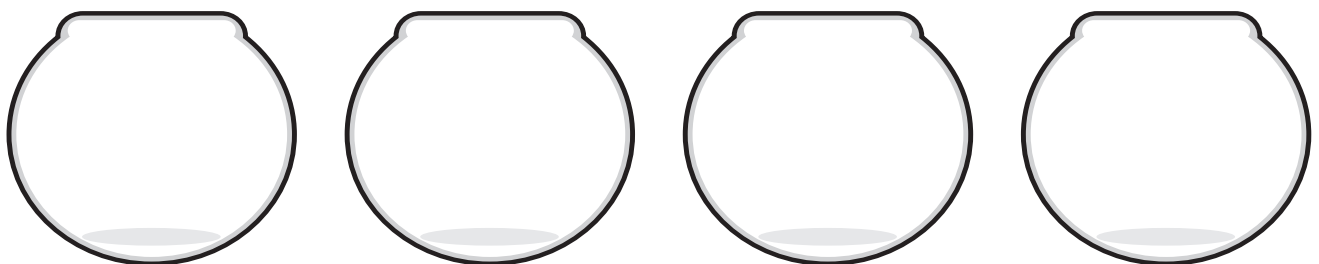


We call these **fair shares** because each share is equal.

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



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





# 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:

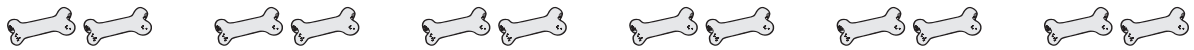
Did you find any patterns to help you?

# 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.

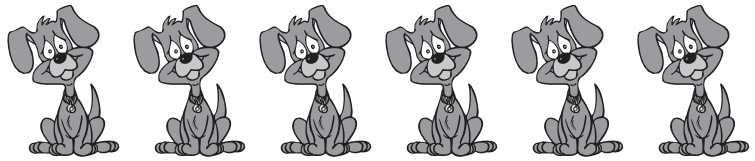
Each dog needs 2 milk bones for lunch. How many dogs can we feed using 12 bones?

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?



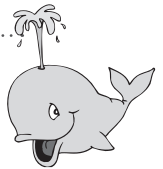
**b** Each bear needs 6 fish. You have 24 fish. How many bears can you feed?





**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.’



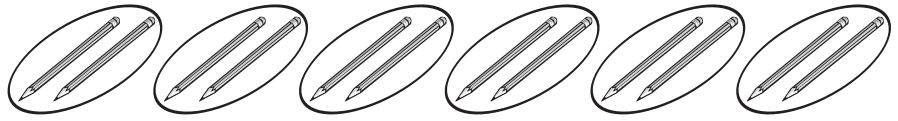
Work with a partner to solve this problem. Show your working out below.

# Division – the ÷ symbol

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

What is the sign for division or sharing? ÷

12 pencils are shared  
between 6 people.

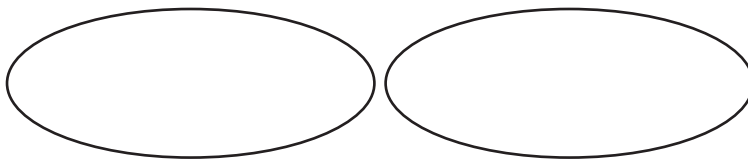


Each person gets 2 pencils.

As a number fact, we write this as  $12 \div 6 = 2$

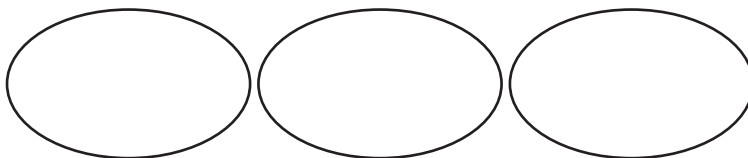
1 Use tally marks or draw pictures to help you solve these problems.  
Finish the matching number facts.

a 10 apples shared between 2 people is .



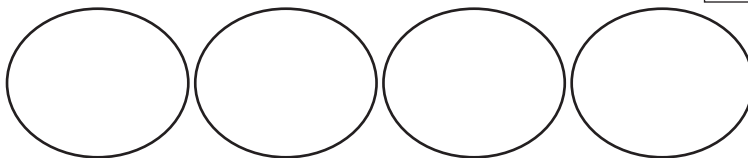
$$10 \div 2 = \square$$

b 12 bananas shared between 3 monkeys is .



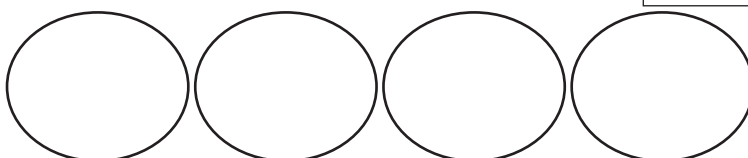
$$12 \div 3 = \square$$

c 16 berries shared between 4 birds is .



$$16 \div \square = \square$$

d 28 fish shared between 4 seals is .



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



# 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?

$$\boxed{16} \div \boxed{8} = \boxed{\phantom{00}}$$

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

$$\boxed{\phantom{00}} \div \boxed{2} = \boxed{\phantom{00}}$$

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

$$\boxed{\phantom{00}} \div \boxed{\phantom{00}} = \boxed{\phantom{00}}$$

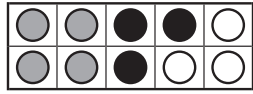
- d Farmer Jess has 36 carrots. She wants to plant them in rows of 9. How many rows can she plant?

$$\boxed{\phantom{00}} \div \boxed{\phantom{00}} = \boxed{\phantom{00}}$$

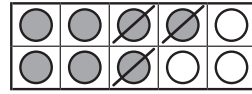
# Division – relating multiplication and division

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.

$$\boxed{3} \times \boxed{4} = \boxed{\phantom{00}}$$

Now put all those counters in 1 group.

Divide the same counters into 3 groups.

How many counters are in each group?

Let's write this as a division fact.

$$\boxed{12} \div \boxed{3} = \boxed{\phantom{00}}$$

## What to do next:

Make 4 groups of 5 counters.

Write this as a multiplication fact.

$$\boxed{\phantom{00}} \times \boxed{\phantom{00}} = \boxed{\phantom{00}}$$

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

$$\boxed{\phantom{00}} \div \boxed{\phantom{00}} = \boxed{\phantom{00}}$$

Now divide the counters into 4 groups.

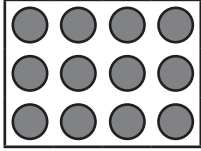
Write the division number fact.

$$\boxed{\phantom{00}} \div \boxed{\phantom{00}} = \boxed{\phantom{00}}$$

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

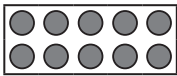
# Division – relating multiplication and division

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

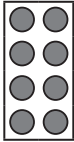
3 rows of 4 is 12  12 counters divided into 3 rows is 4

**3 × 4 = 12**      AND      **12 ÷ 3 = 4**

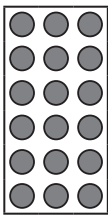
1 Use the arrays to finish the number statements and facts.

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

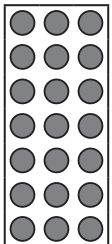
×  =        ÷  =

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

×  =        ÷  =

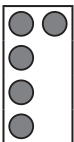

**c**  ×  =  

÷  =

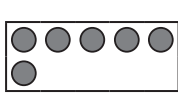

**d**  ×  =  

÷  =

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

**a**   ×  =

÷  =

**b**   ×  =

÷  =

# Division – relating multiplication and division

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

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

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

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

**a**  $1 \times 2 = \boxed{\phantom{00}}$

$$\boxed{\phantom{00}} \div 1 = \boxed{\phantom{00}}$$

**b**  $2 \times 2 = \boxed{\phantom{00}}$

$$\boxed{\phantom{00}} \div 2 = \boxed{\phantom{00}}$$

**c**  $4 \times 2 = \boxed{\phantom{00}}$

$$\boxed{\phantom{00}} \div \boxed{\phantom{00}} = \boxed{\phantom{00}}$$

**d**  $5 \times 2 = \boxed{\phantom{00}}$

$$\boxed{\phantom{00}} \div \boxed{\phantom{00}} = \boxed{\phantom{00}}$$

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

**a**  $10 \times 2 = \boxed{\phantom{00}}$

$$\boxed{20} \div 10 = \boxed{\phantom{00}}$$

**b**  $20 \times 2 = \boxed{\phantom{00}}$

$$\boxed{\phantom{00}} \div 20 = \boxed{\phantom{00}}$$

**c**  $40 \times 2 = \boxed{\phantom{00}}$

$$\boxed{\phantom{00}} \div \boxed{\phantom{00}} = \boxed{\phantom{00}}$$

**d**  $50 \times 2 = \boxed{\phantom{00}}$

$$\boxed{\phantom{00}} \div \boxed{\phantom{00}} = \boxed{\phantom{00}}$$

# 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.