

Spring Block 2

# Multiplication and division

## Small steps

Step 1

Recognise equal groups

Step 2

Make equal groups

Step 3

Add equal groups

Step 4

Introduce the multiplication symbol

Step 5

Multiplication sentences

Step 6

Use arrays

Step 7

Make equal groups – grouping

Step 8

Make equal groups – sharing

## Small steps

Step 9

The 2 times-table

Step 10

Divide by 2

Step 11

Doubling and halving

Step 12

Odd and even numbers

Step 13

The 10 times-table

Step 14

Divide by 10

Step 15

The 5 times-table

Step 16

Divide by 5

## Small steps

Step 17

The 5 and 10 times-tables

# Recognise equal groups

## Notes and guidance

In this block, children make the connection between repeated addition and multiplication. In this small step, they start to make this connection by recognising equal groups.

It is important that children explore both equal and unequal groups, so that they are able to identify when groups are or are not equal and explain why. At this point, the addition and multiplication symbols are not used, but the language around this can still be used to support learning later in the block.

Sentence stems are used in this step to support children in identifying the groups, finding how many are in each group and developing language around repeated addition. Children use this knowledge over the next set of steps to complete multiplication calculations as repeated addition.

### Things to look out for

- Children may not be able to spot equal and unequal groups.
- Children may try to find the total instead of finding the amount in each group.
- Children may not realise that two groups are equal if they do not look the same.

## Key questions

- Are the groups equal or unequal? How do you know?
- How can you make the groups equal?
- How many groups are there?
- How many are in each group?
- What is the same and what is different about these two pictures?
- Do all equal groups look the same?

## Possible sentence stems

- There are \_\_\_\_\_ equal groups.  
There are \_\_\_\_\_ in each group.
- There are \_\_\_\_\_ groups of \_\_\_\_\_  
There are \_\_\_\_\_ altogether.
- The groups are equal/unequal because ...

## National Curriculum links

- Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication ( $\times$ ), division ( $\div$ ) and equals ( $=$ ) signs

# Recognise equal groups

## Key learning



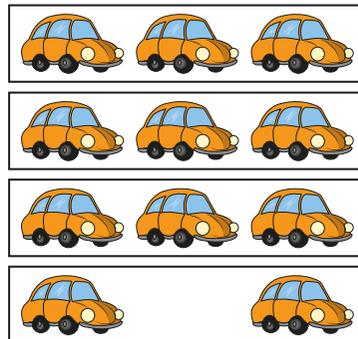
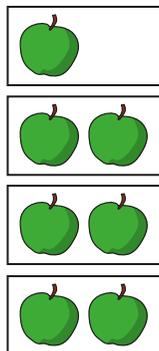
Take children outside and ask them to gather 10 objects.

Tell children to put their objects into groups.

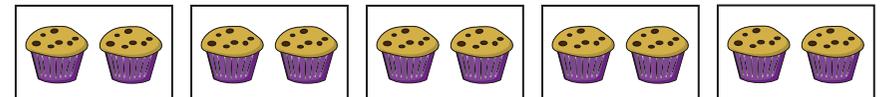
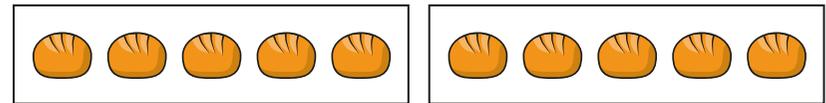
Discuss with them what they notice about their groups.

- Which pictures show equal groups?

Which pictures show unequal groups?



- Complete the sentences for each set of pictures.



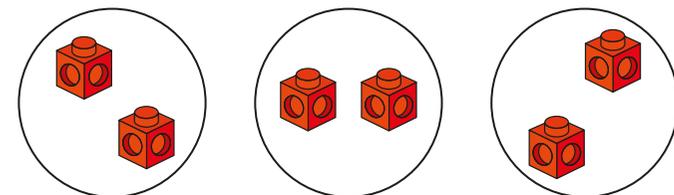
There are \_\_\_\_\_ equal groups.

There are \_\_\_\_\_ in each group.

There are \_\_\_\_\_ groups of \_\_\_\_\_

There are \_\_\_\_\_ altogether.

- Are the groups equal?



How do you know?

# Recognise equal groups

## Reasoning and problem solving

Which circle do the groups of counters belong to?

**A**

**B**

Explain your answer.

A

No

There are 10 equal groups with 2 in each group.

Do you agree with Tiny?  
Explain your answer.

# Make equal groups

## Notes and guidance

In this small step, children move on from identifying equal groups to making equal groups with a given number of objects.

Children begin this step by identifying equal groups and matching equal groups to numerals and words. It is important that children can identify these groups accurately. They also represent equal groups by using concrete resources or drawing pictures, including completing a partly filled picture.

Children should be able to represent, for example, 4 groups of 3 as well as 3 groups of 4 accurately and know what is the same and what is different about the two forms. This could be a good opportunity to explore the idea of commutativity.

In the next step, children add equal groups as a repeated addition.

## Things to look out for

- Children may not be able to recognise equal groups.
- When given a picture of incomplete groups, children may find it difficult to complete it to show a set number of equal groups.
- Children may represent a set of equal groups incorrectly, for example 2 groups of 4 instead of 4 groups of 2

## Key questions

- Are the groups equal?
- How do you know if a group is equal or not equal to another group?
- How can you make these groups equal?
- How many equal groups can you put these counters into?
- Can you draw \_\_\_\_\_ groups of \_\_\_\_\_?
- How are 4 groups of 3 different from 3 groups of 4?

## Possible sentence stems

- There are \_\_\_\_\_ equal groups with \_\_\_\_\_ in each group.
- There are \_\_\_\_\_ in each group.  
There are \_\_\_\_\_ equal groups.

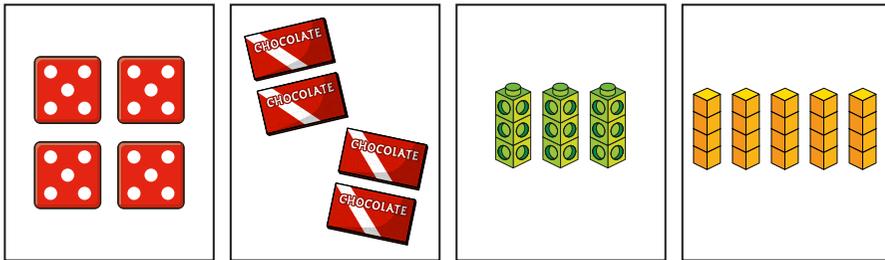
## National Curriculum links

- Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication ( $\times$ ), division ( $\div$ ) and equals ( $=$ ) signs

# Make equal groups

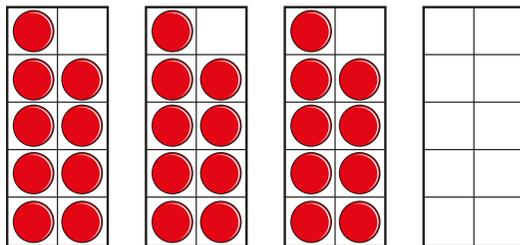
## Key learning

- Match the pictures to the labels.



- 5 groups of 4
- 2 groups of 2
- 4 groups of 5
- 3 groups of 3

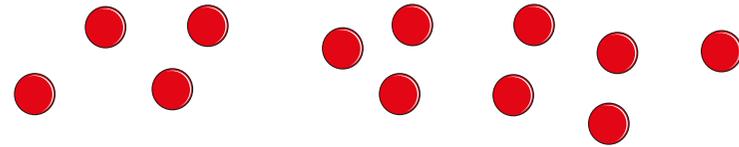
- Complete the ten frames to show equal groups.



Complete the sentence to describe the groups.

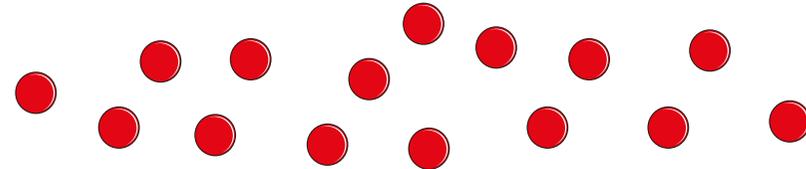
There are \_\_\_\_\_ equal groups with \_\_\_\_\_ in each group.

- Put 12 counters into different equal groups.



What do you notice?

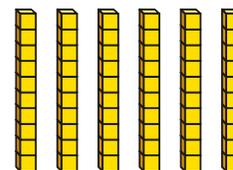
- Use 15 counters.



- ▶ Make 3 groups of 5
- ▶ Make 5 groups of 3

What is the same about the groups? What is different?

- Complete the sentences to describe the equal groups.



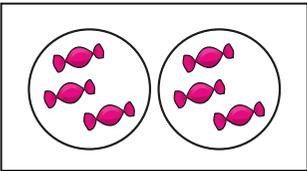
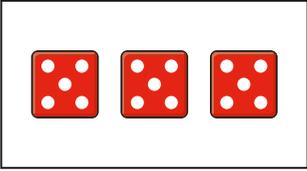
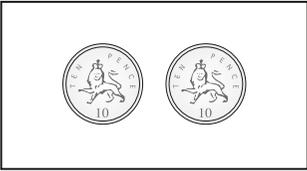
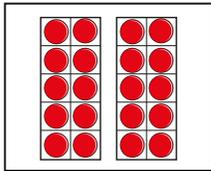
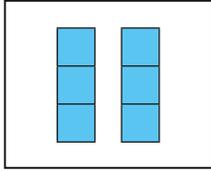
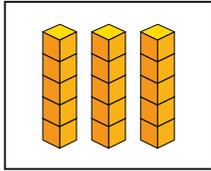
There are \_\_\_\_\_ equal groups of 10

There are \_\_\_\_\_ tens.

# Make equal groups

## Reasoning and problem solving

Match the pictures and the labels.

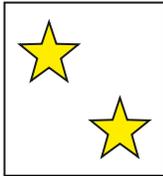
3 groups of 5

2 groups of 10

2 groups of 3

sweets – 2 groups of 3 – squares  
 dice – 3 groups of 5 – cubes  
 coins – 2 groups of 10 – ten frames

Kim and Max are making equal groups.





Kim: I am going to add more stars to make the groups equal.

Max: I am going to move one star to make the groups equal.

3 groups of 4  
 3 groups of 3

What equal groups is Kim making?

What equal groups is Max making?

# Add equal groups

## Notes and guidance

In this small step, children use their understanding of equal groups to find the total using repeated addition.

Sentence stems are used in this small step to scaffold the learning and to ensure that children use accurate language when writing number sentences. Children should be able to describe pictures using sentences and also create pictures from given sentences.

As children have already learnt to add three 1-digit numbers, they should be able to add up to three groups of any 1-digit number. If there are more than three groups, children can use their understanding of counting in 2s, 3s, 5s and 10s to find the total.

Children do not need to write multiplication number sentences, which are covered in the next step.

## Things to look out for

- Children may not represent number sentences accurately when using manipulatives or drawing pictures.
- Children may not have efficient strategies for adding three 1-digit numbers.
- If they cannot count in 2s, 3s, 5s or 10s, children may not answer the calculations correctly.

## Key questions

- How do you know the groups are equal?
- How many equal groups are there?  
How many are in each group?
- Can you write this as an addition sentence?
- Which number sentence matches the picture?

## Possible sentence stems

- There are 3 equal groups with \_\_\_\_\_ in each group.  
There are 3 groups of \_\_\_\_\_  
\_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_
- There are \_\_\_\_\_ equal groups with \_\_\_\_\_ in each group.  
There are \_\_\_\_\_ groups of \_\_\_\_\_  
There are \_\_\_\_\_ altogether.

## National Curriculum links

- Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication ( $\times$ ), division ( $\div$ ) and equals ( $=$ ) signs

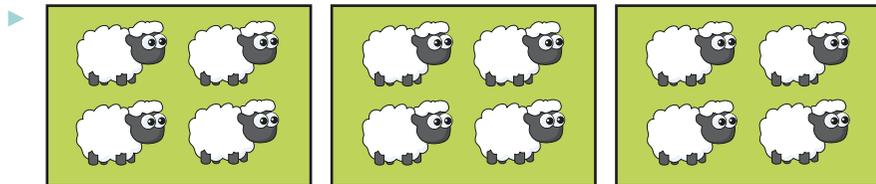
# Add equal groups

## Key learning

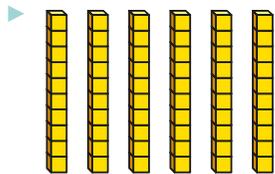
- Complete the sentences to match the pictures.



There are \_\_\_\_\_ equal groups with \_\_\_\_\_ in each group.  
 \_\_\_\_\_ + \_\_\_\_\_ = 6

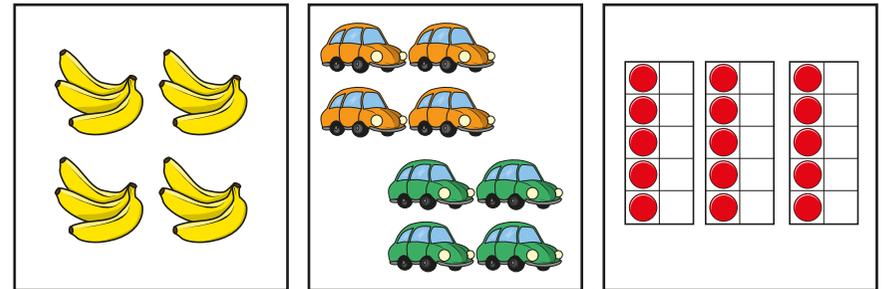


There are \_\_\_\_\_ equal groups with \_\_\_\_\_ in each group.  
 \_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_



There are \_\_\_\_\_ equal groups with \_\_\_\_\_ in each group.  
 \_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_

- Write a number sentence to match each picture.



- Draw a picture to match each number sentence.

- ▶  $4 + 4 + 4 = 12$
- ▶  $2 + 2 + 2 + 2 + 2 + 2 = 12$
- ▶  $10 + 10 = 20$
- ▶  $5 + 5 + 5 + 5 = 20$

- Complete the number sentences.

- ▶  $5 + 5 + 5 = \underline{\hspace{2cm}}$
- ▶  $3 + 3 + 3 + 3 + 3 = \underline{\hspace{2cm}}$

What do you notice?

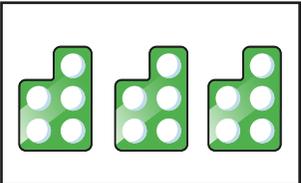
Talk about it with a partner.

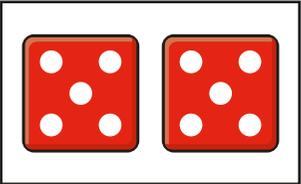
# Add equal groups

## Reasoning and problem solving

Which one does not belong? 

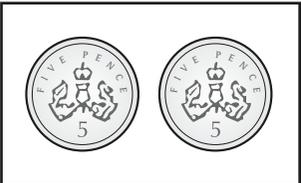
2 groups of 5





ten

5 + 5



What could you change to make it belong?

number shapes  
 \_\_\_\_\_  
 take away one  
 number shape



Tiny is adding equal groups.

$$5 + 5 = 2 + 2 + 2 + 2 + 2$$

Do you agree with Tiny's addition?  
 Use cubes to help you explain. 

Yes



Mo has 30p.

All of my coins are the same. 

How many 10p coins could he have?  
 How many 5p coins could he have?  
 How many 1p coins could he have?

three 10p coins  
 \_\_\_\_\_  
 six 5p coins  
 \_\_\_\_\_  
 thirty 1p coins

# Introduce the multiplication symbol

## Notes and guidance

In this small step, children are introduced to the symbol for multiplication ( $\times$ ) and make the link between multiplication and repeated addition.

Children should already be secure in identifying equal groups and be able to represent this as an addition number sentence. They now write both a repeated addition and a multiplication number sentence. This step focuses on recognising multiplication number sentences that are equal to repeated additions, and correctly matching them to a context. Children are not required to find the total at this stage. Children could also be challenged to put a context to given multiplication and addition sentences.

Children may find that using the language “lots of” builds on previous learning, but they should also use other variations interchangeably, such as “times”, “multiplied by” and so on.

### Things to look out for

- Children may not make the link between repeated addition and multiplication.
- Children may not know what each number in the multiplication number sentence represents.
- Children may find it challenging to put a context to a multiplication number sentence.

## Key questions

- Is repeated addition always the most efficient method? Why?
- What does the multiplication symbol look like?
- How else can you write this repeated addition number sentence?
- What is the same about repeated addition and multiplication? What is different?
- Which addition number sentence matches the multiplication?
- Can you think of a story to match the multiplication?

## Possible sentence stems

- There are 3 equal groups with \_\_\_\_\_ in each group.

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

$$\underline{\quad} \times \underline{\quad} = \underline{\quad}$$

## National Curriculum links

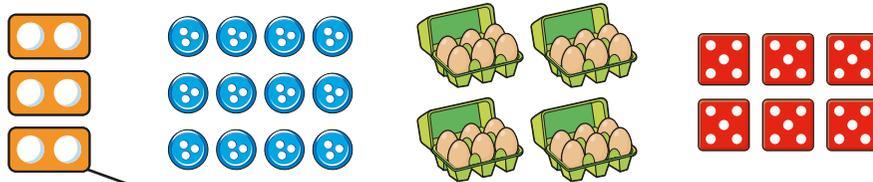
- Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication ( $\times$ ), division ( $\div$ ) and equals ( $=$ ) signs

# Introduce the multiplication symbol

## Key learning

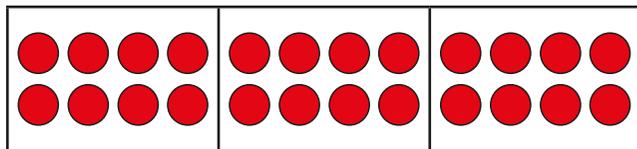
- Match the pictures to the labels.

The first one has been done for you.



- 4 lots of 6
- 6 lots of 5
- 3 lots of 2
- 3 lots of 4

- Complete the sentences to describe the equal groups.

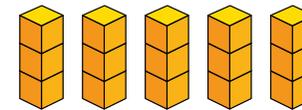


There are \_\_\_\_\_ equal groups with \_\_\_\_\_ in each group.

\_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_ = 24

\_\_\_\_\_ × \_\_\_\_\_ = 24

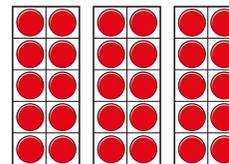
- Complete the sentences to describe the equal groups.



\_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_ = 15

\_\_\_\_\_ × \_\_\_\_\_ = 15

- Complete the number sentence to describe the equal groups.



\_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_ × \_\_\_\_\_

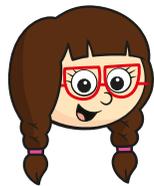
- Complete the table.

Sentence	Picture	Addition	Multiplication
There are 3 equal groups with 2 in each group.			

# Introduce the multiplication symbol

## Reasoning and problem solving

Jo puts some counters into equal groups.



There are 12 counters in total.

What could the addition and multiplication number sentences be?



multiple possible answers, e.g.

$$6 + 6 = 12$$

$$2 \times 6 = 12$$

$$4 + 4 + 4 = 12$$

$$3 \times 4 = 12$$

Sam and Ron are talking about multiplication stories.



There are 4 trees with 3 birds in each tree.

Sam

Write an addition and a multiplication for Sam's story.



$$3 + 3 + 3 + 3$$

$$4 \times 3$$

$$5 + 5 + 5 + 5 + 5 + 5$$

The multiplication for my story is  $6 \times 5$



Ron

What is the addition for Ron's story?

What could Ron's story be?



$$3 + 3 + 3 = 3 \times 3$$

Is Tiny correct?

How do you know?

Draw a picture to help you.



Yes

picture showing 3 groups of 3

# Multiplication sentences

## Notes and guidance

In this small step, children continue to develop their understanding of the multiplication symbol in calculations, but now with more emphasis on finding the answers.

This step mainly uses pictures to support understanding and the language of “lots of” and “multiplied by”. These should be used alongside the multiplication symbol to help develop children’s familiarity with the symbol. Children identify the multiplication number sentences and draw pictures that represent them or express them as word problems.

Although pictures may show, for example, 4 lots of 3, children may discover that multiplication is commutative, and this idea could be explored. Commutativity is covered in more detail in the next step when looking at arrays.

### Things to look out for

- Children may mix up describing “5 lots of 3” and “3 lots of 5”, as the totals are the same.
- At this point, children may not recognise that, for example,  $4 \times 3$  gives the same total as  $3 \times 4$
- Children may find it more challenging to draw a picture to represent a multiplication than to identify the multiplication from a picture.

## Key questions

- What can you see in the picture?
- How many equal groups can you see?  
How many are in each group?
- What does the symbol mean?
- What do the numbers represent?
- How many ways can you describe the picture?
- If the answer is \_\_\_\_\_, what could the multiplication be?
- Can you draw a picture to show this multiplication?

## Possible sentence stems

- \_\_\_\_\_ lots of \_\_\_\_\_ = \_\_\_\_\_
- \_\_\_\_\_ multiplied by \_\_\_\_\_ is equal to \_\_\_\_\_
- \_\_\_\_\_  $\times$  \_\_\_\_\_ = \_\_\_\_\_

## National Curriculum links

- Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication ( $\times$ ), division ( $\div$ ) and equals (=) signs

# Multiplication sentences

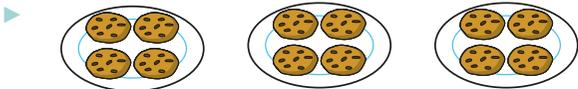
## Key learning

- Complete the sentences to match the picture.

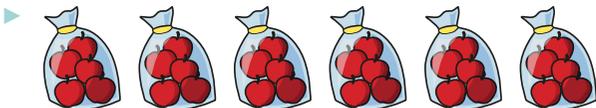


\_\_\_\_\_ lots of 3 = 12  
 \_\_\_\_\_ multiplied by \_\_\_\_\_ = 12  
 \_\_\_\_\_ × \_\_\_\_\_ = 12

- Complete the sentences to match the pictures.



\_\_\_\_\_ lots of \_\_\_\_\_ = \_\_\_\_\_  
 \_\_\_\_\_ multiplied by \_\_\_\_\_ = \_\_\_\_\_  
 \_\_\_\_\_ × \_\_\_\_\_ = \_\_\_\_\_



\_\_\_\_\_ lots of \_\_\_\_\_ = \_\_\_\_\_  
 \_\_\_\_\_ multiplied by \_\_\_\_\_ = \_\_\_\_\_  
 \_\_\_\_\_ × \_\_\_\_\_ = \_\_\_\_\_

- Draw a picture to match each label.

3 lots of 2

$5 \times 7$

10 multiplied by 3

- Complete the table.

Picture	Multiplication	Sentence
	$4 \times 10 = 40$	4 lots of 10 is equal to 40
	$35 = 7 \times 5$	
		6 lots of 3 is equal to 18

- Write <, > or = to complete the statements.

○

4 lots of 3 ○

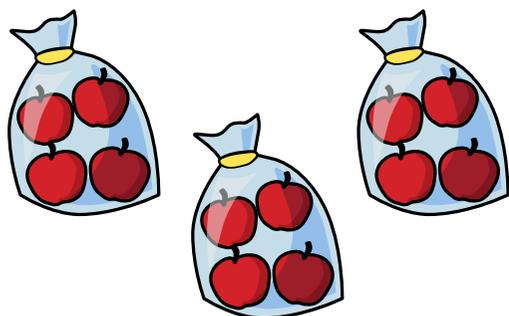
=
=
1 × \_\_\_\_\_

Compare methods with a partner.

# Multiplication sentences

## Reasoning and problem solving

The picture shows 3 lots of 4



12 apples

Draw a picture to show 4 lots of 3



How many apples are there in each picture?

What is the same about the multiplications?



What is different about the multiplications?

The answer to a multiplication question is 18



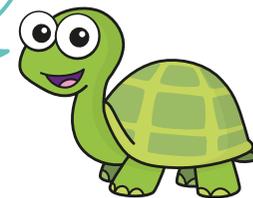
What could the multiplication be?

$$\square \times \square$$

How many possible questions can you find?

$1 \times 18, 2 \times 9, 3 \times 6,$   
 $6 \times 3, 9 \times 2, 18 \times 1$

$10 \times 2$  must be greater than  $4 \times 5$ , because 10 is greater than 5



No

Do you agree with Tiny?

Explain your answer.



# Use arrays

## Notes and guidance

In this small step, children use arrays for the first time in this block. This step focuses on the fact that multiplication is commutative and children should be encouraged to identify the two multiplication sentences that can be seen in an array.

Concrete resources should be used to help identify different sets of equal groups. Discuss why an array is a useful and efficient tool to calculate a multiplication and encourage children to draw arrays to represent the multiplication.

While the multiplication symbol is used more frequently, links should still be made to repeated addition and the language previously used to describe multiplication.

Children use arrays throughout the rest of the block to solve multiplication and division calculations.

### Things to look out for

- Children may make mistakes when drawing arrays. For example, children may leave a hole in their array, and so not represent the multiplication correctly.
- Children may not recognise that, for example,  $3 \times 4 = 4 \times 3$
- Children may not see the different sets of equal groups in an array.

## Key questions

- How can you organise the counters to help you find the total?
- How many rows are there?
- How many columns are there?
- What multiplication can you see in the array?
- What two multiplication sentences can you see?
- Is it easier to count in \_\_\_\_\_s or \_\_\_\_\_s to find the total?
- Why do  $3 \times 2$  and  $2 \times 3$  have the same total?

## Possible sentence stems

- There are \_\_\_\_\_ rows and \_\_\_\_\_ columns.
- In this array, I can see \_\_\_\_\_  $\times$  \_\_\_\_\_ and \_\_\_\_\_  $\times$  \_\_\_\_\_
- There are \_\_\_\_\_  $\times$  \_\_\_\_\_ = \_\_\_\_\_ altogether.

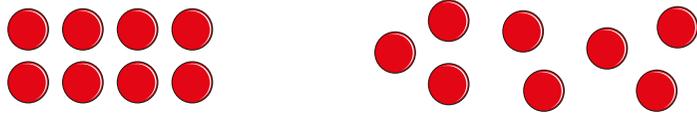
## National Curriculum links

- Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication ( $\times$ ), division ( $\div$ ) and equals (=) signs
- Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot

# Use arrays

## Key learning

- Look at the two groups of counters.



What is the same? What is different?  
Which group of counters is easier to count? Why?

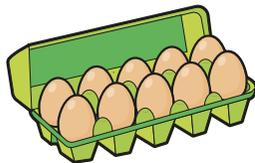
- Complete the sentences to match the picture.



\_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_  
 \_\_\_\_\_ × \_\_\_\_\_ = \_\_\_\_\_

There are \_\_\_\_\_ water bottles.  
 Can you see a different repeated addition and multiplication in the picture?

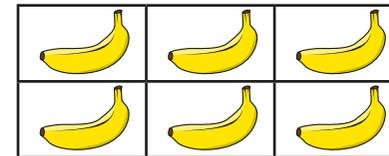
- Look at the picture.



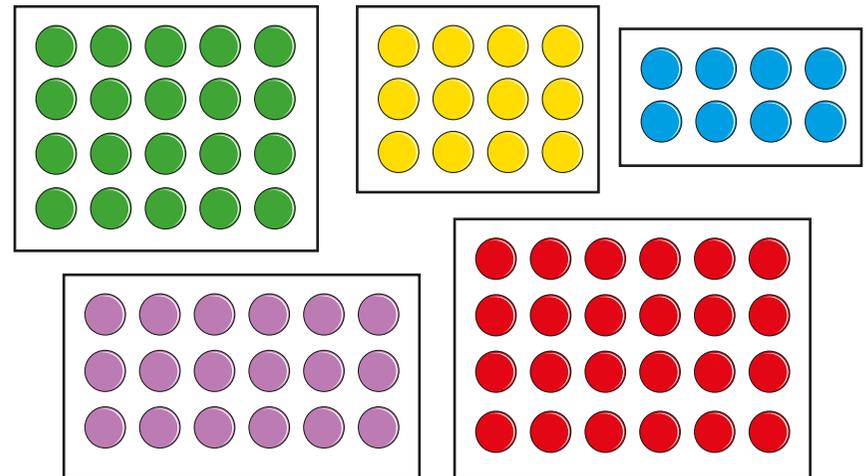
Find  $2 \times 5$  and  $5 \times 2$

Draw an array of counters to match the picture.

- Write two addition sentences and two multiplication sentences for the array.



- Write two addition sentences and two multiplication sentences for each array.

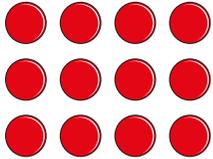


- Draw as many arrays as you can to show 16  
What do you notice?

# Use arrays

## Reasoning and problem solving

Kim and Max are looking at this array.



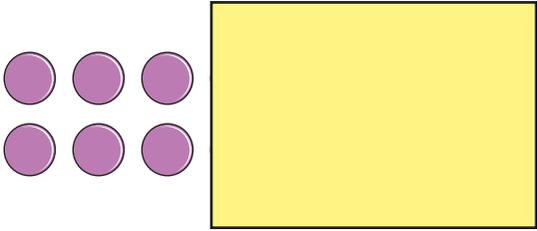
Kim says: The array shows  $3 \times 4$

Max says: The array shows  $4 \times 3$

Who is correct?  
How do you know?

They are both correct.

Tiny has hidden part of an array.



Tiny says: There are fewer than 16 counters in total.

What could the array be?  
Talk about it with a partner.

- $2 \times 4$
- $2 \times 5$
- $2 \times 6$
- $2 \times 7$

# Make equal groups – grouping

## Notes and guidance

Now that children have looked in detail at multiplication, in this small step they use their knowledge of equal groups to support them in developing their understanding of division. This is the first time within this block that children have looked at division.

Children put objects into groups of a certain amount rather than sharing into equal groups, which is covered in the next step. They are introduced to the division symbol for the first time, and this should be supported by language and sentence stems rather than just written in an abstract calculation. An interesting discussion point is what each number in the division calculation represents and this can be considered further in the next small step when looking at division as sharing.

Children should also be able to make links between multiplication and division.

## Things to look out for

- Children may mix up grouping and sharing.
- If circling groups, children may not do this in an efficient way and may end up with objects left over at both ends of the image.
- Children may think that as multiplication is commutative, division must be too.

## Key questions

- How many do you have altogether?
- How many are you going to put into each group?
- How many groups do you have?
- What does the symbol mean?
- What does each number represent?
- How can you use a number line to show equal groups?
- How are multiplication and division linked?

## Possible sentence stems

- There are \_\_\_\_\_ altogether.  
I have put them into equal groups of \_\_\_\_\_  
There are \_\_\_\_\_ groups.
- \_\_\_\_\_  $\div$  \_\_\_\_\_ = \_\_\_\_\_

## National Curriculum links

- Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication ( $\times$ ), division ( $\div$ ) and equals ( $=$ ) signs

# Make equal groups – grouping

## Key learning

- Take 15 counters.



- ▶ Put them into groups of 3
- ▶ Complete the sentences.

There are 15 counters.

The counters are in groups of \_\_\_\_\_

There are \_\_\_\_\_ groups.

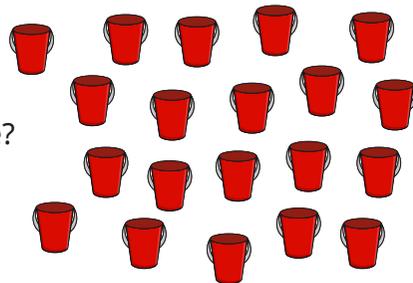
- There are 20 buckets.

- ▶ Circle groups of 5
- How many groups did you circle?

- ▶ Complete the number sentence.

$$20 \div 5 = \underline{\quad}$$

Does it matter how you circle the groups of 5?



- Ben has 12 cookies and some plates.

He puts 3 cookies on each plate.

How many plates does Ben have?

Use cubes or counters to show your answer.

- Ann has 20 pencils.

She wants to put 10 pencils in each pot.

Complete the sentences to show how many pots Ann needs.  
You could draw a picture to help you.

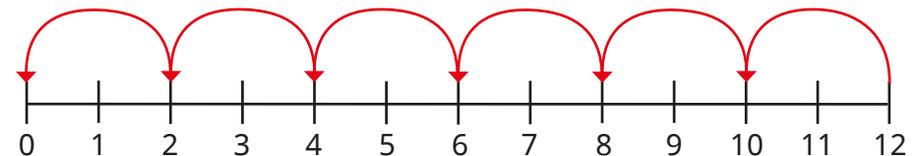
There are \_\_\_\_\_ pencils altogether.

There are \_\_\_\_\_ pencils in each pot.

There are \_\_\_\_\_ pots.

$$\underline{\quad} \div \underline{\quad} = \underline{\quad}$$

- Tom uses a number line to work out how many equal groups of 2 he can make from 12



- ▶ Complete the sentences.

12 is made up of \_\_\_\_\_ equal groups of \_\_\_\_\_

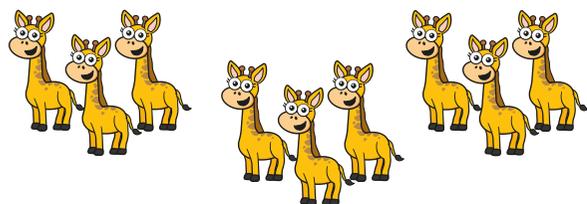
$$12 \div 2 = \underline{\quad}$$

- ▶ Use a number line to work out  $15 \div 3$

# Make equal groups – grouping

## Reasoning and problem solving

Write a division and a multiplication to match the picture.



$$9 \div 3 = 3$$

$$3 \times 3 = 9$$

What do you notice?

Dan has 30 stickers.

He groups the stickers, so that there is the same number of stickers in each group.

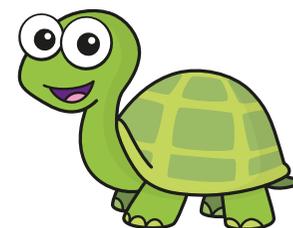
What groups could Dan have made?

Talk about it with a partner.

multiple possible answers, e.g.  
10 groups of 3  
5 groups of 6

Tiny has made 5 equal groups of counters.

I started with more than 10 counters, but fewer than 35 counters.



How many counters could Tiny have started with?

How many counters will there be in each group?

Compare answers with a partner.

15 counters in 5 groups of 3  
20 counters in 5 groups of 4  
25 counters in 5 groups of 5  
30 counters in 5 groups of 6

## Make equal groups – sharing

### Notes and guidance

In this small step, children explore division through sharing.

Children should firstly explore this using concrete resources and physically sharing between groups. They could explore the generalisation that the greater the number they are dividing by, the smaller the answer. Bar models and pictures are also used to support children in completing the calculations. When dividing larger numbers, children could use base 10 and this may be a useful opportunity to recap place value and exchanging.

Children could also compare sharing and grouping and think about what the numbers represent in each structure. They use both grouping and sharing later in the block when dividing by 2, 5 and 10

### Things to look out for

- Children may mix up grouping and sharing.
- Children may not count the number in each group to find the answer.
- When using base 10, children may not exchange, so they may think that they cannot complete calculations or will complete them inaccurately.

### Key questions

- How many do you have altogether?
- How many groups are you going to share them between?
- How many does each group have?
- What does this symbol ( $\div$ ) represent? What does each number represent?
- Can you draw a picture to represent this calculation?
- How is sharing different from grouping? How is it similar?

### Possible sentence stems

- There are \_\_\_\_\_ altogether.  
There are \_\_\_\_\_ equal groups.  
There are \_\_\_\_\_ in each equal group.
- \_\_\_\_\_ shared equally between \_\_\_\_\_ groups is equal to \_\_\_\_\_  
\_\_\_\_\_  $\div$  \_\_\_\_\_ = \_\_\_\_\_

### National Curriculum links

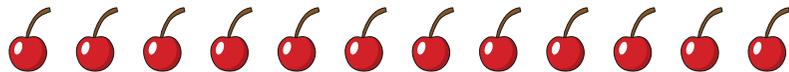
- Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication ( $\times$ ), division ( $\div$ ) and equals ( $=$ ) signs

# Make equal groups – sharing

## Key learning

- Take 10 counters.
  - ▶ Share them into 2 equal groups.
  - ▶ Complete the sentences.  
There are 10 counters.  
There are \_\_\_\_\_ equal groups.  
There are \_\_\_\_\_ in each equal group.
  - ▶ If you share the counters into 5 equal groups, how do the sentences change?

- Kay has 12 cherries.

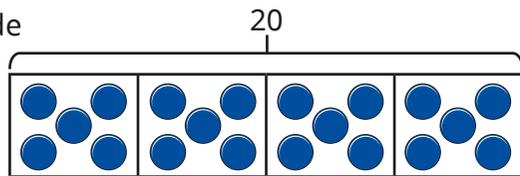


She shares them equally between 3 plates.

Show how Kay shares the cherries.

How many cherries are on each plate?

- Ben uses a bar model to divide 20 into 4 equal groups.



How does Ben's bar model show the question?

How does it show the answer?

$$20 \div 4 = 5$$

- Share 12 cubes equally between 4 boxes.

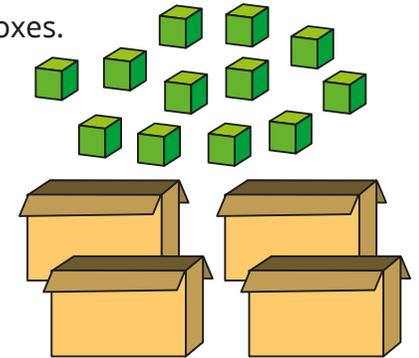
Complete the sentences.

There are \_\_\_\_\_ cubes altogether.

There are \_\_\_\_\_ boxes.

There are \_\_\_\_\_ cubes in each box.

$$12 \div \_\_\_\_\_ = \_\_\_\_\_$$



- 24 children are put into 6 equal teams.

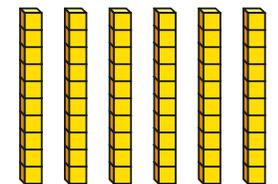
How many children are in each team?

Use counters to show this.

- Use base 10 to help you work out the divisions.

▶  $60 \div 6$       ▶  $60 \div 3$       ▶  $60 \div 2$

▶  $60 \div 5$       ▶  $60 \div 10$       ▶  $60 \div 4$



Which did you find the easiest?

Which did you find the hardest?

Talk about it with a partner.

# Make equal groups – sharing

## Reasoning and problem solving

Tiny uses a bar model to work out  $20 \div 5$

I have shared the counters into 5 equal groups, so  $20 \div 5 = 5$

Do you agree with Tiny?  
Why?

No

Write a story to match the division.

$30 \div 5 = 6$

Is your story sharing or grouping?  
Compare stories with a partner.

multiple possible answers

Mo is working out  $40 \div 5$

I cannot use base 10 to work out  $40 \div 5$ , because I cannot share 4 tens into 5 equal groups.

Do you agree with Mo?  
Why?

No

Ann has 20 sweets and shares them between 5 friends.

Tom has 20 sweets and shares them between 10 friends.

Whose friends get more sweets?  
How do you know?

Ann's friends

# The 2 times-table

## Notes and guidance

This small step uses skills from previous steps and from counting in 2s, 5s and 10s from the Place value block. Children explore the 2 times-table and start to become more fluent in this. This step focuses mainly on multiplication, with division covered in more detail in the next step.

Children explore the 2 times-table in a range of ways, and it is important that children are exposed to multiple representations. They should use concrete resources as well as number tracks, number lines and bar models. They will have the opportunity to practise using these representations again later in the block.

When calculating, children should be encouraged to find efficient strategies rather than always counting from  $1 \times 2$

## Things to look out for

- Children may add the two numbers together, rather than multiplying them.
- Children may always start from the first number in the times-table, instead of starting from a known fact.
- Children may be less confident in some representations than others.

## Key questions

- How can you show counting in 2s?
- How do you know what \_\_\_\_\_ lots of 2 are?
- Would drawing a picture help you to work out the multiplication?
- What do you need to do with the two numbers in the number sentence?
- Do you always need to start counting from 2?
- If you know what  $5 \times 2$  is, how can you work out  $6 \times 2$ ?
- If you know what  $10 \times 2$  is, how can you work out  $9 \times 2$ ?
- Can you show the multiplication another way?

## Possible sentence stems

- \_\_\_\_\_  $\times 2$  is the same as \_\_\_\_\_ lots of 2
- \_\_\_\_\_ multiplied by 2 is equal to \_\_\_\_\_
- I know that \_\_\_\_\_  $\times 2 =$  \_\_\_\_\_, so I can add/subtract 2 to work out \_\_\_\_\_  $\times 2$

## National Curriculum links

- Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers

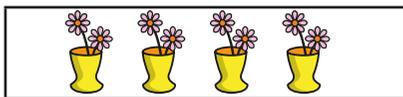
# The 2 times-table

## Key learning

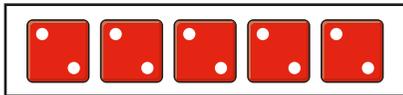
- Match the pictures to the multiplications.



$4 \times 2$

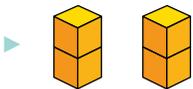


$5 \times 2$



$3 \times 2$

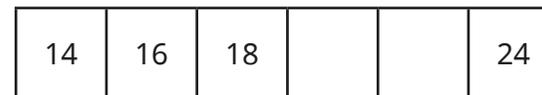
- Write a multiplication sentence to match each picture.



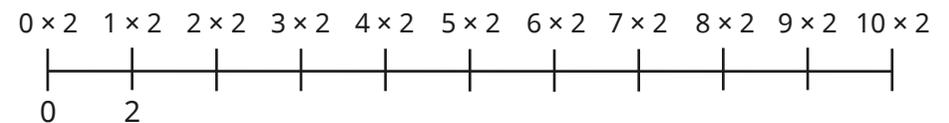
- How many wheels are there on five bicycles?



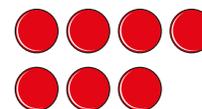
- Complete the number tracks.



- Complete the number line.



- Complete the array to work out the multiplication.



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

- Complete the multiplications.

- ▶  $4 \times 2 = \underline{\quad}$       ▶  $2 \times 10 = \underline{\quad}$       ▶  $\underline{\quad} = 12 \times 2$
- ▶  $8 \times 2 = \underline{\quad}$       ▶  $2 \times \underline{\quad} = 18$       ▶  $\underline{\quad} \times 2 = 6$

# The 2 times-table

## Reasoning and problem solving

Tiny is working out  $5 \times 2$



The answer is 7

Is Tiny correct?  
How do you know?



No

Write  $<$ ,  $>$  or  $=$  to compare the statements.

$5 \times 2$  ○  $7 \times 2$

$2 \times 8$  ○ 18

$6 \times 2$  ○  $8 + 4$



$<$   
 $<$   
 $=$

Kay has 7 cookies.

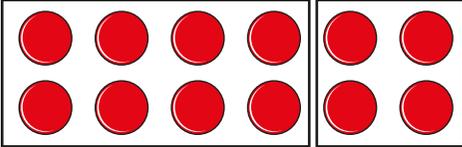
Max has twice as many cookies as Kay.

How many cookies does Max have?




14

Kim uses counters to show  $6 \times 2$





My array shows that  $4 \times 2 + 2 \times 2$  is the same as  $6 \times 2$

What else does Kim's array show?

multiple possible answers, e.g.  
 $6 \times 2 = 1 \times 2 + 5 \times 2$

# Divide by 2

## Notes and guidance

Following on from the previous step, children use their knowledge of the 2 times-table to divide by 2

Children should be aware of the differences between the grouping and sharing structures of division. Divisions are shown using pictures as well as concrete resources to help children work out the calculations. Children use sentence stems alongside number sentences using the division symbol.

While it is important that children use concrete resources, they should also be aware that they can use the 2 times-table to help them fluently divide by 2, in the abstract. Children should be encouraged to spot patterns to help them complete calculations efficiently.

### Things to look out for

- Children may not be confident with the 2 times-table.
- Children may confuse grouping and sharing.
- When using a number line, children may believe that the answer is always zero, as this is the number they will finish on.
- Children may be over-reliant on practical resources and not use their times-table knowledge.

## Key questions

- How can the 2 times-table help you?
- How are division and multiplication linked?
- Will you be grouping or sharing for this question?  
How do you know?
- How can making/drawing an array help you?
- How many groups of 2 can you make?
- How can you share this between 2 equal groups?
- How can you use a number line to complete the division?
- If you know what 20 divided by 2 is, what is 10 divided by 2?

## Possible sentence stems

- There are \_\_\_\_\_ altogether.  
There are \_\_\_\_\_ in each group.  
There are \_\_\_\_\_ groups.
- \_\_\_\_\_ divided by 2 is equal to \_\_\_\_\_

## National Curriculum links

- Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers

# Divide by 2

## Key learning

- Use 16 cubes.



- ▶ Put them into groups of 2 and complete the sentence.  
There are \_\_\_\_\_ equal groups of 2
- ▶ Share them into 2 equal groups and complete the sentence.  
There are \_\_\_\_\_ cubes in each equal group.

How are grouping and sharing different? How are they similar?

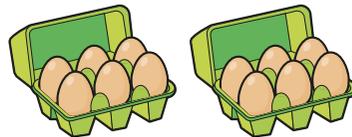
- Complete the sentences.

There are 12 eggs altogether.

There are \_\_\_\_\_ groups.

There are \_\_\_\_\_ eggs in each group.

$12 \div 2 = \underline{\quad}$        $\underline{\quad} \times 2 = 12$



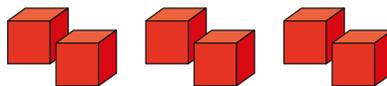
- Complete the sentences.

There are \_\_\_\_\_ cubes altogether.

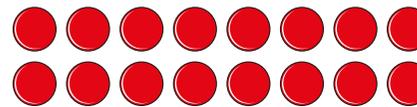
There are \_\_\_\_\_ cubes in each group.

There are \_\_\_\_\_ groups.

$\underline{\quad} \div \underline{\quad} = \underline{\quad}$        $\underline{\quad} \times \underline{\quad} = \underline{\quad}$

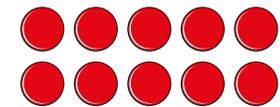


- Use the arrays to complete the number sentences.



$\underline{\quad} \times 2 = 16$

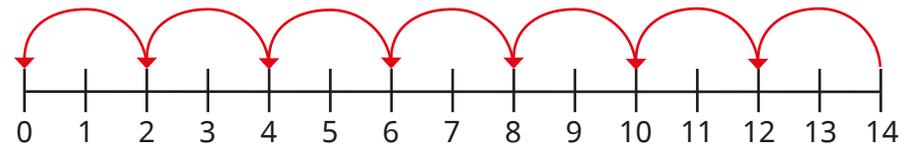
$16 \div 2 = \underline{\quad}$



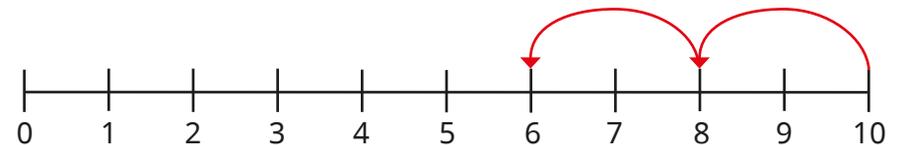
$\underline{\quad} \times 2 = \underline{\quad}$

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

- Use the number lines to work out the divisions.



$14 \div 2$



$10 \div 2$

- Dan and Fay share 12 sweets between them equally.

How many sweets does each child get?

# Divide by 2

## Reasoning and problem solving

Jo is dividing by 2



If I know my 2 times-table, then I can divide by 2

Do you agree with Jo?  
Why?



Yes

Ben has 24p.  
He divides it equally between 2 friends.  
How much will they each get?

Ben has 24p in 2p coins.  
How many 2p coins does he have?

What is the same about the two questions? What is different?

12p

---

12 coins

Tom shares some grapes equally between two friends.

Each friend gets more than 30 grapes, but fewer than 50 grapes.

Complete the sentences to describe the number of grapes Tom started with.

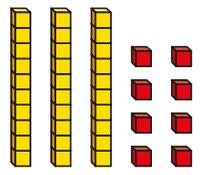
He could have started with \_\_\_\_\_ grapes.

He cannot have started with \_\_\_\_\_ grapes.



Tom could have started with any even number of grapes between 62 and 98 grapes.

Tiny is working out  $38 \div 2$

How can Tiny use the base 10 to work out the division?




19

# Doubling and halving

## Notes and guidance

In this small step, children double and halve numbers.

Introduce the concept using concrete resources and pictures to show halves and doubles. Guide them towards the connection that when they double a number, they multiply by 2 and when they halve a number, they divide by 2

Children also use pictures to identify when a number has or has not been doubled or halved; misconceptions, such as thinking that doubling means adding 2, could be explored at this point.

Once children are secure in their understanding of doubling and halving, they can look for patterns and try to predict answers based on known facts, for example “If I know what double 2 is, I can find double 20”

Some children may try to halve odd numbers, which is something that can be explored with concrete resources.

## Things to look out for

- Children may not make the connection between doubling and halving and the 2 times-table.
- Children may be over-reliant on manipulatives or pictures to double or halve, rather than multiplying or dividing by 2

## Key questions

- What does “double” mean?
- What does “halve” mean?
- How do you double a number?
- How do you halve a number?
- How can you use counters to help you double a number?
- Can you write this as a number sentence?
- How is doubling linked to the 2 times-table?
- How is halving linked to the 2 times-table?

## Possible sentence stems

- Double \_\_\_\_\_ is \_\_\_\_\_
- Half of \_\_\_\_\_ is \_\_\_\_\_
- Double \_\_\_\_\_ is \_\_\_\_\_, so double \_\_\_\_\_ is \_\_\_\_\_
- Half of \_\_\_\_\_ is \_\_\_\_\_, so half of \_\_\_\_\_ is \_\_\_\_\_

## National Curriculum links

- Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers

# Doubling and halving

## Key learning

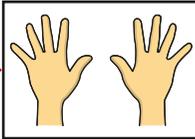


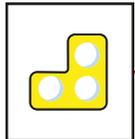
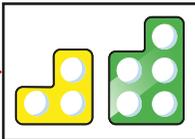
Show children the sets of pictures.

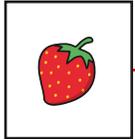
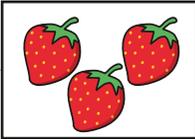
Discuss what the pictures show.

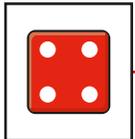
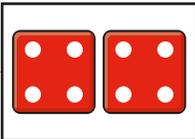
Identify with children whether each set of pictures shows doubling, halving or neither.

- Which pictures show doubling?

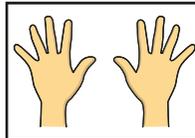
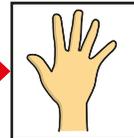
A  → 

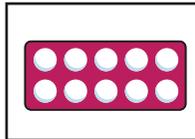
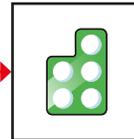
B  → 

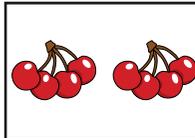
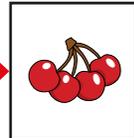
C  → 

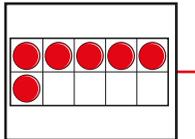
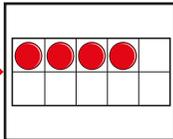
D  → 

- Which pictures show halving?

A  → 

B  → 

C  → 

D  → 

- Write a multiplication or division number sentence to match the labels.

double 7      half of 14      double 12      half of 24

What do you notice about your answers?

# Doubling and halving

## Reasoning and problem solving



As a class, complete the table.

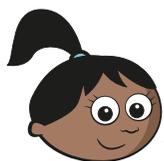
Number	1	2	3	4	5	6	7	8	9	10
Double										

Ask children to describe any patterns that they spot.

Discuss what other numbers they could double using the same patterns.

multiple possible answers

Sam is doubling and halving numbers.



If I can multiply or divide a number by 2, then I can double and halve the number.

Do you agree with Sam? Explain your answer.

Yes

Tiny has 12 leaves.

Tiny eats half the leaves.

I must have 24 leaves left.



What mistake has Tiny made?

Tiny has doubled the starting number rather than halving it.

Tiny will have 6 leaves left.

Think of a number.

- Double it.
- Add 4
- Halve the answer.
- Take away the number you first thought of.

What number do you finish with?

Try this with a different number.

Why does this always happen?

finishing number is always 2

# Odd and even numbers

## Notes and guidance

Children may have met the idea of odd and even numbers in Reception or Year 1. In this small step, they explore the idea more formally, identifying whether a whole number is odd or even.

Children should first be shown representations, for example number pieces, of odd and even numbers that clearly show when a number can be divided into two whole equal parts and when it cannot. It may be useful to think of a definition for odd and even numbers and to identify non-examples as well as examples of both. Children should recognise that an even number can be halved to give a whole number answer, as it is divisible by 2

Once children are secure in their understanding of odd and even, they can recognise that they need to check the ones column of a number to decide whether it is odd or even.

### Things to look out for

- Zero and other numbers with zero in the ones column may confuse children.
- Children may not recognise that they only need to check the ones column of a number to see if it is odd or even.
- Children may not recognise that if a number is even, the next number must be odd.

## Key questions

- What do you notice about odd/even numbers?
- How do you know if a number is odd/even?
- Why is the 2 times-table important for odd and even numbers?
- If your number is even/odd, will the next number you count be odd or even? Why?
- What digit is in the ones column? Why is this important?
- Can you halve even/odd numbers? How do you know?

## Possible sentence stems

- Even numbers have \_\_\_\_\_ in the ones column.
- Odd numbers have \_\_\_\_\_ in the ones column.
- Even numbers can be divided by \_\_\_\_\_ to give a whole number answer.
- The next whole number after an \_\_\_\_\_ number is an \_\_\_\_\_ number.

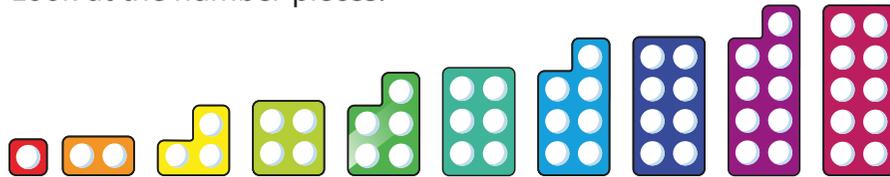
## National Curriculum links

- Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers

# Odd and even numbers

## Key learning

- Look at the number pieces.

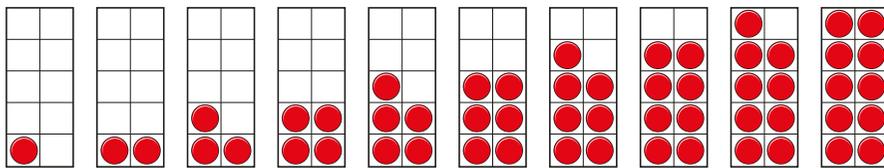


Which number pieces show odd numbers?

Which number pieces show even numbers?

How do you know?

- Which ten frames show even numbers? How do you know?



Even numbers are all in the \_\_\_\_\_ times-table.

Even numbers can be divided by \_\_\_\_\_

- Use counters to show that the statements are true.

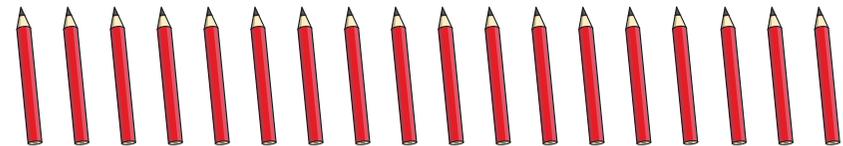
17 is an odd number.

26 is an even number.

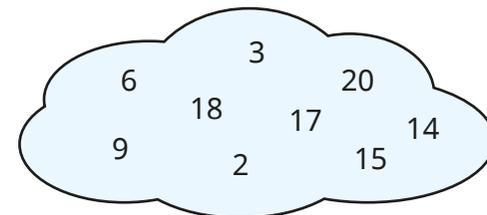
- Group the pencils into 2s to show that 15 is an odd number.



Group the pencils into 2s to show that 18 is an even number.



- Use a blank 100 square.  
Colour all the odd numbers.  
What do you notice about odd and even numbers?
- Sort the numbers into odd and even.



What patterns can you spot?

# Odd and even numbers

## Reasoning and problem solving

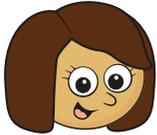
Tiny is looking at odd and even numbers.



30 is an odd number because 3 is an odd number.

No

Do you agree with Tiny?  
Explain your answer.



I have added two 1-digit numbers. My answer can be divided into two equal groups.

multiple possible answers, e.g.  
 $1 + 3 = 4$

What could Kim's numbers be?  
How many answers can you find?

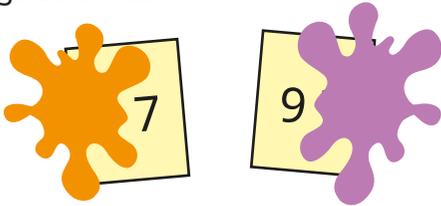


When I add two odd numbers together, the total is always even.

Yes

Is Mo correct?  
How do you know?  
What else can you find out?

Are the numbers odd, even or can you not tell?



first card: odd  
second card: cannot tell

Talk about it with a partner.

# The 10 times-table

## Notes and guidance

In this small step, children focus on the 10 times-table. They use their understanding of multiplication to count forwards and backwards in 10s. Division by 10 is covered in more detail in the next step.

As with the 2 times-table, children explore the 10-times table through a range of representations and should be confident using these. They count in 10s using number tracks, number lines and bar models. Children should also be confident drawing an image that matches a number sentence. As children are counting in 10s, base 10 could be used to support understanding.

The 10 times-table is revisited later in the block, where children explore the links between the 10 and 5 times-tables.

## Things to look out for

- Children may not be confident counting from 90 to 100
- Children may not recognise that number tracks can decrease as well as increase.
- Children may always start from the first number in the times-table, instead of starting from a known fact.

## Key questions

- How can you show counting in 10s?
- How do you know what \_\_\_\_\_ lots of 10 are?
- Would drawing a picture help you to work out the calculation?
- How can you use base 10 to help you find the answer?
- Do you always need to start counting from 10?
- If you know what  $10 \times 5$  is, how could you work out  $10 \times 6$ ?
- What other way could you show this calculation?

## Possible sentence stems

- \_\_\_\_\_  $\times$  10 is the same as \_\_\_\_\_ lots of 10
- \_\_\_\_\_  $\times$  10 = \_\_\_\_\_, so \_\_\_\_\_  $\times$  10 = \_\_\_\_\_
- When counting forwards in 10s, the number after \_\_\_\_\_ is \_\_\_\_\_
- When counting backwards in 10s, the number after \_\_\_\_\_ is \_\_\_\_\_

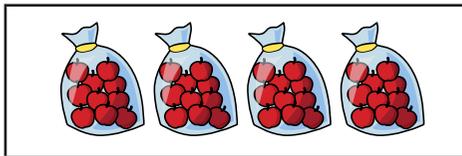
## National Curriculum links

- Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers

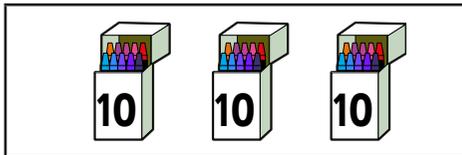
# The 10 times-table

## Key learning

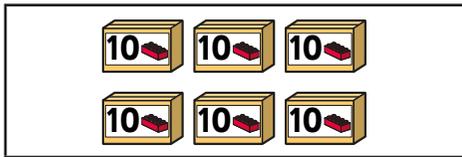
- Match the pictures to the multiplications.



$$3 \times 10$$



$$6 \times 10$$



$$4 \times 10$$

- Complete the sentences for each picture.

\_\_\_\_\_  $\times$  10 = \_\_\_\_\_

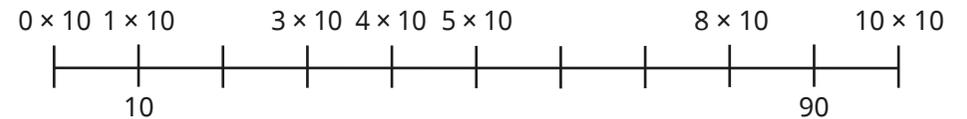
There are \_\_\_\_\_ altogether.



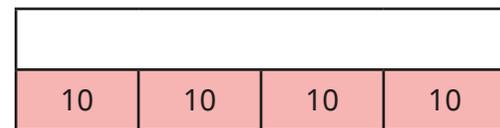
- Complete the number tracks.



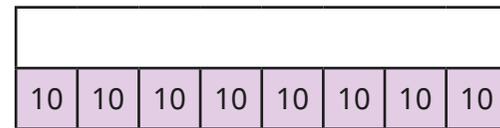
- Complete the number line.



- Use the bar models to complete the multiplications.



\_\_\_\_\_  $\times$  10 = \_\_\_\_\_



10  $\times$  \_\_\_\_\_ = \_\_\_\_\_

What do you notice about the two multiplications?

- Complete the number sentences.

- ▶  $5 \times 10 =$  \_\_\_\_\_
- ▶  $10 \times 3 =$  \_\_\_\_\_
- ▶  $10 \times 10 =$  \_\_\_\_\_
- ▶  $9 \times 10 =$  \_\_\_\_\_
- ▶ \_\_\_\_\_  $= 4 \times 10$
- ▶  $10 \times$  \_\_\_\_\_  $= 60$

# The 10 times-table

## Reasoning and problem solving

Dan runs 10 m seven times.

Which cards do **not** show this?

$10 + 7$	$7 + 7 + 7 + 7 + 7 + 7 + 7 + 7 + 7 + 7$
$7 \times 10$	$10 + 10 + 10 + 10 + 10 + 10 + 10$

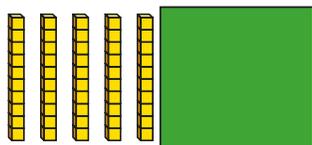
Explain your answers.



$10 + 7$        $7 + 7 + 7 + 7 + 7 + 7 + 7 + 7 + 7 + 7$

Ron uses base 10 to show a multiplication.

- Some of the base 10 pieces are covered up.
- The answer is less than 100



What could Ron's multiplication be?

$6 \times 10, 7 \times 10, 8 \times 10, 9 \times 10$

Write  $<$ ,  $>$  or  $=$  to compare the statements.



$8 \times 10$	<input type="text"/>	$10 \times 6$
90	<input type="text"/>	$9 \times 10$
$4 \times 2$	<input type="text"/>	$4 \times 10$
$5 \times 10$	<input type="text"/>	47

$>$   
 $=$   
 $<$   
 $>$

Kay is 4 years old.

Ann is twice as old as Kay.

Ann's gran is 10 times older than Ann.

How old is Ann's gran?



80 years old

# Divide by 10

## Notes and guidance

In this small step, children use their knowledge of the 10 times-table to divide by 10

Children experience a range of grouping and sharing activities, building on their previous learning, and should be reminded of the differences and similarities between these two structures. They should be confident counting backwards in 10s and understand that they can use this to solve division calculations.

Children are exposed to a range of representations to show division. They could start by using concrete resources, such as base 10, and contextual sentence stems before moving on to using more pictorial and abstract representations, including number lines and number sentences.

Encourage children to identify their own, mathematically correct, rule for dividing by 10 and to compare ideas with others.

## Things to look out for

- Children may not yet be confident with 10 times-table facts.
- Children may confuse grouping and sharing.
- Children may be over-reliant on practical resources and not make connections to their times-table knowledge.

## Key questions

- How can the 10 times-table help you?
- How are division and multiplication linked?
- Will you be grouping or sharing for this question? How do you know?
- How can you use base 10 to help you?
- How many groups of 10 can you make?
- How can you share this between 10 equal groups?
- How can you use a number line to complete the division?

## Possible sentence stems

- There are \_\_\_\_\_ altogether.  
There are \_\_\_\_\_ in each group.  
There are \_\_\_\_\_ groups.  
\_\_\_\_\_  $\div$  10 = \_\_\_\_\_

## National Curriculum links

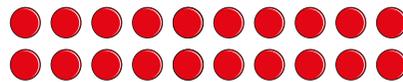
- Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers

# Divide by 10

## Key learning

- Use 20 counters.

▶ Put them into groups of 10



There are \_\_\_\_\_ equal groups of 10

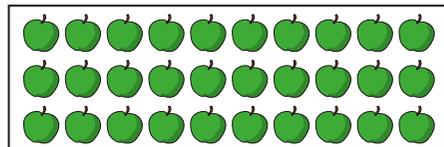
▶ Share them into 10 equal groups.

There are \_\_\_\_\_ counters in each equal group.

What do you notice?

- Apples are sold in packs of 10

Complete the sentences for the number of packs that can be made from each set of apples.

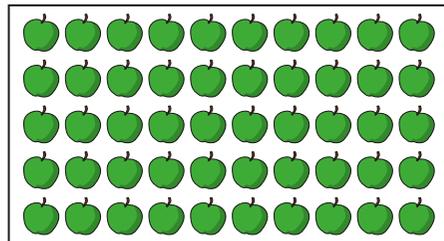


There are \_\_\_\_\_ apples.

There are \_\_\_\_\_ apples in each group.

There are \_\_\_\_\_ groups.

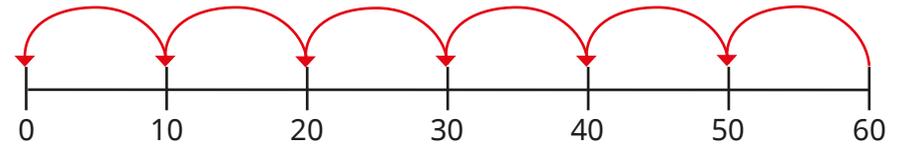
\_\_\_\_\_ ÷ \_\_\_\_\_ = \_\_\_\_\_



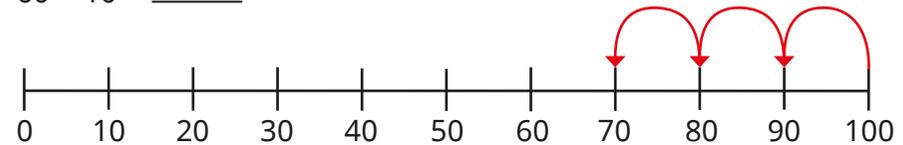
- Share 40 counters into 10 equal groups.

How many groups are there?

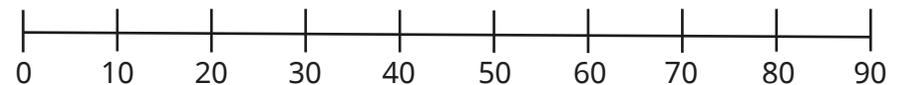
- Use the number lines to complete the divisions.



$60 \div 10 = \underline{\hspace{2cm}}$



$100 \div 10 = \underline{\hspace{2cm}}$



$90 \div 10 = \underline{\hspace{2cm}}$

- Max has 70p in his pocket.

It is made up of 10p coins.

How many coins does Max have?

Draw a picture to show your answer.

- Complete the sentences.

▶  $70 \div 10 = \underline{\hspace{2cm}}$

▶ 6 tens ÷ 1 ten = \_\_\_\_\_

▶  $5 = \underline{\hspace{2cm}} \div 10$

▶ There are \_\_\_\_\_ tens in 40

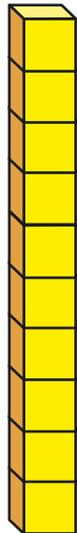
# Divide by 10

## Reasoning and problem solving

Tiny uses cubes to build a tower.



My tower is  
30 cm tall.



3 cm  
 $30 \div 10 = 3$

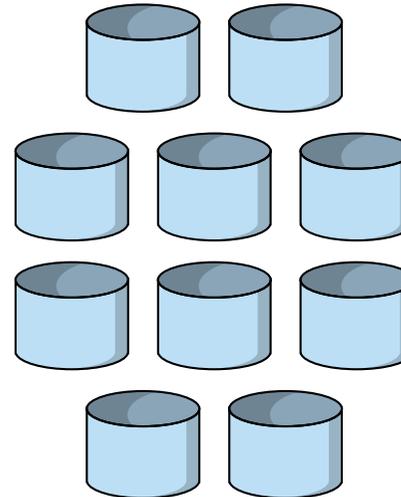
How tall is each cube?

Write a number sentence to show  
how you worked it out.

Miss Hall has some pens.



She shares them equally between  
10 pots.



multiple possible  
answers, e.g.  
 $70 \div 10 = 7$

How many pens could be in each pot?

Find as many ways to share the pens  
as you can.

What do you notice about  
your answers?



# The 5 times-table

## Notes and guidance

In this small step, children focus on the 5 times-table. They use their understanding of multiplication to count in 5s.

As with the other times-tables covered earlier in the block, zero should be included, so that children realise that  $0 \times 5 = 0$ . Children develop their knowledge of the 5 times-table facts, which will be reinforced when they divide by 5 in the next step.

Children use multiple representations to show the 5 times-table and manipulatives are used to support understanding. Efficient counting strategies should be shared, and children encouraged to use known facts rather than always counting from  $1 \times 5$

Children should be encouraged to spot patterns with the 5 times-table and may start to see links between the 5 and 10 times-tables. This will be covered in more detail later in the block.

## Things to look out for

- Children may think that the 5 times-table stops at 50
- Children may get to 10 and then start counting in 10s rather than continuing to count in 5s.
- Children may always start from the first number in the times-table, instead of starting from a known fact.

## Key questions

- How can you show counting in 5s?
- How do you know what \_\_\_\_\_ lots of 5 are?
- Would drawing a picture help you to work out the multiplication?
- Do you always need to start counting from 5?
- If you know what  $10 \times 5$  is, how could you work out  $11 \times 5$ ?
- What do you notice about the ones column of the numbers in the 5 times-table?
- How are the 5 times-table and 10 times-table similar?  
How are they different?

## Possible sentence stems

- \_\_\_\_\_  $\times 5$  is the same as \_\_\_\_\_ lots of 5
- \_\_\_\_\_  $\times 5 =$  \_\_\_\_\_, so \_\_\_\_\_  $\times 5 =$  \_\_\_\_\_
- When counting in 5s, the number after/before \_\_\_\_\_ is \_\_\_\_\_

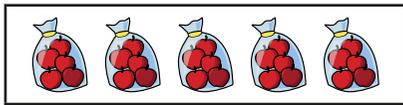
## National Curriculum links

- Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers

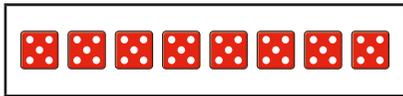
# The 5 times-table

## Key learning

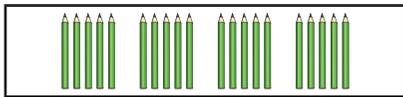
- Match the pictures to the multiplications.



$8 \times 5$



$4 \times 5$

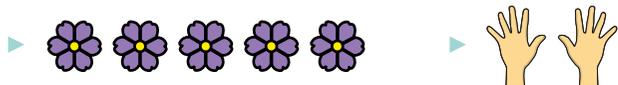


$5 \times 5$

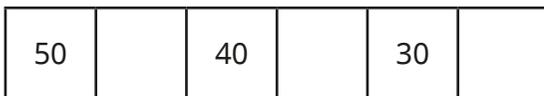
- Complete the sentences for each picture.

$\text{_____} \times 5 = \text{_____}$

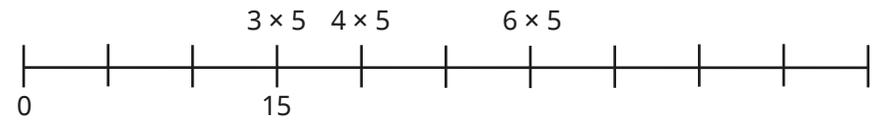
There are \_\_\_\_\_ altogether.



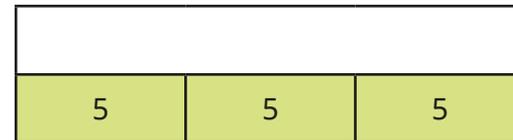
- Complete the number tracks.



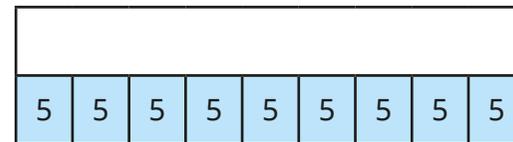
- Complete the double number line.



- Use the bar models to complete the multiplications.



$\text{_____} \times 5 = \text{_____}$



$5 \times \text{_____} = \text{_____}$

- Complete the number sentences.

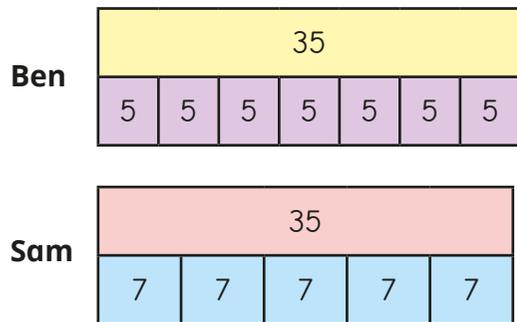
▶ $5 \times 2 = \text{_____}$	▶ $5 \times 3 = \text{_____}$	▶ $5 \times 6 = \text{_____}$
▶ $4 \times 5 = \text{_____}$	▶ $\text{_____} = 12 \times 5$	▶ $5 \times \text{_____} = 35$

- Draw a picture to show  $8 \times 5$   
Compare pictures with a partner.

# The 5 times-table

## Reasoning and problem solving

Ben and Sam both draw bar models to show  $7 \times 5$



The total is the same.

Ben's bar model shows 7 lots of 5  
Sam's bar model shows 5 lots of 7

What is the same and what is different about their bar models?

Tubes of tennis balls come in packs of 2 and 5



Fay has 22 tennis balls.

How many of each pack could she have?

Compare answers with a partner.



multiple possible answers, e.g.  
4 packs of 5,  
1 pack of 2

Jo, Ron, Kim and Mo all have some stickers.



Mo

I have 4 stickers.



Jo

I have twice as many stickers as Mo.



Ron

I have 10 times as many stickers as Mo.



Kim

I have 5 times as many stickers as Jo.

How many stickers does each child have?

Mo: 4  
Jo: 8  
Ron: 40  
Kim: 40

## Divide by 5

### Notes and guidance

In this small step, children use their understanding of the 5 times-table to divide by 5, helping them to become more fluent with the times-tables facts. Children answer questions involving grouping and sharing and need to have efficient strategies for calculating both types of problems.

As with the previous division steps, children should be exposed to multiple representations when dividing and use both concrete and pictorial resources to support their understanding.

At this point, children could explore the effect of dividing the same number by 2, 5 and 10 and comparing the answers. They may start to see links between the 5 and 10 times-tables, which is covered in more detail in the next step.

### Things to look out for

- Children may not yet be confident with 5 times-table facts.
- Children may confuse grouping and sharing.
- When using bar models, children may add together all the equal parts rather than just find one part.
- Children may be over-reliant on practical resources and not make connections to their times-table knowledge.

### Key questions

- How can the 5 times-table help you?
- How are division and multiplication linked?
- Will you be grouping or sharing for this question? How do you know?
- How could making/drawing an array help you?
- How many groups of 5 can you make?
- How can you share this into 5 equal groups?
- How can you use a number line to complete the division?

### Possible sentence stems

- There are \_\_\_\_\_ altogether.  
There are \_\_\_\_\_ in each group.  
There are \_\_\_\_\_ groups.  
\_\_\_\_\_  $\div$  5 =

### National Curriculum links

- Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers

# Divide by 5

## Key learning

- Use 30 cubes.

How many towers of 5 cubes can you make?

- 20 birds have been put into groups of 5

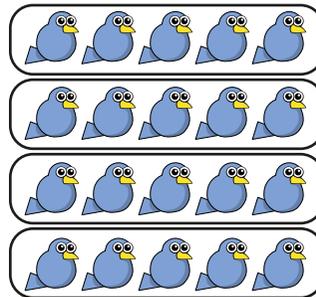
Complete the sentences.

There are \_\_\_\_\_ birds altogether.

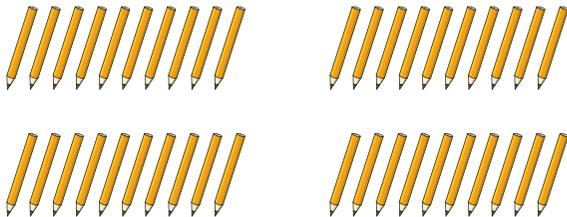
There are \_\_\_\_\_ birds in each group.

There are \_\_\_\_\_ groups.

\_\_\_\_\_ ÷ \_\_\_\_\_ = \_\_\_\_\_



- 40 pencils are shared equally between 5 children.

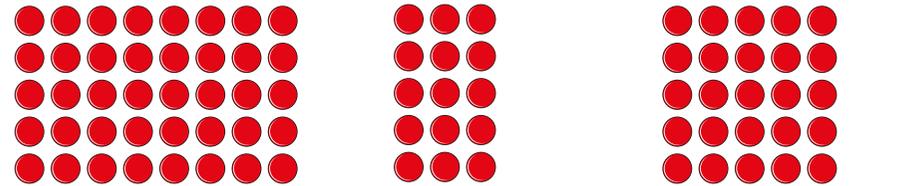


How many pencils does each child get?

Write a division.

\_\_\_\_\_ ÷ \_\_\_\_\_ = \_\_\_\_\_

- Use the arrays to complete the number sentences.

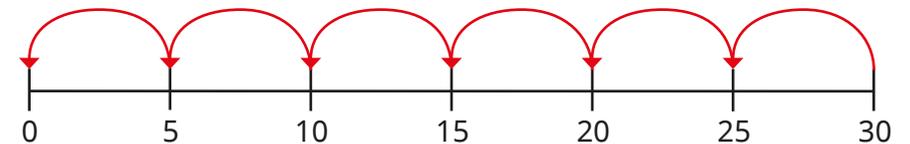


\_\_\_\_\_ × 5 = \_\_\_\_\_    \_\_\_\_\_ × 5 = \_\_\_\_\_    \_\_\_\_\_ × 5 = \_\_\_\_\_

\_\_\_\_\_ ÷ 5 = \_\_\_\_\_    \_\_\_\_\_ ÷ 5 = \_\_\_\_\_    \_\_\_\_\_ ÷ 5 = \_\_\_\_\_

- Use the number line to work out the division.

30 ÷ 5



- Draw bar models to work out the divisions.

▶ 20 ÷ 5

▶ 40 ÷ 5

▶ 60 ÷ 5

What do you notice about your answers?

- Complete the divisions.

▶ 25 ÷ 5 = \_\_\_\_\_

▶ 35 ÷ 5 = \_\_\_\_\_

▶ 45 ÷ 5 = \_\_\_\_\_

# Divide by 5

## Reasoning and problem solving

Here are some number cards.



Use the cards to make multiplication and division sentences.

How many different sentences can you make?

Talk about it with a partner.



multiple possible answers, e.g.  
 $4 \times 5 = 20$   
 $20 \div 10 = 2$

Tom has some marbles.

He shares them into 10 equal groups.

There are 6 marbles in each group.

Tom then shares his marbles into 5 equal groups.

How many marbles are there in each group?

How did you work it out?



12

Max buys 5 chew bars for 50p.



How much does one chew bar cost?

How much do three chew bars cost?

10p

30p

Mr Jones is putting tennis balls into tubes.

Each tube holds 5 tennis balls.

Mr Jones has 60 tennis balls.

How many tubes does he need?

Tubes are sold in packs of 5

How many packs does Mr Jones need to buy?

Will Mr Jones fill all the tubes he buys?



12

3

No  
Three tubes will be left empty.

# The 5 and 10 times-tables

## Notes and guidance

In this small step, children look at both the 5 and 10 times-tables and the relationship between them. While this will be useful revision of both, the main aim of this step is for children to see the connection between the two and to spot patterns.

Children should identify numbers that are in both the 5 and 10 times-tables and think about any generalisations that they can make. Guide them to identify that all numbers in the 10 times-table are also in the 5 times-table, but only some of the numbers in the 5 times-table are also in the 10 times-table.

Children should be able to identify that, for example,  $4 \times 10 = 8 \times 5$  and identify the fact that there are twice as many 5s as there are 10s. They should recognise that the 10 times-table is double the 5 times-table.

### Things to look out for

- Children may not be aware that the equals sign can be used to show equivalence.
- Children may believe that all the numbers in the 5 times-table are also in the 10 times-table.
- Children may find it difficult to make the calculations equal if they do not make the link that 2 lots of 5 = 10

## Key questions

- Which numbers are in the 5 times-table?  
Which numbers are in the 10 times-table?  
Which numbers are in both?  
What do you notice?
- What patterns can you spot?
- How many lots of 5 make 10?
- Are all the numbers in the 10 times-table also in the 5 times-table? Why?
- Are all the numbers in the 5 times-table also in the 10 times-table? Why?

## Possible sentence stems

- All numbers in the \_\_\_\_\_ times-table are also in the \_\_\_\_\_ times-table.
- Some numbers in the \_\_\_\_\_ times-table are also in the \_\_\_\_\_ times-table.
- \_\_\_\_\_  $\times$  10 = \_\_\_\_\_  $\times$  5

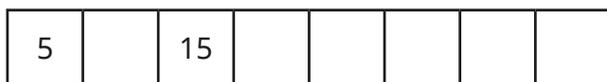
## National Curriculum links

- Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers

# The 5 and 10 times-tables

## Key learning

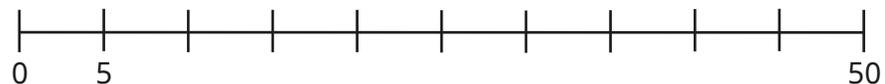
- Complete the number tracks.



What do you notice?

Which numbers are in both number tracks?

- Complete the number lines.



What do you notice?

- Complete the number line.



Which numbers are in both the 5 times-table and the 10 times-table?

Which numbers are only in the 5 times-table?

- Here is part of a hundred square.

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

- ▶ Colour the numbers that are in the 10 times-table.

Circle the numbers that are in the 5 times-table.

Which numbers did you circle and colour?

- ▶ Repeat the steps with a grid from 0 to 100

What do you notice?

- ▶ Complete the sentences.

All numbers in the \_\_\_\_\_ times-table are also in the \_\_\_\_\_ times-table.

Some numbers in the \_\_\_\_\_ times-table are also in the \_\_\_\_\_ times-table.

- Complete the multiplications.

▶  $2 \times 5 = \underline{\quad} \times 10$

▶  $\underline{\quad} \times 5 = 2 \times 10$

▶  $5 \times 8 = \underline{\quad} \times 10$

▶  $5 \times \underline{\quad} = 10 \times 10$

## The 5 and 10 times-tables

### Reasoning and problem solving

Tiny is thinking about the 5 and 10 times-tables.

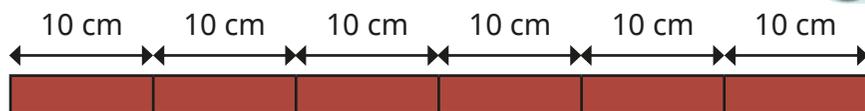


All numbers in the 10 times-table are also in the 5 times-table. So, all numbers in the 5 times-table must also be in the 10-times table.

Do you agree with Tiny?  
Why?

No

There are six 10 cm pieces of wood.



How many 5 cm pieces can be made?

12

Ben has eight 5p coins.



Ann has the same amount of money as Ben in 10p coins.  
How many 10p coins does Ann have?

4

Use the 10 times-table to help you work out the multiplication.

$$5 \times 18$$

$$5 \times 18 = 10 \times 9 = 90$$