

Summer Block 1

Multiplication and division

Small steps

Step 1

Count in 2s

Step 2

Count in 10s

Step 3

Count in 5s

Step 4

Recognise equal groups

Step 5

Add equal groups

Step 6

Make arrays

Step 7

Make doubles

Step 8

Make equal groups – grouping

Small steps

Step 9

Make equal groups – sharing

Count in 2s

Notes and guidance

In this small step, children explore counting both forwards and backwards in 2s. This builds on understanding from Autumn Block 2, when children added 1 and 2, as well as previous knowledge of doubles and finding 1 more and 1 less.

Begin by practically exploring counting in 2s using things that come in pairs, such as socks and wheels on a bicycle. Number lines and a 1–50 number grid are useful representations that allow children to spot patterns when counting in 2s. They should count both forwards and backwards in 2s, but always starting from an even number.

Begin to introduce children to the language of multiplication, for example “There are _____ equal groups of 2. There are _____ altogether.” This will be built on in future steps.

Things to look out for

- Children may count the number of pairs, rather than count in 2s.
- Make sure children understand that a pair is two objects, and those objects do not need to look exactly the same.
- Children may count each object in a group, rather than counting in 2s.

Key questions

- How can you count the pairs?
- What pairs can you see/find?
- How can you use the number line/number grid to help you count in 2s?
- What patterns do you see when you count in 2s?
- When you count in 2s, what numbers will you say/not say?
- How many equal groups of 2 are there?

Possible sentence stems

- There are _____ in each pair.
There are _____ pairs.
There are _____ in total.
- There are _____ equal groups of 2
There are _____ altogether.

National Curriculum links

- Count, read and write numbers to 100 in numerals; count in multiples of 2s, 5s and 10s

Count in 2s

Key learning



Put children into groups of 10 and give each child 2 cubes.

Ask each group to show you an even number of cubes. Each child can either hold out zero or two cubes.

Get children to count the number of cubes individually. Then ask how many cubes each person has got. Then get children to count the number of cubes in 2s.



Read *Eggs and Legs* by Michael Dahl. Pause partway through the book and ask children to draw a picture predicting what the legs could be doing on the next page. How many legs will there be? How many eggs will there be?



Show an estimation jar.

Ask children to estimate how many objects are inside. Empty the jar and ask them to count the objects in 2s to check.



- How many socks are there in total?

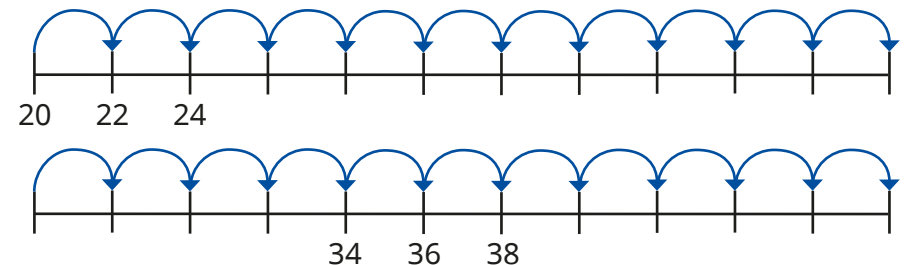


There are _____ socks in total.

- Continue to colour in 2s on the grid. What do you notice?

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



- Complete the number lines by counting in 2s.



Count in 2s

Reasoning and problem solving

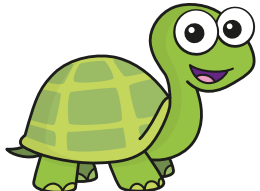
Nine children are riding their bicycles.

How many wheels are there in total?

18

Tiny is counting backwards in 2s.




36, 34, 32, 30, 27, 26

What mistake has Tiny made?

Tiny said 27 rather than 28

Sam counts back from 50 in 2s.
Max counts up from 12 in 2s.



Sam

50, 48, 46, 44 ...

Max

12, 14, 16, 18 ...

They say their numbers at the same time.
Who will say 30 first?

Max

Count in 10s

Notes and guidance

In this small step, children count forwards and backwards in 10s. This builds on previous learning where children explored the multiples of 10 up to 50 as well as counting by making groups of 10

Use of ten frames, bundles of straws, bead strings and number grids will reinforce children's understanding of the multiples of 10. Introduce the language associated with multiplication, such as "_____ groups of 10 are equal to _____" to begin to develop understanding of multiplication, although children are not introduced to the multiplication symbol until Year 2

Focus on multiples up to 50, as children have not yet been exposed to numbers greater than 50. They may then begin to explore counting forwards and backwards from numbers that are not multiples of 10, for example 42, 32, 22, 12, 2

Things to look out for

- Children may confuse teen numbers and multiples of 10, for example 13 and 30
- Children may still rely on counting individual objects, for example counters, rather than using representations such as full ten frames to count in 10s.

Key questions

- When you count in 10s, what number comes after _____?
- When you count in 10s, what number comes before _____?
- How many groups of 10 are there?
What number is this?
- How many groups of 10 are there in _____?
- If you count in 10s from _____, will you say _____?
- Which digit stays the same/changes when you count in 10s?

Possible sentence stems

- There are _____ groups of ten.
There are _____ altogether.
- There are _____ full ten frames.
There are _____ in total.

National Curriculum links

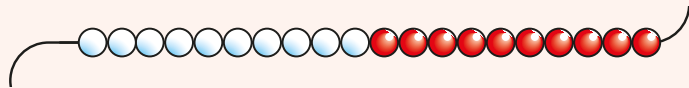
- Count, read and write numbers to 100 in numerals; count in multiples of 2s, 5s and 10s

Count in 10s

Key learning



Read *Toasty Toes* by Michael Dahl. Give children examples from the book, for example “Fifty toes wiggle in the water.” Ask how many children there will be.



Give each child a 50-bead string and explain that they are going to use it to count in tens. Ask how they can use the bead string to count forwards and backwards in 10s.

- How many flowers are there altogether?

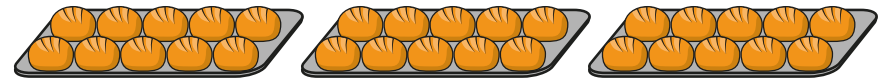


There are _____ flowers in each bunch.

There are _____ bunches.

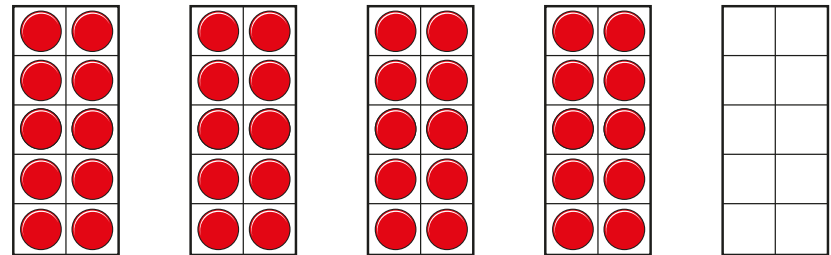
There are _____ flowers altogether.

- A baker has made 3 trays of 10 bread rolls.



How many rolls are there in total?

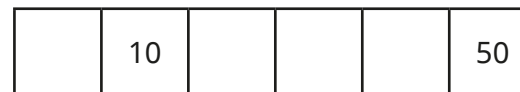
- How many counters are there?



Fill in the empty ten frame.

How many counters are there now?

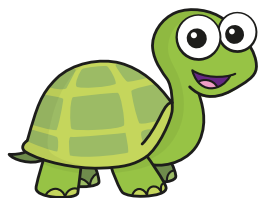
- Complete the number tracks.



Count in 10s

Reasoning and problem solving

Tiny is counting back in 10s from 50



Which numbers will Tiny say?

45	10	0
20	30	25
28	40	12

40, 30, 20, 10, 0

How do you know that Tiny will say these numbers?



Ben and Kay count in 10s on the grid.



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

Ben starts at 10

Colour all the numbers that Ben will say.

Kay starts at 6

Circle all the numbers that Kay will say.

What do you notice about the numbers that they say?

What is the same and what is different?



coloured: 10, 20, 30, 40, 50

circled: 6, 16, 26, 36, 46

Count in 5s

Notes and guidance

In this small step, children are introduced to counting in 5s.

Children practise counting on and back in 5s using a range of different representations such as arms on a starfish or a dice showing 5. They will need lots of practice orally to embed this skill. Rhymes such as 'Five eggs and five eggs' can be sung to help reinforce this learning.

Ten frames can also be used, showing children the five-wise patterns. The 1–50 grid is another useful representation that can be used for children to spot and discuss patterns that emerge when counting in 5s.

Continue to use the language associated with multiplication, for example "There are _____ equal groups of 5. There are _____ altogether."

Things to look out for

- Children may confuse 15 and 50, because they sound very similar.
- Children may not recognise the relationship between two 5s making a 10. The use of five and ten frames can help children to understand that a full row makes 5 and two 5s make 10

Key questions

- Will you say _____ when you count in 5s? Why/why not?
- How many 5s are there altogether?
- When you count in 5s, what number comes after _____?
- When you count in 5s, what number comes before _____?
- What patterns do you notice when you count in 5s?
- What do you notice about counting in 5s and counting in 10s?

Possible sentence stems

- There are _____ groups of 5
There are _____ altogether.
- There are _____ 5s.
There are _____ in total.
- There are _____ 5s in 10

National Curriculum links

- Count, read and write numbers to 100 in numerals; count in multiples of 2s, 5s and 10s

Count in 5s

Key learning



Read *Starry Arms* by Michael Dahl.



Ask children what they notice about the starfish.

How many starfish are there?

How many arms are there altogether?

Ask children to make their own *Starry Arms* page.



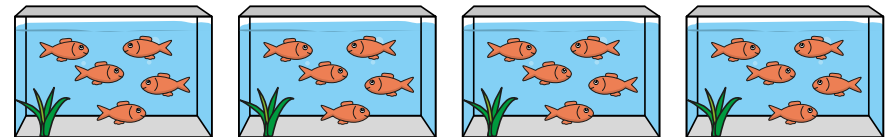
Choose a group of five children to come to the front of the class.

Ask the children to show two hands, one hand or no hands. Each child can choose to hold up both their hands, one hand or no hands.

The rest of the class say how many fingers they can see altogether.

As a further challenge, say a multiple of 5 and ask children to work together to show that number of fingers.

- How many fish are there?



There are _____ fish in each tank.

There are _____ tanks.

There are _____ fish altogether.

- How many grapes are there?



- Continue to count in 5s on the grid.

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

What patterns can you see?


Count in 5s

Reasoning and problem solving

Ann counts the number of fingers she can see.

She counts 20 fingers.

How many hands can she see?



4

Ron has some number cards.


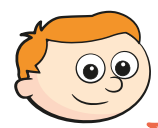
25

27

30

45

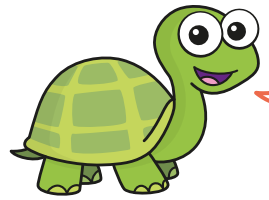
Which numbers will Ron say?
How do you know?

I am counting in 5s from zero.

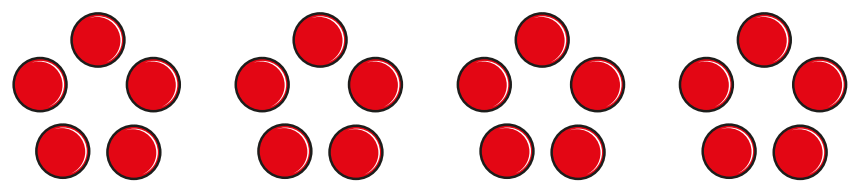
25, 30, 45

Tiny makes a flower pattern with counters.



If I make 9 flowers, I will use 46 counters.

How do you know that Tiny is incorrect?



46 does not have a 0 or 5 in the ones column.

Recognise equal groups

Notes and guidance

In this small step, children begin by using stories that link to pictures and concrete resources to help support them in recognising equal groups. They recognise and explain how they know when there are equal groups and when there are not. In order to do this, children need to see lots of different examples of equal groups in different contexts, for example trays of buns or bunches of flowers.

It is important for children to see equal groups that are arranged differently, so they understand that groups can look different but still be equal in number. For example, 5 dots arranged as on a dice, 5 dots in a row close together and 5 dots spaced further apart are all groups of 5

Children can begin to explore ways of making unequal groups equal by adding to or removing from some of the groups.

Things to look out for

- If objects are arranged differently, children may not think that the groups are equal.
- Children may be less confident with more unfamiliar representations.

Key questions

- What does “equal” mean?
- How do you know that the groups are equal/unequal?
- Do the groups have to look exactly the same to be equal? Why/why not?
- How many equal groups are there?
How many are there in each equal group?
- How can you make the groups equal?

Possible sentence stems

- There are _____ equal groups of _____
- I know that the groups are equal/not equal because ...
- To make the groups equal, I could ...

National Curriculum links

- Solve one-step problems involving multiplication and division by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher

Recognise equal groups

Key learning



Get children to collect some stones or pebbles.



Ask children to put them in equal or unequal groups.
How many different equal groups can they make?



Give children 12 counters.
Can they show you equal and unequal groups?
How many different equal groups can they make?
What happens if they have 13 or 15 counters?



In pairs, children take turns to roll two dice.
The first player to identify equal groups and correctly shout “equal” gets a point.
The winner is the first player to reach 5 points.



- Are the groups equal or unequal?

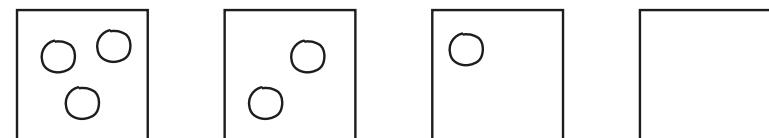


- Complete the sentence to match the picture.



There are _____ equal groups of _____ pencils.

- Dan is drawing equal groups of 3



Finish his drawing.

Recognise equal groups

Reasoning and problem solving

Kim and Mo are having a picnic.

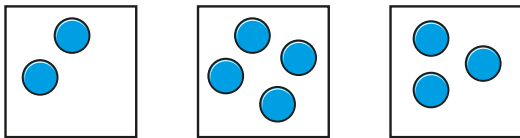


Kim

Who has made equal groups?
Explain how you know.

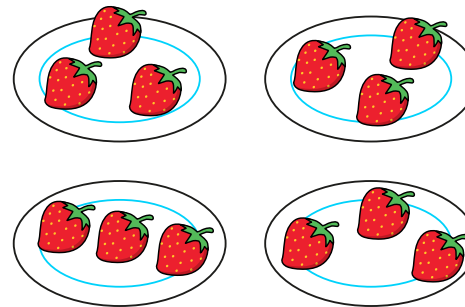


Here are some groups of counters.



How can you make the groups equal?

multiple possible answers, e.g.
Move 1 from the second box to the first box.



These groups are not equal because they look different.



No

Do you agree with Tiny?
Explain your answer.



Add equal groups

Notes and guidance

In this small step, children use their knowledge from previous learning of recognising equal groups to now add equal groups together to find a total.

Children focus on counting equal groups of 2, 5, and 10 and explore this within 50. They move on to identifying and recording the number sentence to match the groups. For example, show children 5 pairs of socks and allow them to represent them in a different way, such as with counters, then encourage them to write the number sentence to represent it: $2 + 2 + 2 + 2 + 2 = 10$

At this point, children do not need to use the multiplication symbol and should record number sentences as repeated additions. However, they should be exposed to the language of multiplication, for example “There are 5 equal groups of 2, so there are 10 in total.”

Things to look out for

- Children need to be secure in recognising equal and unequal groups.
- Children may confuse the number of groups with the amount in each group, for example 2 groups of 5 rather than 5 groups of 2

Key questions

- Are the groups equal? How do you know?
- How many _____ are there in each group?
- How many equal groups can you see?
What can you use to show this?
- How many are there altogether?
How can you write this as a number sentence?

Possible sentence stems

- There are _____ equal groups.
There are _____ in each group.
There are _____ altogether.
- There are _____ groups of _____
_____ + _____ + _____ + _____ + _____ = _____

National Curriculum links

- Solve one-step problems involving multiplication and division by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher

Add equal groups

Key learning



Ask two children to show a total of three hands. Ask how many fingers there are altogether and record the addition.

$$5 + 5 + 5 = \square$$

Repeat with different numbers of hands.



Ask children to line up some bikes or scooters. As a class, count how many bikes/scooters there are.



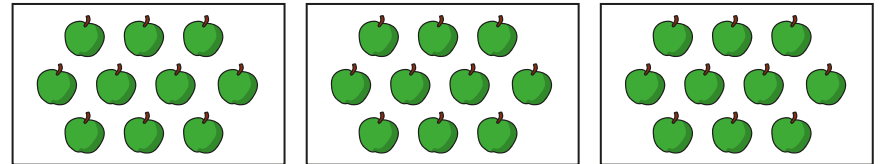
Ask how many wheels there are altogether. Encourage children to write the number sentence to match the bikes.



Hide some pictures of ladybirds around the playground. Each ladybird must have 2, 5 or 10 spots. When each child has found a ladybird, they need to find other children who have a ladybird with the same number of spots. They then add their equal groups together to find the total number of spots.



- How many apples are there?

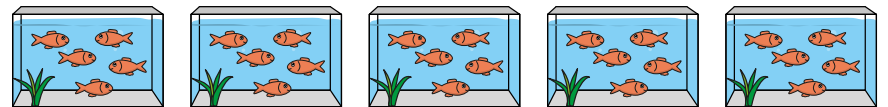


Use ten frames and counters to help you complete the sentences.

$$10 + 10 + 10 = \underline{\quad}$$

There are apples altogether.

- How many fish are there?

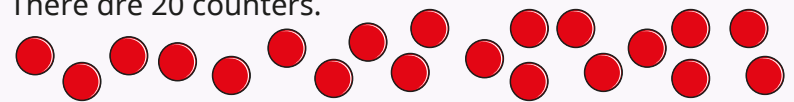


$$\underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} = \underline{\quad}$$

There are fish in total.



There are 20 counters.




Arrange the counters into equal groups.

Write the number sentence to match your groups.

Add equal groups

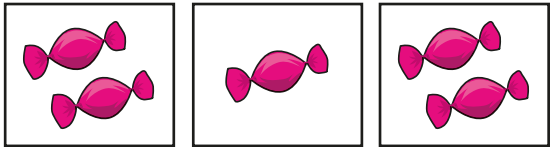

Reasoning and problem solving



2 groups of 10 is greater than 4 groups of 5, because 10 is greater than 5

Do you agree with Jo?
Explain your answer.

No






3 groups of 2 are equal to 5

What mistake has Max made?

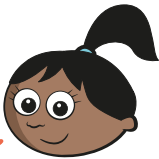
Max does not have equal groups.

Ron and Sam bake these cakes.
They put them into equal groups.

We need 10 more cakes to make 40

Ron



We need one more group to make 40

Sam

Who do you agree with?
Explain your answer.

Both children are correct.

Make arrays

Notes and guidance

In this small step, children use their knowledge of recognising and adding equal groups to arrange objects in columns and rows as arrays. This arrangement helps children to see the equal amounts and how they are grouped.

An effective way to introduce arrays to children is by using real-life examples such as bun trays and egg boxes that have these patterns already built in.

Once they are confident with describing given arrays, encourage children to build and draw their own arrays to represent a story. They may begin to explore the fact that they can describe arrays in two ways, for example 3 rows of 2 and 2 columns of 3

Children could continue to practise writing repeated addition number sentences to describe the arrays.

Things to look out for

- Children may confuse the language of column and row.
- Children may not arrange the rows or columns evenly, or leave a gap in the middle of the array.
- Children may not recognise that any objects or pictures can be an array.

Key questions

- What is a column? Can you show me a column in the array?
- What is a row? Can you show me a row in the array?
- How many equal rows/columns are there?
How many are there in each row/column?
How many are there altogether?
- How can you write a number sentence to match the array?

Possible sentence stems

- There are _____ rows.
There are _____ in a row.
There are _____ in total.
- There are _____ columns.
There are _____ in a column.
There are _____ altogether.

National Curriculum links

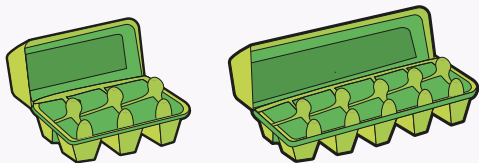
- Solve one-step problems involving multiplication and division by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher

Make arrays

Key learning



Use cubes and a range of containers such as bun trays, egg boxes and paint pallets.

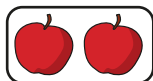


Allow children to explore using the cubes and discuss all the different ways to fill the containers.

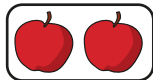
There are _____ rows/columns.

There are _____ cubes in each row/column.

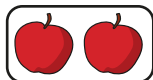
- Use counters to make an array that matches the apples.



Complete the sentences.



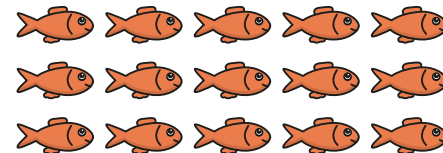
There are _____ apples in each row.



There are _____ rows.

There are _____ apples altogether.

- Here are some arrays.



- Count the **rows** and complete the sentences to describe each array.

There are _____ rows of _____

There are _____ altogether.

- Count the **columns** and complete the sentences to describe each array.

There are _____ columns of _____

There are _____ altogether.

What do you notice?

- Draw an array to match the story.

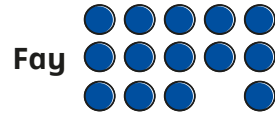
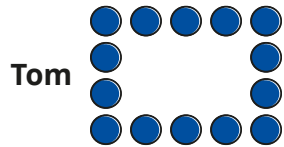
There are 5 trees.
There are 2 birds in each tree.

Write a number sentence to match your array.

Make arrays

Reasoning and problem solving

Tom and Fay are making arrays with 14 counters.



What mistake has each child made?

Make an array with 14 counters.

2×7 or 7×2 array

Kay has started to make an array using 40 counters.

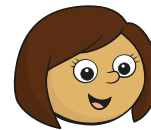
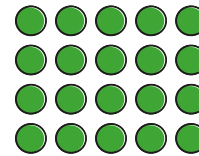


Write two number sentences to describe your array.

$$10 + 10 + 10 + 10 = 40$$

$$4 + 4 + 4 + 4 + 4 + 4 + 4 + 4 + 4 + 4 = 40$$

Kim and Mo write number sentences to match the array.



Kim

$$5 + 5 + 5 + 5 = 20$$



Mo

$$4 + 4 + 4 + 4 + 4 = 20$$

They are both correct.

Who is correct?

Explain your answer.

Make doubles

Notes and guidance

In this small step, building on learning from Spring Block 2, children again explore doubles. They progress from describing doubling as the addition of the same amount to describing it as 2 equal groups, linking to the work done on multiplication in this block so far. They should now be more confident with doubling numbers up to 20

Give children opportunities to build doubles and explain what a double is using real objects, mathematical equipment and pictures. This will help to reinforce understanding of a double being 2 groups of a number. Encourage children to say doubles as they build them, for example “Double _____ is _____.” They can use repeated addition to represent doubles in the abstract. Give children opportunities to look at representations and decide whether they show doubles or not.

Now that children have explored numbers to 50, they could also start to explore doubles beyond 20, for example double 12 or double 20

Things to look out for

- Children may not make/draw 2 equal groups.
- Children may think that double 4 is 44, because they see the digit twice.

Key questions

- What is double _____?
- How can you show me double _____?
- Is this a double? How do you know?
- How many equal groups are there?
How many are there in each group?
How many are there altogether?
- Is double _____ equal to _____? How do you know?

Possible sentence stems

- Double _____ is _____
_____ + _____ = _____
- This is double _____
- _____ is/is not a double. I know this because ...

National Curriculum links

- Solve one-step problems involving multiplication and division by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher

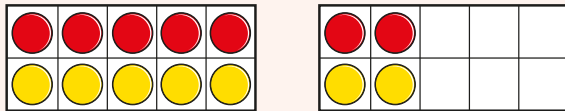
Make doubles

Key learning

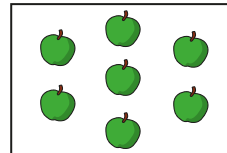


Show children a number of counters up to 10 on ten frames.

Ask children to make the double with double-sided counters on two ten frames.



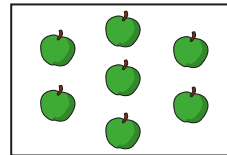
- Complete the sentences to match the picture.



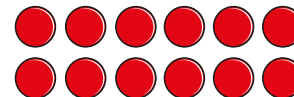
There are _____ equal groups.
 There are _____ in each group.
 There are _____ apples altogether.

_____ + _____ = _____

Double _____ is _____



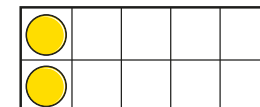
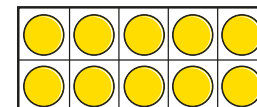
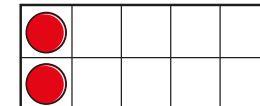
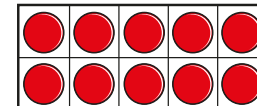
- Complete the sentences to match the array.



_____ + _____ = _____

Double _____ is _____

- Use the ten frames to work out double 12



Hide lots of number pieces outside. Children work in pairs to find two number pieces that are the same to make a double. The winners are the pair who find the most doubles. Children could be challenged to write their doubles as number sentences.




Read *Minnie's Diner* by Dayle Ann Dodds, where all the food orders are doubled. Set up a double cafe in the classroom. Encourage children to make up their own double diner menus.

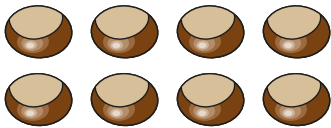
If you get 8 specials, what have you doubled?

Make doubles

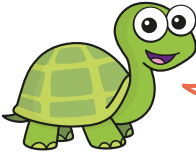
Reasoning and problem solving

Jo doubles some conkers. 

Here are the conkers **after** she has doubled them.




Jo started with 8 conkers and ended with 16 conkers.




Tiny


Jo started with 4 conkers and ended with 8 conkers.

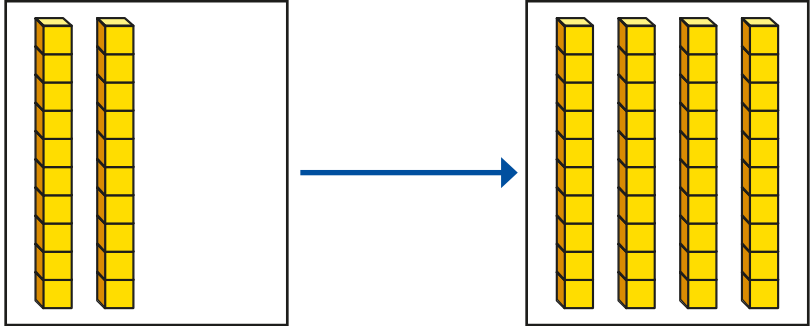


Max

Who do you agree with?
Explain your answer. 


Max

Tiny uses base 10 to double 20 



What is double 20?
Use base 10 to work out the double.

Double 15 is



40 | 30

Make equal groups – grouping

Notes and guidance

In this small step, children build on their knowledge of recognising equal groups to begin to explore division through grouping. This is the first time that they are explicitly introduced to the idea of division.

Children start with a given total and make groups of an equal amount. Give them opportunities to make groups with concrete resources. Circling groups when using pictures can also help them to see the groups and identify if they are equal. Further develop children's understanding of equal groups by exposing them to numbers that do not group equally.

At this stage, children do not need to be introduced to the division symbol, but they should become familiar with the language of division, for example "There are _____ groups of _____ in _____."

Things to look out for

- When dividing, children may be more familiar with sharing from real-life experiences and may therefore confuse sharing with grouping.
- Children may be confused by groups that do not look similar, but they should be encouraged to focus on how many are in each group.

Key questions

- Are the groups equal? How do you know?
- Do the groups have to be the same size/shape/pattern to be equal?
- How many _____ are there altogether?
How many are there in each group?
How many groups are there?
- How many different ways can you put the _____ into equal groups?

Possible sentence stems

- The groups are equal/not equal because ...
- There are _____ altogether.
They can be put into equal groups of _____
There are _____ groups.

National Curriculum links

- Solve one-step problems involving multiplication and division by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher

Make equal groups – grouping

Key learning



Take children into the playground. As a class, count how many children there are.

Ask children to get into groups of three. Are all the groups equal?

What other equal groups can they get into?



Provide children with 20 counters or cubes. Ask them to put them into equal groups. How many different sets of equal groups can they make?

Repeat with other numbers of counters or cubes.



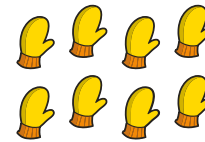
Show children a picture of a gingerbread person and explain that each one needs three buttons.



Give the children 15 buttons and ask how many gingerbread people they can give buttons to.

What if they had 18/21/24 buttons?

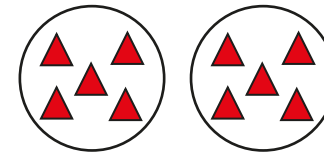
- Circle groups of 2 mittens and complete the sentence.



There are _____ groups of 2 mittens.

If you had 10 mittens, how many equal groups of 2 mittens could you make?

- Complete the sentences to match the pictures.



There are _____ altogether.

There are _____ equal groups of _____



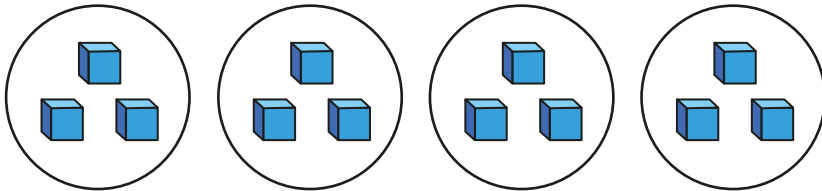
_____ has been sorted into _____ equal groups of _____

- Draw a picture to match the sentence.
20 has been sorted into 4 equal groups of 5

Make equal groups – grouping

Reasoning and problem solving

Here are some groups of cubes.



Ron

The cubes are in groups of 4

The cubes are in groups of 3



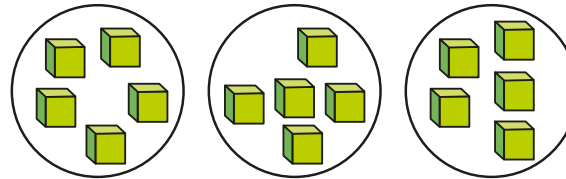
Jo

Who do you agree with?
Explain your answer.



Jo

Here are some groups of cubes.



The cubes are not in equal groups.

No

Do you agree with Sam?

Ben and Tom each have the same number of sweets.



Ben has 8 equal groups of 2

Tom puts his sweets into equal groups of 4

4

How many equal groups of sweets does Tom have?

Make equal groups – sharing

Notes and guidance

In this small step, children explore division in the form of sharing.

Children first explore this practically using concrete resources and physically sharing them into groups. They should see that each group will then have the same amount. At this stage, children do not need to write number sentences using the division symbol, but they should be encouraged to explain what is happening using the language of division, for example “There are _____ counters shared equally into _____ groups. There are _____ in each group.”

It may be helpful to explore the similarities and differences between sharing and grouping, once children are confident with the two structures separately.

As an extension, children can look at situations where the objects cannot be shared equally and there are some left over.

Things to look out for

- Having just explored grouping in the previous step, children may confuse that knowledge with the new learning on sharing.
- When sharing, children may miss out some objects or place too many in one group.

Key questions

- What does “sharing” mean?
What does “sharing equally” mean?
- How many _____ are there altogether?
How many equal groups are you sharing them into?
How many are there in each group?
Are there any left over?
- Can you share the _____ into any other number of equal groups?

Possible sentence stems

- The _____ have/have not been shared equally.
I know this because ...
- There are _____ altogether.
They are shared equally between _____ groups.
There are _____ in each group.

National Curriculum links

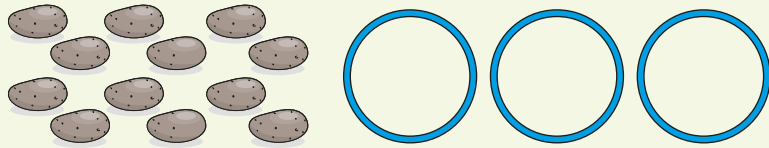
- Solve one-step problems involving multiplication and division by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher

Make equal groups – sharing

Key learning



Take children outside to collect 12 sticks or pebbles. Ask them to share their items equally between 3 hoops.



Can they share them equally between 2/4/6 hoops?
 Can they share them equally between 5/7 hoops?
 Repeat for other numbers.



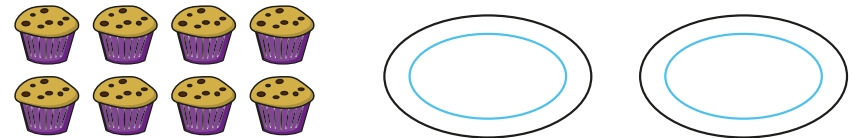
Provide modelling clay to represent cupcakes and counters to represent sweets.

Children can then explore different ways of decorating the cupcakes.

Tell children to make 3 cupcakes. Give them 15 sweets to share equally between the 3 cupcakes. Ask how many sweets there are on each cupcake.

Repeat for different numbers of cupcakes and sweets.

- Share the muffins equally between the 2 plates.



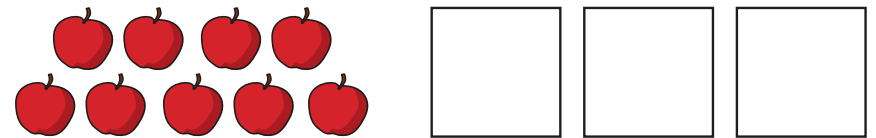
Complete the sentences.

There are _____ muffins.

They are shared equally between _____ plates.

There are _____ muffins on each plate.

- Share the apples equally between the 3 boxes.



Complete the sentences.

_____ apples are shared equally between _____ boxes.

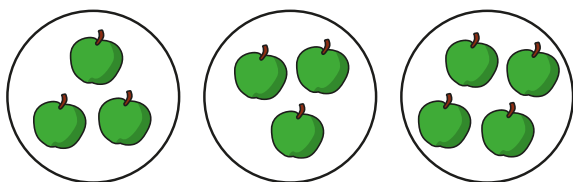
There are _____ in each group.

- Fay has 16 bananas.
 She shares them equally between 4 people.
 How many bananas does each person get?

Make equal groups – sharing

Reasoning and problem solving

Tiny makes some groups of apples.



10 shared between 3 is 4

Do you agree with Tiny?
Explain your answer.



No

Dan shares 20 cookies equally between his friends.

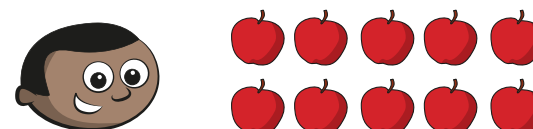


How many friends could Dan share his cookies between?



1, 2, 4, 5, 10 or 20 people

Mo has 10 apples.



How many apples will there be in each bag if Mo shares them equally?

He shares the apples between 10 bags.

He shares the apples between 5 bags.

He shares the apples between 2 bags.

He puts all the apples into 1 bag.

What do you notice?



- 1 _____
- 2 _____
- 5 _____
- 10 _____

Summer Block 2

Fractions

Small steps

Step 1

Recognise a half of an object or a shape

Step 2

Find a half of an object or a shape

Step 3

Recognise a half of a quantity

Step 4

Find a half of a quantity

Step 5

Recognise a quarter of an object or a shape

Step 6

Find a quarter of an object or a shape

Step 7

Recognise a quarter of a quantity

Step 8

Find a quarter of a quantity

Recognise a half of an object or a shape

Notes and guidance

In this small step, children explore recognising a half or two halves for the first time, looking at both objects and shapes.

Children need lots of opportunities to practically make halves and identify a half and a whole. They need to be shown various types of representations to develop a full understanding of a half. They also need to be shown half of these shapes and objects in different ways. For example, a square can be split in half vertically, horizontally or diagonally.

It is important that children know that a half means “one of two equal parts” and are able to count them. In this step, they are supported to recognise when a shape or object is or is not a half, in addition to identifying the whole.

At this stage, children do not use the fractional notation of $\frac{1}{2}$

Things to look out for

- Children may talk about a “bigger” or “smaller” half due to prior experiences of sharing, so it is important to reinforce that a half is one of two equal parts.
- Children may struggle to recognise halves when they are shown in non-standard ways.

Key questions

- What is the whole?
- How many parts are there?
- Are the parts equal?
- Is this a half? How do you know?
- How does this show half?
- Is this a half or a whole?

Possible sentence stems

- The whole is split into _____ equal parts.
- There are _____ halves in a whole.
- This is/is not a half because ...

National Curriculum links

- Recognise, find and name a half as one of two equal parts of an object, shape or quantity

Recognise a half of an object or a shape

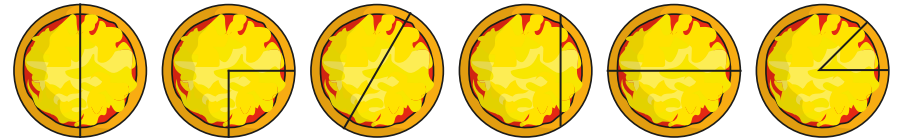
Key learning



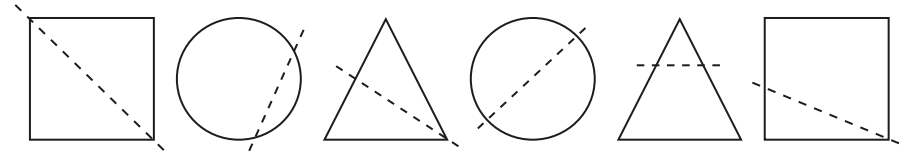
Read *Peg + Cat: The Pizza Problem* by Jennifer Oxley and Billy Aronson. Then show children different images of pizza cut into different size pieces, some showing a half and some not. Can the children identify the half and the whole images of pizza from the story?

Give children cut-out shapes of pizza and ask them to help you sort the pizza into two groups: half and not half. Discuss how they know whether each one is or is not a half.

- Which pizzas have been cut in half?



- Which shapes show half?



Show children some everyday objects such as an apple, a cake and a biscuit.



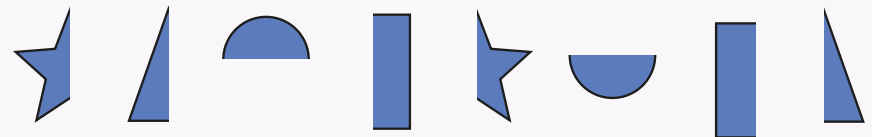
Model when something has been cut in half and not in half. Can children identify which objects are cut in half and which are not?

Ask how many equal parts there are when something is cut in half.



Give children a range of different paper shapes that have been cut in half.


Ask them to find the other half to make a whole.



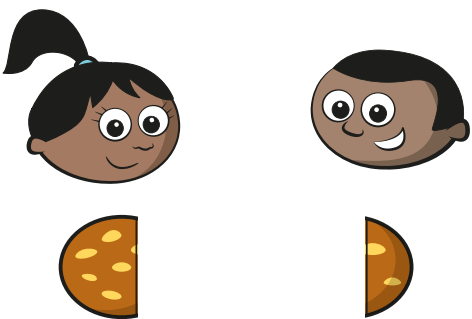
How do they know that they have found the other half? Can they use a mirror to help?

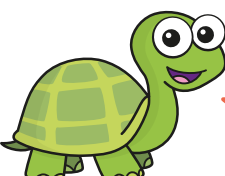
Recognise a half of an object or a shape


Reasoning and problem solving

Sam and Mo are eating cookies. 

Sam Mo

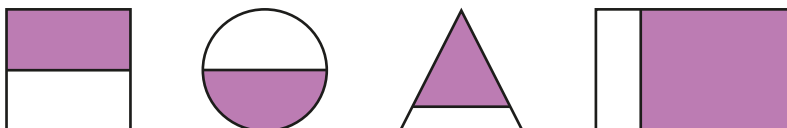



 Sam has got the bigger half.

Do you agree with Tiny?
Explain your answer. 


No

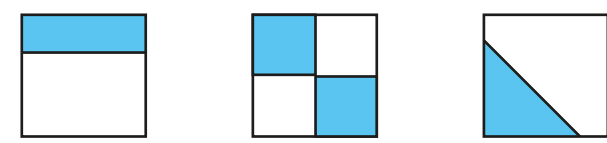
Jo thinks that she has coloured half of each shape.



Do you agree with Jo?
Explain your answer. 

No

Which shape shows half? 



middle shape

Find a half of an object or a shape

Notes and guidance

In this small step, children build on the knowledge from the previous step, where they recognised a half of an object or shape, to now find a half of shapes or objects for themselves.

Give children lots of opportunities to practically find halves and make a half using pictures, objects and shapes. They need to be shown lots of varied examples and experiment with different ways of making a half using a range of resources.

It is important that children know that a half means “one of two equal parts” and can count them. At this stage, they are still only finding half of one object or shape. They will explore finding half of a set of objects in the next steps.

Things to look out for

- Children may think that if they split something into two parts, they have split it in half. They may not remember that the two parts must be equal.
- Children may not recognise that they can split some shapes/objects in half in a number of ways, instead only using horizontal or vertical divisions.

Key questions

- How many halves make a whole?
- Are the parts equal? How do you know?
- How do you know that you have found a half?
- How can you find a half of this object/shape?
- Is there more than one way to show half of this shape?
- How can you tell if an object or shape has not been split in half?

Possible sentence stems

- To find a half, I need to split the whole into _____ equal parts.
- If the whole is split into two equal parts, each part is called a _____
- The shape is/is not split in half because ...

National Curriculum links

- Recognise, find and name a half as one of two equal parts of an object, shape or quantity

Find a half of an object or a shape

Key learning



Set up a cafe role-play area. Provide children with modelling clay and child-friendly knives. Ask them to make doughnuts, muffins, cake slices or pancakes for the cafe.

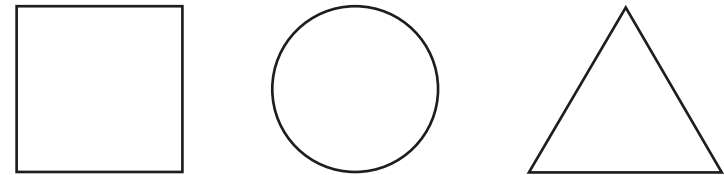
Children take it in turns to role-play the customer and the cafe owner. The customers order what they would like from the cafe. Would they like half of a bun? Would they like more than one half?

Using the knives, the cafe owners cut the 'food' items.

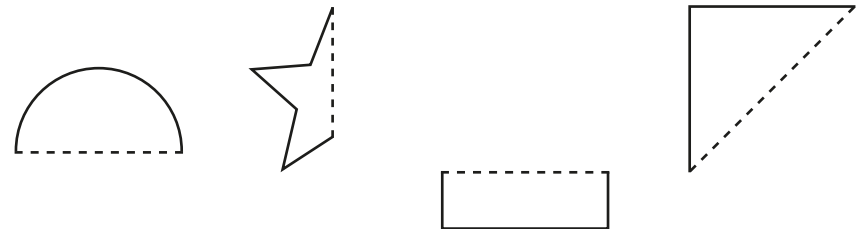
- Draw a line to split each object in half.



- Find three different ways to split each shape in half.



- Draw the other half of each shape to make the whole.



Give children a range of different paper shapes in a variety of sizes. Ask them to explore which shapes can be folded in half and what they look like when folded in half.



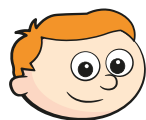
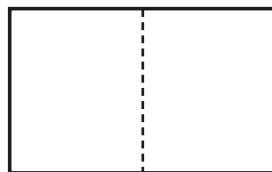
Which shapes can be folded in half in only one way?
Which shapes can be folded in half in more than one way?

Find a half of an object or a shape

Reasoning and problem solving

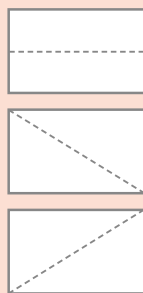
Jo and Ron are splitting a rectangle in half.

Jo splits the rectangle like this.

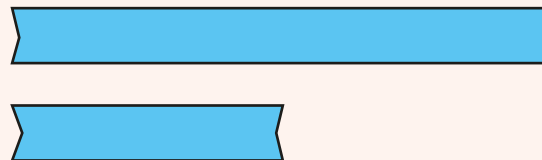


I can find three other ways of splitting the rectangle in half.

Draw Ron's three rectangles.



Make a collection of ribbons or string of different lengths. The ribbons or pieces of string are in pairs where one is twice the length of the other, for example 12 cm and 6 cm.



Give one to each child and ask them to find the person to match the half to the whole.
Encourage children to talk to each other about why one is half the length of the other. Do they always have only one match or can they find another?

Discuss answers as a class.

Recognise a half of a quantity

Notes and guidance

In this small step, children use their previous learning of recognising and finding a half, and apply this to recognising half of a quantity.

Children need to have a good sense of cardinality so that they can find a total and then relate this to finding half the amount of the total. They need to show how the total can be shared equally into two groups, using learning covered in the previous block on multiplication and division. They can use concrete resources such as cubes, beads, counters and other small world objects to support this. Children may also find it helpful to relate finding a half to classroom contexts. For example, they can find half the number of children in a group, so that they see what half of an amount looks like.

Things to look out for

- Children may only recognise a half as half of an object or shape, rather than also referring to a number or quantity.
- Children may not recognise when the two halves appear different visually, for example three apples on a plate close together and three apples on another plate spread out.

Key questions

- What is the total/whole?
- How can you find half?
- How many parts do you need to split them into to find half?
- How many _____ are there in each part?
- Is this still half when I move the _____ around?
- How can you check that this is still half?

Possible sentence stems

- There are _____ altogether.
They are shared into _____ equal groups.
There are _____ in each group.
Each group is _____ of the whole.
- I know that the _____ are/are not split in half because ...

National Curriculum links

- Recognise, find and name a half as one of two equal parts of an object, shape or quantity

Recognise a half of a quantity

Key learning



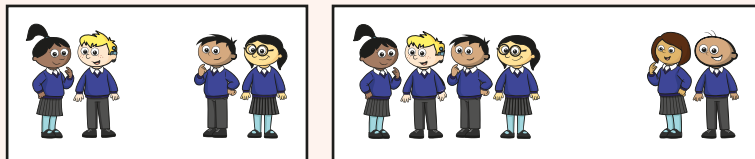
Go outside with a bag of balls and three hoops. Take out six balls.

Share the balls equally between two hoops and ask children if the balls have been split in half. Repeat, but sharing the the balls unequally between two hoops. Then share the balls between three hoops and ask if they have been split in half.

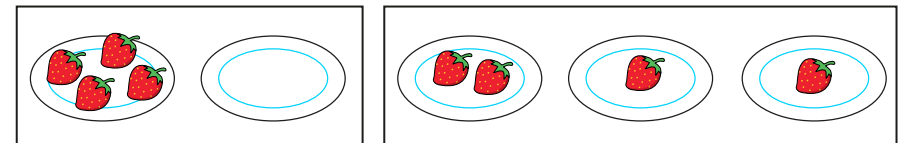
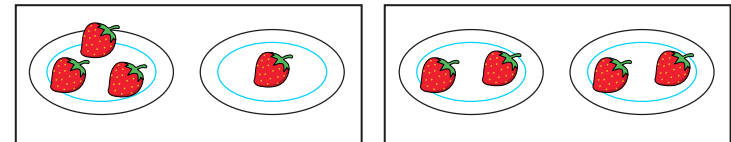
Repeat with other totals.



Put children into small groups of up to 10 and ask them to line up. Split the groups in different ways, some in half, some not in half. Ask children to explain which groups have been split in half and which have not. Can they explain why? What happens if there is an odd number of children in total?



- Which pictures show equal groups?

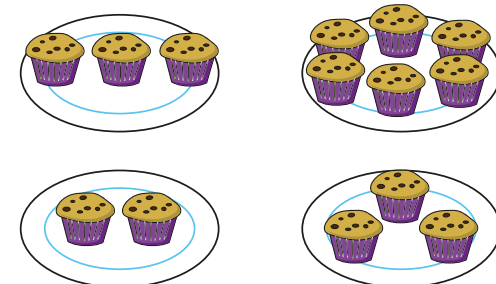


Which pictures show half?

- Here are 6 muffins.



Which plates show half of the muffins?

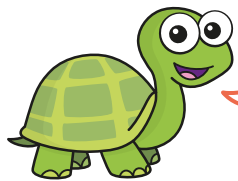
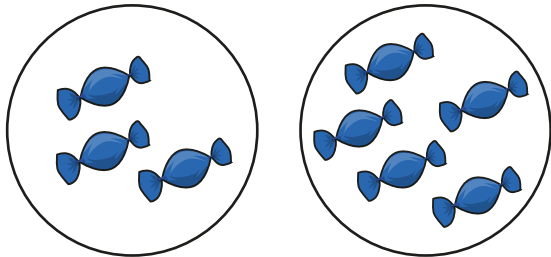


Is there more than one answer?

Recognise a half of a quantity

Reasoning and problem solving

Tiny is finding half of the sweets.



I have made two groups, so I have found half of the sweets.

Do you agree with Tiny?
Explain your answer.



No

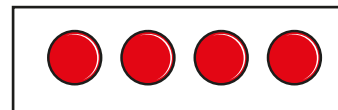
Ron and Kim have some counters.

Ron has half of the counters and Kim has half of the counters.

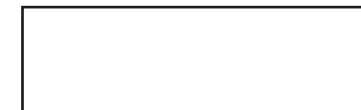
Draw Kim's counters.



Ron



Kim



How many counters are there altogether?

What is half of the total?

8

4



Find a half of a quantity

Notes and guidance

In this small step, children build on the previous step to find half of a quantity.

Children should see that to find a half, they need two equal groups, and should explore practically sharing a given quantity of objects into two groups using skills developed in the previous block on multiplication and division. Encourage children to check the amounts in each group after sharing to ensure that there is an equal amount in each group.

Children then progress to circling or shading half of a given quantity. Understanding that half can mean “one out of every two objects” is important for this. Finally, they may begin to explore finding the whole from a half. For example, if 3 is half, what is the whole? Knowledge of doubles from prior learning can support this.

Things to look out for

- Children may draw lines to halve each shape/object in a set, rather than finding half of the total.
- When finding missing totals, children may halve the amount rather than doubling it. For example, when asked to find the whole if 4 is half, they may give the answer 2

Key questions

- How many are there altogether?
- How many equal groups are there when you are finding half?
- How do you know that the groups are equal?
- How many _____ are there in each group?
So what is half of _____?
- If 3 is half, how can you find the whole?
- If you know that double 4 is 8, how can you work out half of 8?

Possible sentence stems

- There are _____ altogether.
To find half, I need to share the total into _____ equal groups.
There are _____ in each group.
- Half of _____ is _____
- If double _____ is _____, then half of _____ is _____

National Curriculum links

- Recognise, find and name a half as one of two equal parts of an object, shape or quantity

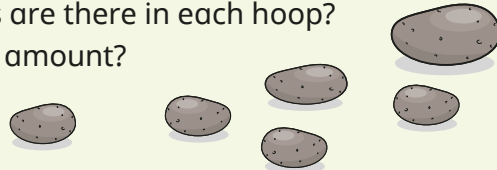
Find a half of a quantity

Key learning

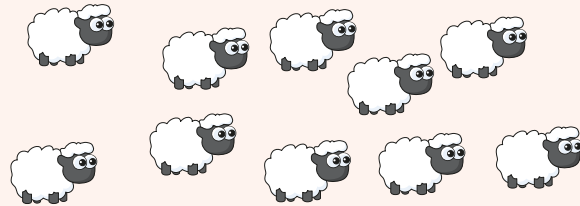


Give children an even number of pebbles or sticks. Provide them with two small hoops. Ask children to share the objects equally between the hoops.

How many objects are there in each hoop?
What is half of the amount?



Set up a scene, for example where animals need to be put equally into two fields.



Ask children to complete the sentences to describe the scene.

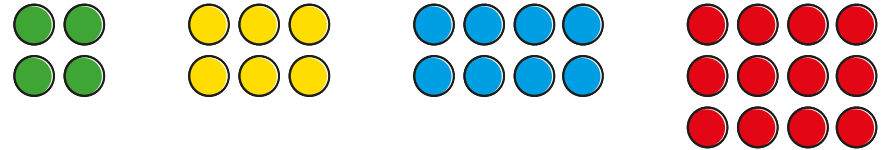
There are _____ animals altogether.

There are _____ animals in each field.

Half of _____ is _____

- Find half of each amount.

Complete the sentence for each.



Half of _____ is _____

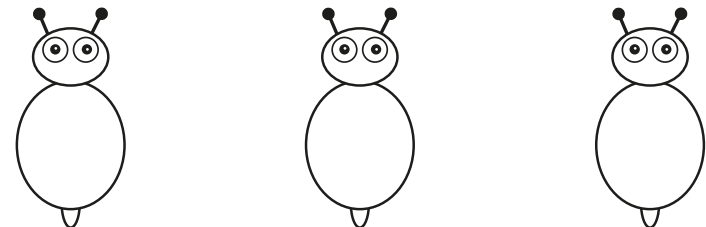
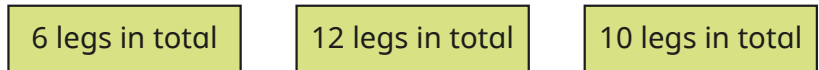
- Shade half of the stars.



Is there more than one way of shading half?

- The creatures need half the number of legs on each side.

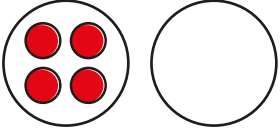
Draw the correct number of legs on each side.



Find a half of a quantity

Reasoning and problem solving

If 4 is half, what is the whole?

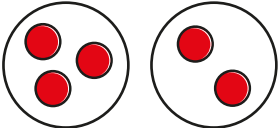
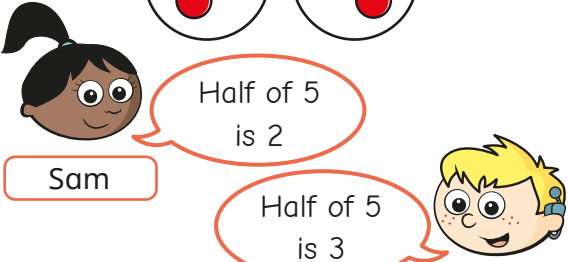


If 2 is half, what is the whole?

If 8 is half, what is the whole?

8
4
16

Sam and Max are trying to find half of 5

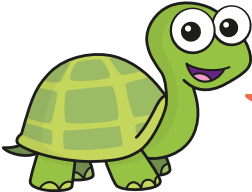
Sam: Half of 5 is 2

Max: Half of 5 is 3

Who do you agree with?
Explain your answer.

They are both incorrect.

Tiny wants to find half of 6



I know that double 3 is 6

Explain how Tiny can use this fact to find half of 6

Complete the sentences.

Double 5 is 10, so half of 10 is _____

Double 7 is 14, so half of _____ is 7

Double 4 is _____, so half of _____ is 4

Double _____ is 12, so half of 12 is _____

5
14
8, 8
6, 6

Recognise a quarter of an object or a shape

Notes and guidance

In this small step, children are introduced to recognising a quarter of an object or a shape. This is the first time that they explore quarters.

Children develop their understanding of equal parts and non-equal parts and relate this to a shape or object being split into four equal parts. They need to see quarters explicitly being made in lots of different contexts, such as being split horizontally, vertically and diagonally, as well as using a range of different shapes and objects.

Children use the words “quarter” and “parts” at this stage, but do not use the fractional notation of $\frac{1}{4}$

Things to look out for

- It may be necessary to reinforce the idea of equal parts, so that children do not think that a shape split into four unequal parts also represents quarters.
- Children may struggle to recognise quarters when they are shown in non-standard ways.

Key questions

- What is the whole?
- How many parts are there?
- Are the parts equal?
- How many parts are shaded?
- Is this a quarter?
- How do you know that this is/is not a quarter?

Possible sentence stems

- The whole is split into _____ equal parts.
_____ of the parts is shaded.
This shows one _____
- There are _____ quarters in a whole.
- This is/is not a quarter because ...

National Curriculum links

- Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity

Recognise a quarter of an object or a shape

Key learning

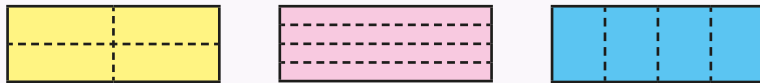


Show children everyday objects such as fruit. Ask how they can be cut into four equal parts.

Explain to children that these are quarters, and all four parts need to be equal.



Provide children with a range of paper shapes and ask them to explore folding the shapes into quarters in different ways.

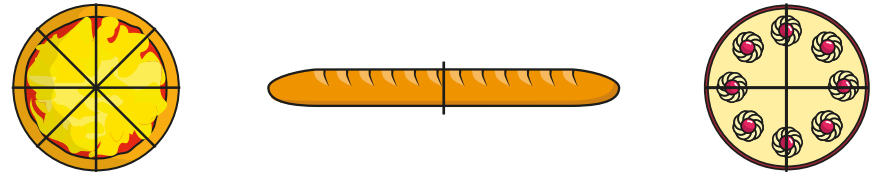


Give children a range of shapes cut into quarters. Ask them to find the group of 4 to make the shape whole.

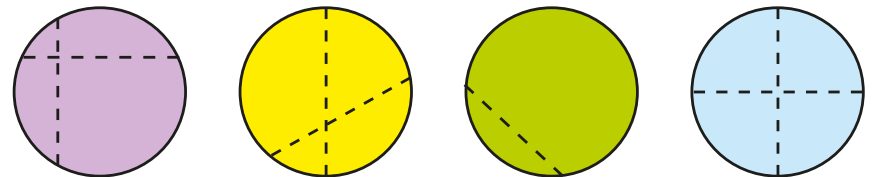
Is there more than one way the parts could be put together to make a whole?



- Which object has been cut into quarters?

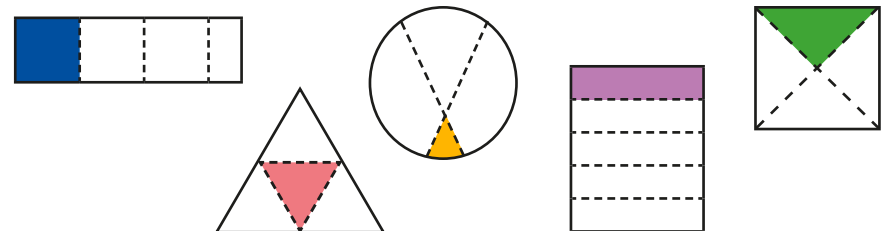


- Which circle has been cut into quarters?



How do you know?

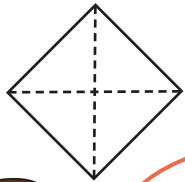
- Which shapes show a quarter?



Recognise a quarter of an object or a shape

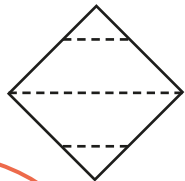
Reasoning and problem solving

Kim and Mo are talking about quarters.



My shape shows quarters, because it has four equal parts.

Kim



My shape shows quarters, because it has four parts.



Mo

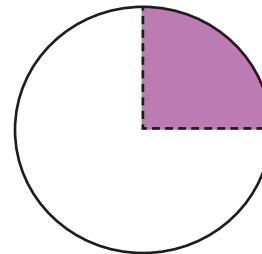
Are Kim and Mo correct?

Explain your answer.



Kim is correct.
Mo is incorrect.

Jo draws a circle and colours one part.



There are only two parts, so this does not show a quarter.



Jo

No

Do you agree with Jo?

Explain your answer.



Find a quarter of an object or a shape

Notes and guidance

In this small step, children build on the learning in the previous step to find a quarter of an object or a shape.

Children begin by shading a shape that has already been split into four equal parts, before moving on to splitting shapes into four equal parts themselves. They need lots of practice looking at and manipulating shapes and pictures to find the four equal parts. Children also need to see many representations of quarters in different orientations using a range of different shapes and pictures.

At this stage, children are still only finding a quarter of one object. They will explore finding a quarter of a set of objects in the next steps.

Things to look out for

- Children may think that if they split something into four parts, they have split it into quarters. They may not remember that the parts must be equal.
- Children may not recognise that they can split some shapes/objects into quarters in a number of ways, instead using only horizontal or vertical divisions.

Key questions

- How many quarters make a whole?
- How many parts has the whole been split into?
- Are all the parts equal?
- How many parts do you need to colour to show a quarter?
- Can you make a quarter in a different way?

Possible sentence stems

- To make quarters, I need to split the whole into _____ equal parts.
- To show a quarter, I need to colour _____ of the _____ equal parts.
- If the whole is split into four equal parts, each part is called a _____
- The shape is/is not split into quarters because ...

National Curriculum links

- Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity

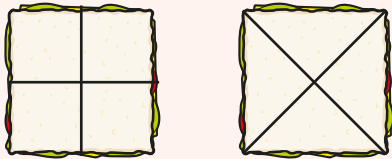
Find a quarter of an object or a shape

Key learning

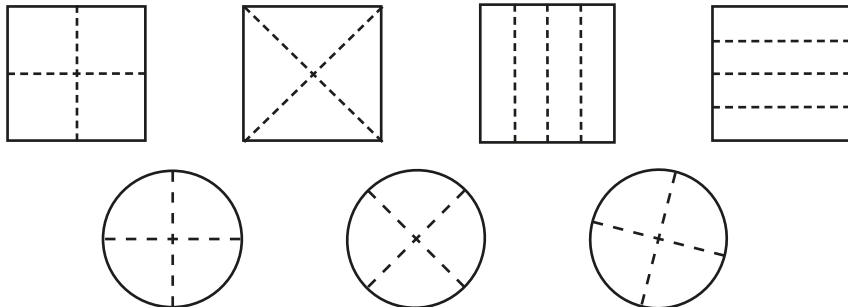


Provide children with sliced bread, sandwich fillings and child-friendly knives. In small groups, children make sandwiches for a picnic. All the sandwiches must be cut into quarters.

Explore how children can cut the sandwiches so that the parts are all equal. Can they cut the sandwiches in more than one way?

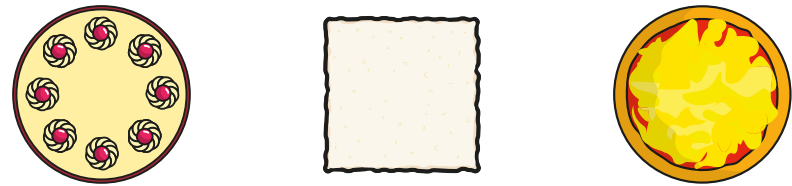


- Colour a quarter of each shape.

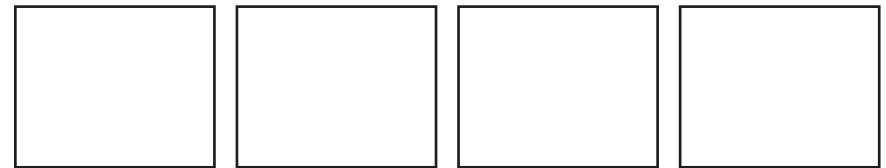


Can you colour the shapes in different ways?

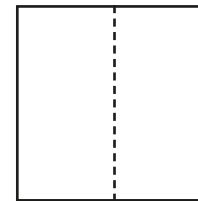
- Draw lines to split the objects into quarters.



- Find four different ways to show a quarter of the rectangle.



- The square shows halves.

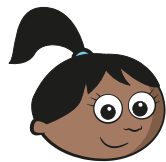
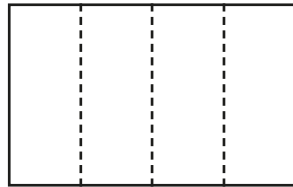


How can you change the square so that it shows quarters?
Is there more than one way?

Find a quarter of an object or a shape

Reasoning and problem solving

Sam splits a rectangle into quarters.

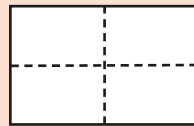


To split the rectangle into quarters, I have to draw three lines.

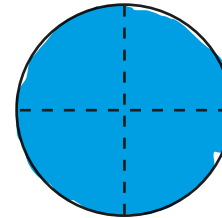
Do you agree with Sam?
Explain your answer.



No
Sam could also draw two lines to split the rectangle into quarters



Ron wants to colour the circle to show a quarter.



There are four equal parts, so I have coloured a quarter.



Do you agree with Ron?
Explain your answer.



No

Recognise a quarter of a quantity

Notes and guidance

In this small step, children build on previous learning of finding a quarter of an object or shape and finding half of a quantity, and relate this to recognising a quarter of a quantity.

Using skills developed in the previous block on multiplication and division, children use their knowledge of how a number can be shared equally into four groups. To decide if a quarter has been found, encourage them firstly to check that there are four groups and then that there is an equal amount in each group. Emphasise that a quarter refers to just one of these groups. They will need to see this in lots of different contexts.

Children can also explore representing the whole when they are given a quarter. For example, if one quarter contains two counters, to show the whole they need to put two counters in each of the remaining three groups.

Things to look out for

- Children may only recognise a quarter as an object or shape split into four parts, rather than as a number or quantity.
- Children may not see that groups are equal if each group is arranged differently.

Key questions

- What is the total/whole?
- How can you find a quarter?
- How many parts do you need to find a quarter?
- How many _____ are there in each part?
- Is this still a quarter when I move the _____ around?
- How can you check that this is still a quarter?

Possible sentence stems

- There are _____ altogether.
They are shared into _____ equal groups.
Each group is a _____ of the whole.
There are _____ in each group.
- I know this shows/does not show a quarter because ...

National Curriculum links

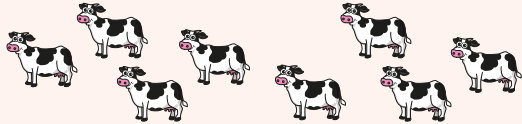
- Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity

Recognise a quarter of a quantity

Key learning



Provide children with a range of small world creatures, for example farm or wild animals.



Set up different scenes: some showing the amount split into quarters and others showing it not split into quarters. Encourage children to explain why the scene shows quarters or not quarters, using the word “equal”.



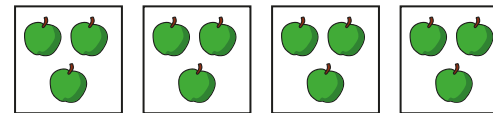
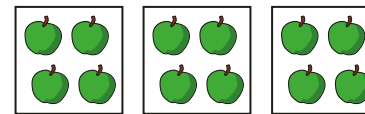
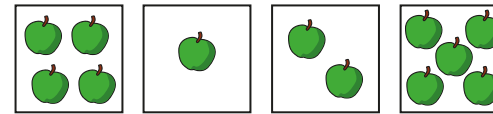
Go outside with a bag of balls and four hoops. Take out four balls.

Demonstrate sharing the balls between the four hoops. Check that each hoop has a quarter, explaining that there must be an equal number in each hoop.

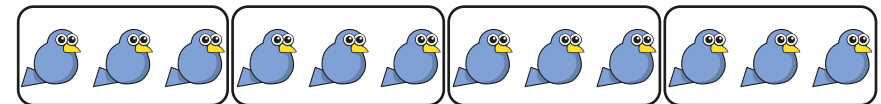
Now take eight balls and share them unequally between the four hoops. Ask if this shows quarters.

Repeat with other examples and non-examples of showing a quarter of a quantity.

- Which row of pictures shows quarters?

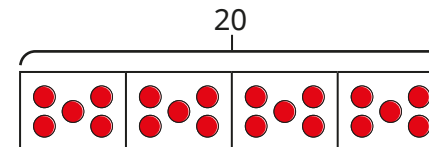


- Complete the sentence.



A quarter of 12 is _____

- Complete the sentence.



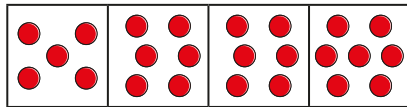
A quarter of 20 is _____

Recognise a quarter of a quantity

Reasoning and problem solving



Tiny is trying to find a quarter of 24



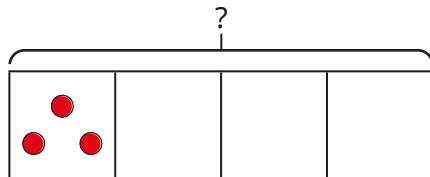
What mistake has Tiny made?
What should Tiny's bar model look like?



bar model with 4 parts and 6 counters in each part



Complete the bar model to work out the whole.

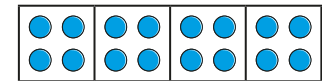


3 counters drawn in each part
The whole is 12

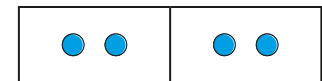
Match the statements to the bar models.



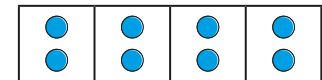
There are 4 apples in a box.
Half of the apples are red.
The rest are green.



There are 8 children in a classroom.
A quarter of the children are wearing glasses.



A quarter of the sweets in a bag are green.
There are 4 green sweets.



top to middle
middle to bottom
bottom to top

Find a quarter of a quantity

Notes and guidance

In this small step, children use all the learning from this block to explore finding a quarter of a quantity.

Children find a quarter of a quantity through their understanding of how to share a set of objects equally.

Use of stem sentences supports their understanding that one quarter refers to one of the four equal groups. It is important that children use a wide range of manipulatives to show the groups clearly, drawing around quantities or physically sharing objects.

Encourage children to see the link between finding half of an amount and half again to find a quarter.

At this stage, children do not use the fractional notation of $\frac{1}{4}$

Things to look out for

- Children may not realise that each quarter is equal if objects are arranged differently within each group.
- Children may group objects into 4s rather than sharing them into four groups, which could lead to them giving an incorrect answer of 4

Key questions

- When you find a quarter, how many equal groups are there?
- How many _____ are there in each group?
So what is a quarter of _____?
- If 3 is a quarter of the whole, how can you find the whole?
- If you know that half of 8 is 4, how can you use this to find a quarter of 8?

Possible sentence stems

- There are _____ altogether.
To find a quarter, I need to share the total into _____ equal groups.
There are _____ in each group.
A quarter of _____ is _____
- If half of _____ is _____, then a quarter of _____ is _____

National Curriculum links

- Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity

Find a quarter of a quantity

Key learning



Ask children to collect eight pebbles. Provide them with four small hoops and ask children to share their pebbles between the hoops. Discuss whether the groups are equal and how many pebbles are in each hoop. Then ask what a quarter of 8 is.

Repeat with other amounts. Are there some totals that could not be shared equally between four hoops?



On different tables, provide children with cut-out fish, where the total is always a multiple of 4, and four boxes to use as tanks.



Ask children to share the fish equally between the four tanks and complete the sentences.

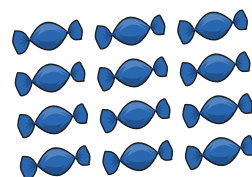
There are _____ fish in total.

There are _____ fish in each of the 4 tanks.

A quarter of _____ is _____

Repeat as they move around the different tables.

- Complete the sentences to find a quarter of each group.

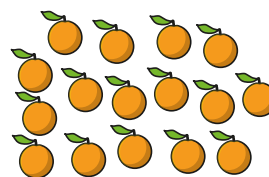


There are _____ sweets altogether.

They are shared into 4 equal groups.

There are _____ sweets in each group.

A quarter of _____ is _____



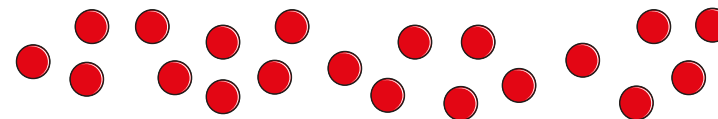
There are _____ oranges altogether.

They are shared into 4 equal groups.

There are _____ oranges in each group.

A quarter of _____ is _____

- Use the bar model to find a quarter of 20



- Tom has 24 stickers.

He gives a quarter of his stickers to Ann.

How many stickers does he give to Ann?

Find a quarter of a quantity

Reasoning and problem solving

A quarter of a number is 4
What is the whole?

Do you agree with Ron?
Explain your answer.

No

Sam is finding a quarter of 8

Do you agree with Sam?
Explain your answer.

No

Complete the sentences.

Half of 4 is _____
A quarter of 4 is _____

Half of 8 is _____
A quarter of 8 is _____

Half of 12 is _____
A quarter of 12 is _____

What do you notice?

Half of a number is 12
What is a quarter of the number?

2, 1
4, 2
6, 3

6

Summer Block 3

Position and direction

Small steps

Step 1

Describe turns

Step 2

Describe position – left and right

Step 3

Describe position – forwards and backwards

Step 4

Describe position – above and below

Step 5

Ordinal numbers

Describe turns

Notes and guidance

In this small step, children use the terms “full”, “half”, “quarter” and “three-quarter” to describe turns. They will be familiar with “half” and “quarter” from the previous block on fractions, but “three-quarter” will be a new concept to them.

Children should be given lots of opportunities to practically turn objects as well as experience the motion of turns themselves. Giving them opportunities to play games and follow simple instructions will support this.

Children should be able to identify the size of a turn by looking at the starting and finishing position of a shape as well as drawing the result of a turn. This provides a useful opportunity to revisit learning on 2-D and 3-D shapes.

Children should investigate whether they can end up facing the same direction if they complete different turns, but they do not need to describe the direction of turns at this stage.

Things to look out for

- Children may forget where they began the turn.
- Children may naturally always turn in one direction and should be encouraged to explore both ways.

Key questions

- What is a turn?
- How do you make a full turn?
- How do you make a half/quarter turn?
- If this is a quarter turn, what do you think a three-quarter turn is?
- Does it always matter which direction you turn?
- Can you get to the end position in more than one way?

Possible sentence stems

- This is a _____ turn.
- The _____ has turned a _____ turn.
- I have turned a _____ turn.
- A _____ turn is the same as ...

National Curriculum links

- Describe position, direction and movement, including whole, half, quarter and three-quarter turns

Describe turns

Key learning



Give children instructions using positional language, for example: “All turn a quarter turn.” Ask children if they have all turned the same way? Does it matter?

This could be developed as an everyday routine as the children line up.

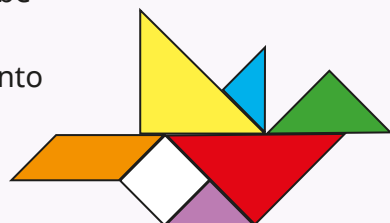
Children can then work in pairs to give and follow instructions.



Provide children with a selection of tangram shapes and encourage them to explore making different representations of pictures by moving and turning the shapes.

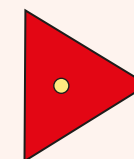
Ask children what animals they can make.

Challenge them to describe how they turn each tangram shape to put it into position in their animal.



Provide children with a range of pictures of 2-D shapes such as triangles, squares and rectangles.

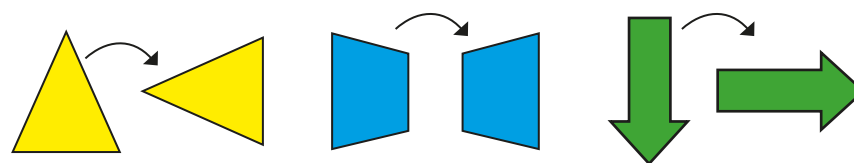
Use paper fasteners to attach the shapes to a piece of A3 paper and explore what they look like after different turns.



Explore full turns, asking what they notice about the start and end positions.

Discuss half, quarter and three-quarter turns and whether it matters which way they turn the shape.

- Match the shapes to the turns.



half turn

quarter turn

three-quarter turn

Describe turns

Reasoning and problem solving

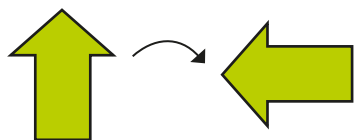
Here is an arrow.



I am going to turn it a quarter turn and then another quarter turn in the same direction.

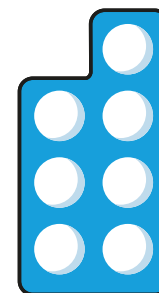
Describe Mo's turn in a different way.

Find two ways to describe the three-quarter turn the arrow makes.



- multiple possible answers, e.g.
- a quarter turn in the other direction
- a half turn and a quarter turn
- 3 quarter turns

Ann turns a number piece and it faces this way.



What direction could it have faced at the start?

What turn could it have made?

How many answers can you find?

Draw your answers.

Describe the turn for each one.



- possible answers:
- a half turn
 - a quarter turn (both directions)
 - a three-quarter turn (both directions)
 - a whole turn



Describe position – left and right

Notes and guidance

In this small step, children are introduced to the terms “left” and “right” for the first time, although they may have experienced this language outside of the classroom before.

Children often confuse the two directions, so look for ways to support children in remembering them, such as rhymes, the “L” shape shown between the index finger and thumb on the left hand and perhaps what hand they use to write with. Explore the positional language of left and right by playing games and singing rhymes and songs. Asking children to follow simple instructions throughout the day is a great way to support this skill.

Children also explore describing the direction of movement as being to either the left or the right, then describing the position of one object in relation to another, for example “The _____ is to the left/right of the _____”.

Things to look out for

- Children may confuse left and right.
- Children may become confused when an object is looked at from a different perspective from their own. When you are facing someone, the position of their left hand does not appear to match yours.

Key questions

- Which is your left/right hand/foot?
- What do you notice when you hold up the thumb and index finger of your left hand?
- How can you get to the _____?
- How can you get from the _____ to the _____?
- Is the _____ to the left or right of the _____?
- Which shape(s) is/are to the left/right of the _____?

Possible sentence stems

- The _____ moves to the _____
- The _____ is to the left/right of the _____

National Curriculum links

- Describe position, direction and movement, including whole, half, quarter and three-quarter turns
- Use the language of position, direction and motion, including: left and right, top, middle and bottom, on top of, in front of, above, between, around, near, close and far, up and down, forwards and backwards, inside and outside (non-statutory guidance)

Describe position – left and right

Key learning



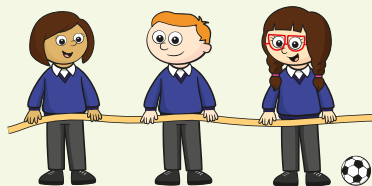
In a large space, as a class listen to, sing and act out songs and rhymes to reinforce the concept of left and right. Examples include *Cha-Cha Slide* by DJ Casper, *Dem Bones* by James Weldon Johnson and the *Hokey Cokey*, an English folk song.



Play human table football in the playground.

You need skipping ropes or pieces of long string and a football.

Position children so that they are lined up in rows of either three or four, all facing the same direction and holding the rope in their hands.



The rest of the class give players instructions to try to get the football into the goal. The players can only move when given an instruction, for example “Row 2, move three steps to the left.”

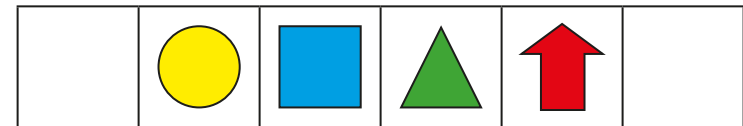


Use chalk to draw a row of four different-coloured circles on the playground.

Give children different instructions using left and right. For example, “Put your left foot in the red circle.”

Then ask children to move between circles. For example, “Move two circles to the right. What colour circle are you standing in now?”

- Here are some shapes.



- Write **left** or **right** to complete the sentences.

The triangle is to the _____ of the arrow.

The square is to the _____ of the circle.

The circle is to the _____ of the square.

- The circle moves 1 square left.



The triangle moves 2 squares right.

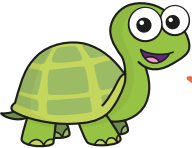
Where are the shapes now?

Describe position – left and right

Reasoning and problem solving


Sam is waving her hand.



Sam is waving her left hand.


Tiny





Sam is waving her right hand.

Max

Who do you agree with?
Explain your answer.



Max


Ben moves the counter 3 squares to the left.

He then moves it 5 squares to the right.

How can Ben get to the same place in one move?

2 squares to the right

Here are some shapes.




Complete the sentence.

The _____ is to the _____ of the _____

How many different ways can you complete the sentence?

Compare answers with a partner.



There are six possible sentences.

Describe position – forwards and backwards

Notes and guidance

In this small step, children develop their precision when describing positions by introducing “forwards” and “backwards”.

Children describe the positions of objects and shapes from different starting positions. To begin with, they move their bodies in line with instructions to move forwards and backwards and understand what these terms mean in a practical context. Instructions can then become more specific, such as “3 steps forwards”.

Using pre-programmable electronic toys or playing a range of simple games where children must move forwards and backwards, including small-scale dice games or large-scale outdoor track games, will support this understanding.

Once confident, children can then combine prior knowledge of “left” and “right” with “forwards” and “backwards” to describe more complex movements.

Things to look out for

- Children may confuse facing forwards with moving forwards.
- Children may have difficulty with combining various instructions, for example “Move 3 squares forwards, then 2 squares left, then 1 square backwards.”

Key questions

- How can you get from the _____ to the _____?
- How could you describe the movement?
- If two objects both move forwards/backwards, are they moving in the same direction?
- How many squares forwards/backwards/left/right has the _____ moved?

Possible sentence stems

- The _____ moves _____ squares forwards/backwards.
- To get to the _____, the _____ needs to move forwards/backwards.
- To get to the _____, the _____ needs to move _____ squares forwards/backwards, then _____ squares left/right.

National Curriculum links

- Describe position, direction and movement, including whole, half, quarter and three-quarter turns
- Use the language of position, direction and motion, including: left and right, top, middle and bottom, on top of, in front of, above, between, around, near, close and far, up and down, forwards and backwards, inside and outside (non-statutory guidance)

Describe position – forwards and backwards

Key learning



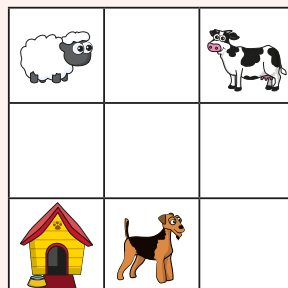
Take the class into the playground. Give children instructions such as “Move 3 steps forwards.” or “Move backwards 6 steps.”



Set up a grid for children to use and apply positional language.

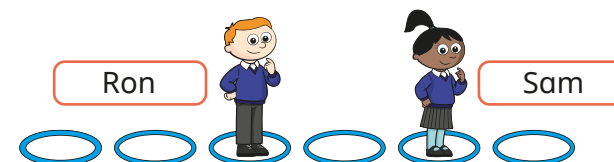
Encourage children to tell a story to say what the animals are doing.

For example, “The cow is walking forwards, towards the sheep.” Ask questions such as “How can the dog get to its kennel?”

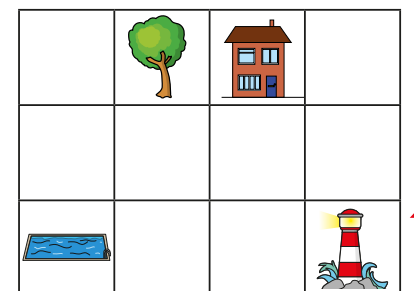


Give children cones and skipping ropes to mark a route for a partner to follow to a treasure chest.

Children should use “left”, “right”, “forwards” and “backwards” to describe the route their partner must follow.



- ▶ Ron moves 3 hoops forwards.
Where is Ron now?
- ▶ Sam moves 2 hoops backwards.
Where is Sam now?



Tom and Kay are at the lighthouse and facing the top of the grid.

- ▶ Tom moves 2 squares forwards and 1 square left.
Where is Tom now?
- ▶ Kay moves 2 squares left and 2 squares forwards.
Where is Kay now?

Describe the journey from the swimming pool to the house.

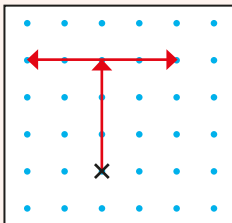
Describe position – forwards and backwards

Reasoning and problem solving



Model how to give instructions for writing a letter on dotted paper, starting at the point marked with a cross.

Explain that you are writing Tiny's name, and to write the letter "T" you draw 3 forwards, 2 left and 4 right.

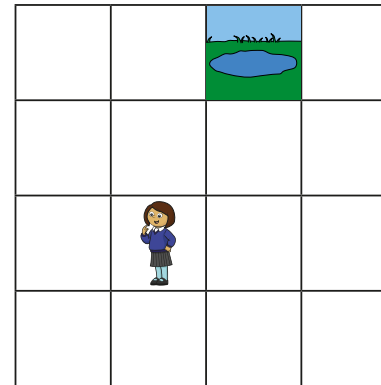


Ask children to give a partner instructions for writing the first letter of their own name.

They may need support in retracing a line they have already drawn, as in this example.

Answers will vary, depending on letter and starting position.

Kim is trying to get to the pond.



- left
- right
- forwards
- backwards

How can you get Kim to the pond?

Use the words to show three different ways.

Compare answers with a partner.



multiple possible answers, e.g.

- 1 backwards, 2 right
- 1 forwards, 2 right, 2 backwards

Describe position – above and below

Notes and guidance

In this small step, children build on the directional language developed in previous steps, extending to include “above” and “below”. They use this language to firstly describe the position of objects in relation to each other, for example, “The _____ is above/below the _____”. This could also include learning from previous steps on left and right. They then follow and give positional instructions and clues to others, for example to build a tower of cubes.

Children develop their ability to recognise and represent direction using marks and symbols. They explore the position of objects and shapes from different starting points. Where possible, this concept should be explored practically both inside and outside the classroom.

Children can also start to explore the terms “top” and “bottom”.

Things to look out for

- Children may use “over” and “under” when thinking about “above” and “below”.
- When interpreting 2-D representations, children may confuse “above” and “below” with “forwards” and “backwards”.

Key questions

- How could you describe “above”?
- How could you show me “below”?
- What is above the _____?
- What is below the _____?
- Is the _____ above or below the _____?
- Which _____ is at the top/bottom?

Possible sentence stems

- The _____ is below the _____
- The _____ is above the _____
- The _____ at the top/bottom is _____

National Curriculum links

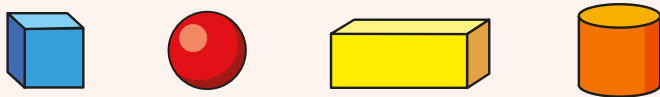
- Describe position, direction and movement, including whole, half, quarter and three-quarter turns
- Use the language of position, direction and motion, including: left and right, top, middle and bottom, on top of, in front of, above, between, around, near, close and far, up and down, forwards and backwards, inside and outside (non-statutory guidance)

Describe position – above and below

Key learning



Provide children with a set of different 3-D shapes.

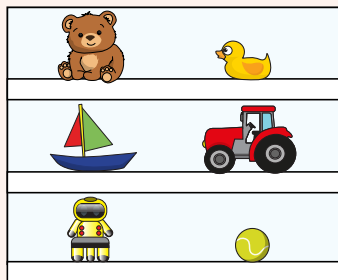


Give children instructions to follow, for example “Hold the sphere above the cube”.

Ask children to give each other instructions to follow using the words above and below.

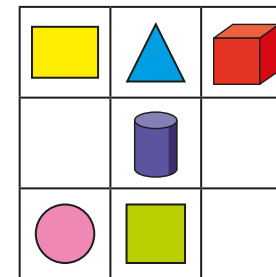


Set up a bookcase with various objects on the shelves.



Get children to talk about which objects are above or below in relation to each other. They can then move the objects into different positions and describe their new positions.

- Here are some shapes on a grid.



above

to the left of

below

to the right of

The triangle is _____ the cylinder.

The square is _____ the circle.

The cylinder is _____ the triangle.

The rectangle is _____ the circle.

The square is _____ the triangle.

- Here is a tower of cubes.



Complete the sentences.

The top cube is _____

The _____ cube is purple.

The cube below the yellow cube is _____

The cube _____ the yellow cube is red.

Describe position – above and below

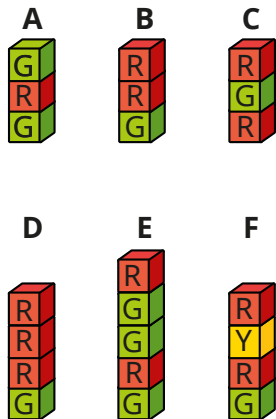
Reasoning and problem solving

Ron makes a tower of cubes.



The bottom cube is green and the top cube is red. I used fewer than 5 cubes.

Which towers could be Ron's?



Make another tower that could be Ron's.



B, D, F

multiple possible answers

all less than 5 cubes with red at the top and green at the bottom

Colour the circles to match the sentences.



- The bottom circle is blue.
- The circle below the top circle is yellow.
- The circle above the blue circle is red.
- The circle below the yellow circle is green.
- The rest of the circles are purple.

How many purple circles are there?

top to bottom:
purple, yellow,
green, purple,
red, blue

2

Ordinal numbers

Notes and guidance

This small step covers a non-statutory statement in the Year 1 curriculum. It has been included to support children to recognise numbers used to describe the position of something. It also links to previous learning such as ordering numbers.

Children may be familiar with the language relating to ordinal numbers from lining up, playing games or competing in races. Ensure that children have experience of not only 1st, 2nd, 3rd, but also identifying and representing other ordinal numbers and using them to explain events. They can record positions using numerals and the endings “st”, “nd”, “rd” and “th” as well as the words “first”, “second”, “third”, “fourth” and so on. Children may also use the word “last” to denote the final position in a group.

Things to look out for

- Children may confuse the ordinal number with the total number.
- Children may not be aware that ordinal numbers can change if the order changes. For example, if Kay is at the front of the line today, she is 1st, but if she is in another place in the line tomorrow, she is no longer 1st.

Key questions

- What does “first” mean?
- When would you use the word “last”?
- When might you use ordinal numbers?
- Is there always fourth?
- Is there always first and last? Why?
- Where is the _____ cube in the tower?
- How can you work out where _____ is?

Possible sentence stems

- I know that _____ is _____ because ...
- The person who wins the race comes _____
- _____ came last in the race.
- The position after _____ is _____
- The position before _____ is _____

National Curriculum links

- Practise counting (1, 2, 3...), ordering (for example, 1st, 2nd, 3rd ...) (non-statutory guidance)

Ordinal numbers

Key learning



Hold a mini sports day in the playground. In groups of 4 or 5, children compete in events such as running, throwing, balancing and jumping. Discuss with children how they can describe the position they finish in each event. Who came 1st/2nd/3rd ...?



Read *Chicken Licken* (traditional tale). Discuss who the characters are in the story and the order in which they appear.

Use small world characters as the animals from the story and order them from the first to appear, onwards. Can children explain their reasoning? For example, "The cow is 2nd because ...". Provide rosettes or cards with the ordinal numbers for children to match these to the animals.

To develop this further, children could make up their own stories and use ordinal numbers to order the appearances of the characters.



As a class, sing *There Was an Old Lady Who Swallowed a Fly*. Can children order the animals that the lady swallowed? Can they assign each one an ordinal number? Ask which animal was last.



Read *Mr Gumpy's Outing* by John Burningham.

Set up a car and choose children to be the characters from the story getting into the car in order. Which ordinal number matches each character? If they swap the order in which the characters enter the car, does their ordinal number stay the same or change?

- Here are some apples.



- ▶ Circle the first apple.
- ▶ Underline the 4th apple.
- ▶ Tick the last apple.

Ordinal numbers





Reasoning and problem solving





Kim and Mo use the clues to draw some shapes.



- There are four shapes.
- The 1st shape is a circle.
- The last shape is a square.
- The other two shapes are a triangle and a rectangle.

Here are their drawings.

Kim    

Mo    

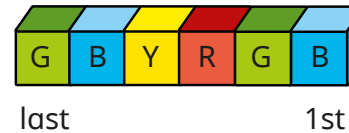
Who is correct?

Explain your answer.



Both children are correct.

Here is a line of cubes.



What colour is the 4th cube?

The red cube is taken away.

What place is the yellow cube in now?

yellow

3rd

Ben, Sam, Jo and Max run in a race.



Use the clues to work out the order of the children.

- Jo finishes 4th.
- Max wins the race.
- Ben finishes between Sam and Jo.

1st Max
2nd Sam
3rd Ben
last Jo

