

Summer Block 4

Position and direction

Small steps

Step 1

Language of position

Step 2

Describe movement

Step 3

Describe turns

Step 4

Describe movement and turns

Step 5

Shape patterns with turns

Language of position

Notes and guidance

In this small step, children use the language of position, recapping and building upon learning from Year 1

Children start by describing the position of objects using left and right. Discuss methods for remembering which way is left and which way is right. They then think about other language to describe position, such as above, below and between.

Children use their understanding of this language to complete multi-step and more sophisticated problems. This learning will be built upon as they begin to think about describing movement and turns in the next steps.

Things to look out for

- Children may confuse left and right.
- Children may think that there is only one way to describe position.
- Children may not use mathematical language to describe position.
- Children may find it more difficult to describe position using images than they do in practical contexts.

Key questions

- How do you know which way is left/right?
- How would you describe the position of this object?
- Which object is to the left/right of the _____?
- Which object is above/below the _____?
- What does “between” mean?

Possible sentence stems

- The _____ is above/below the _____
- The _____ is to the right/left of the _____
- The _____ is between the _____ and the _____

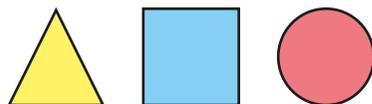
National Curriculum links

- Use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anticlockwise)

Language of position

Key learning

- Here are some shapes.



- ▶ Which shape is to the left of the square?
- ▶ Which shape is to the right of the square?
- ▶ How can you remember which way is left and which is right?
- ▶ Which shape is between the triangle and the circle?

- Look at the people and things around you in the classroom.

Complete the table.

| In front of me | Behind me | To the left of me | To the right of me |
|----------------|-----------|-------------------|--------------------|
| | | | |



Ask children to walk around school or the playground and complete the sentences.

The _____ is above/below the _____

The _____ is to the left/right of the _____

The _____ is in between the _____ and the _____

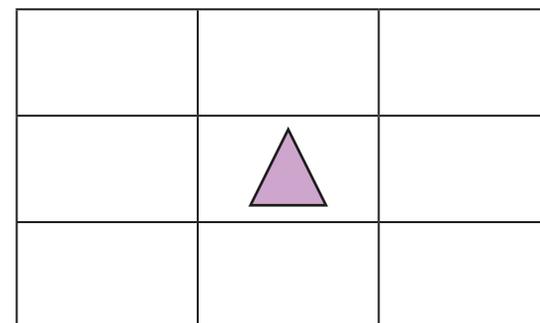
- Use five cubes. Follow the instructions to make a tower.

- Start with a yellow cube.
- Put a blue cube on top of the yellow cube.
- Put a white cube below the yellow cube.
- Put a red cube on the top of the tower.
- Put the green cube in between the yellow and white cube.

Write your own instructions for a partner.

- Follow the instructions.

- Draw a square above the triangle.
- Draw a circle below the triangle.
- Draw a rectangle to the left of the triangle.
- Draw another triangle to the right of the square.



Language of position

Reasoning and problem solving

Use the clues to write Max, Sam and Jo's names on the grid.



| | | |
|--|---|---|
|  Kim |  Mo | |
| | | |
| | |  Ron |

- Mo is directly above Max.
- Sam is directly below Max.
- Jo is to the right of Max.

Complete the sentence.

Sam is to the left of _____

2nd row: empty,
Max, Jo

3rd row: empty,
Sam

Ron

How many ways can you describe the position of the 2p coin?



- below the 50p
- above the 10p
- in between the 50p and the 10p
- in between the 20p and the 5p
- to the left of the 5p
- to the right of the 20p

Think of a set of clues to describe the positions of some coins.

Tell a partner your clues. Can they work out the position of each coin?



Describe movement

Notes and guidance

In this small step, children use their understanding of position to describe movement. This could be explored, in the first instance, by following instructions outside to move from one area to another. Children then begin to record and describe movement more formally, in terms of both direction and number of squares. They should first describe movement of an object as up, down, left and right as they look at it on a page. Once they are confident with this, they can begin to think about describing movement using forwards and backwards. This is often difficult for children and will need careful modelling as the direction of forwards or left, for example, changes, depending on which way a person or object is facing. This learning is key and needs to be fully understood as it is used throughout the remainder of this block.

Things to look out for

- Children may confuse left and right.
- Children need to think about which way an object is facing to work out both forwards/backwards and left/right, which can be challenging.
- Children may count the starting square, so miscount the number of squares an object has moved.

Key questions

- Which direction is left/right?
- How many squares has the object moved?
- Do you need to count the square that the object starts in?
- Which direction is forwards/backwards?
- If you move forwards, do you always move in the same direction?
- Which way would left/right be in this question?
How do you know?

Possible sentence stems

- The _____ has moved _____ squares up/down/left/right.
- The _____ has moved _____ squares forwards/backwards and _____ squares left/right.

National Curriculum links

- Use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anticlockwise)

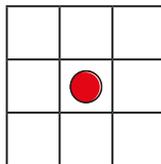
Describe movement

Key learning



Take the children into the playground. In pairs, they take turns to give instructions for their partner to get from one place to another. Tell them that they need to use the words forwards, backwards, left and right, together with the number of steps.

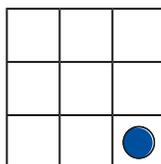
- There is a counter in the middle square of the grid.



- ▶ Draw a triangle to show where the counter will be if it moves 1 square up.
- ▶ Draw a circle to show where the counter will be if it moves 1 square left.

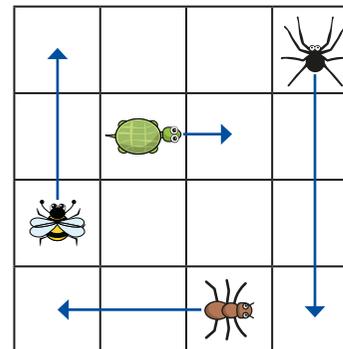
- Ben moves the counter 2 squares left and 2 squares up.

Where is the counter now?



Make up instructions for a partner to move the counter.

- Use the words **forwards** and **backwards** to help you complete the sentences.



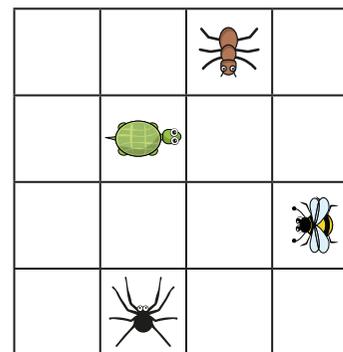
Tiny moves 1 square _____

The bee moves _____ squares _____

The _____ moves 2 squares backwards.

The spider moves _____ squares _____

- Use arrows to show the movement on the grid.



- Tiny moves 1 square backwards.

- The ant moves 2 squares forwards.

- The bee moves 3 squares forwards and then 1 square backwards.

- The spider moves 2 squares right.

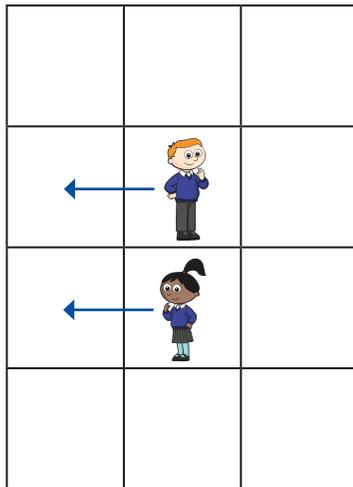
Describe movement

Reasoning and problem solving

Ron and Sam both move 1 square to their left.



Tiny draws arrows to show where they move to.



Do you agree with Tiny?

Explain your answer.

Draw arrows to show where Ron and Sam move to.



No
Both Ron and Sam move in the opposite direction to that shown, into the right-hand column.

Use the words to help the bee get to the beehive.

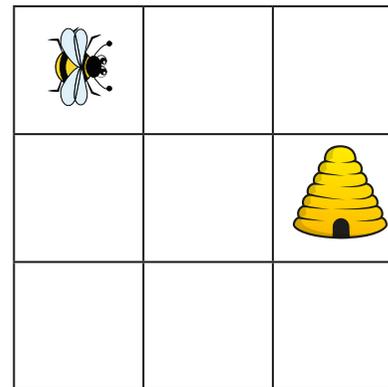


forwards

backwards

left

right



How many ways can you find?



multiple possible answers, e.g.
2 squares forwards,
1 square right

Describe turns

Notes and guidance

In this small step, children start to describe turns.

Children learn about quarter, half, three-quarter and full turns, as well as using clockwise and anticlockwise. Links could be made to other areas of the curriculum (time, fractions) to help conceptualise the learning. Children may find it beneficial to complete quarter, half, three-quarter and full turns before they are introduced to clockwise and anticlockwise.

Children should be able to draw what an object would look like after a turn and describe the turn that an object has performed. As with previous steps, there will be plenty of opportunity to explore this step practically, both in the classroom and outside.

Things to look out for

- Children may need a reminder about the fractions used in this step.
- Children may confuse clockwise and anticlockwise.
- Children may find it more difficult to describe a turn than to make it.
- Children may think that an object must change if it completes a full turn.

Key questions

- Where have you heard “half” and “quarter” before? What do they mean?
- Which direction will you be facing if you make a _____ turn?
- Which way do the hands go round a clock?
- What do you think clockwise/anticlockwise means?
- What happens to the way you are facing when you make a half/full turn?
- What type of turn has this object made?

Possible sentence stems

- The _____ has turned a _____ turn _____
- When I make a half turn, I will be facing _____
- When I make a full turn, I will be facing _____

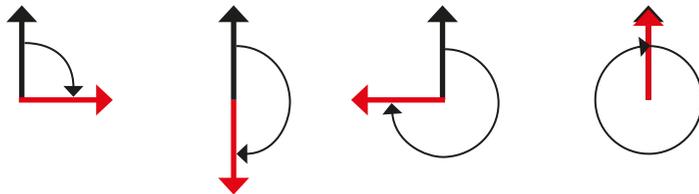
National Curriculum links

- Use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anticlockwise)

Describe turns

Key learning

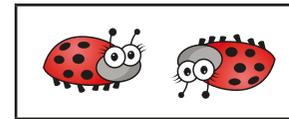
- The pictures show a quarter turn, a half turn, a three-quarter turn and a full turn.



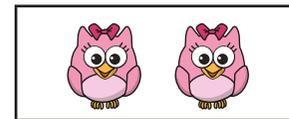
How is this similar to fractions?

How is this similar to time?

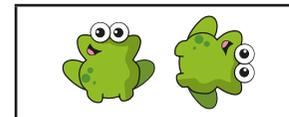
- Match the pictures to the turns.



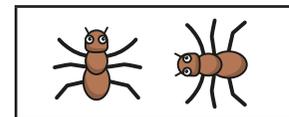
full turn



quarter turn
clockwise



half turn
anticlockwise



quarter turn
anticlockwise

- Complete the sentence to describe the turn each triangle has made.



The triangle has turned a _____ turn _____



Ask children to pick an object and take it in turns with a partner to turn the object.

Children should describe the turns using the language full turn, half turn, quarter turn, three-quarter turn.



Discuss the terms clockwise and anticlockwise. Use a clock to show children the difference.

Play *Simon says* using quarter, half and three-quarter turns together with clockwise and anticlockwise.

Describe turns

Reasoning and problem solving

Jo is describing turns.



It does not matter which way I turn for a half turn.

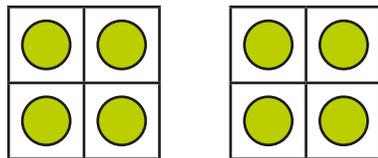
Do you agree with Jo?

Explain your answer.



Yes

Look at the shapes.

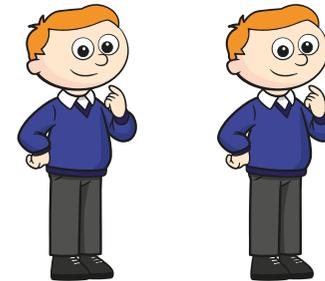


Describe the turns the shape could have made.

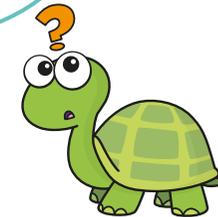


quarter, half, three-quarter or full turn, either clockwise or anticlockwise

Ron has made a turn.



I do not think this is correct, because Ron is facing the same direction.



Do you agree with Tiny?

Explain your answer.

No

Ron could have completed a full turn.

Describe movement and turns

Notes and guidance

In this small step, children combine their learning from previous steps to describe movement and turns.

There are many misconceptions that can occur within this step, so it is important to practically complete tasks and discuss any misunderstandings as a class. Children could play games, such as giving each other instructions through a maze. They need to visualise which way an object is facing and which way it will be facing if it turns left or right. Once this is secure, they can then think about describing movement and giving instructions to move an object from one place to another.

The use of small, programmable robots could also be used to consolidate this learning.

Things to look out for

- Children may confuse left and right, and clockwise and anticlockwise.
- Taking into account the original direction that an object is facing may need support and modelling.
- When describing movement involving more than one step, especially when a turn is needed, children may leave out some steps or confuse the order.

Key questions

- Which direction is left/right?
Does it matter which way the object is facing?
- How do you know which direction the object has moved?
- Which direction is clockwise/anticlockwise?
- Which direction does the object need to move after the turn?
- How can you show the movement using arrows on the grid?

Possible sentence stems

- First I move _____ squares forwards.
Then I turn _____
Then I move _____ squares forwards.

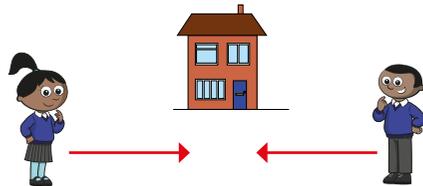
National Curriculum links

- Use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anticlockwise)

Describe movement and turns

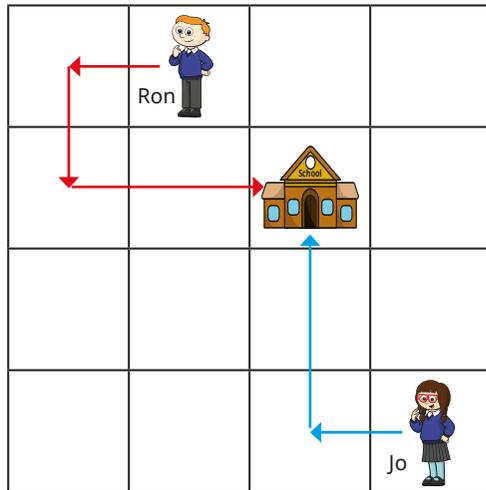
Key learning

- Sam and Mo are walking home.



Which way should Sam turn?
Which way should Mo turn?
What do you notice?

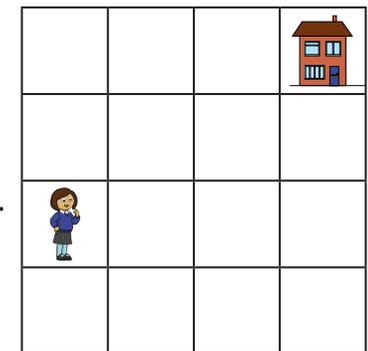
- Ron and Jo are walking to school.



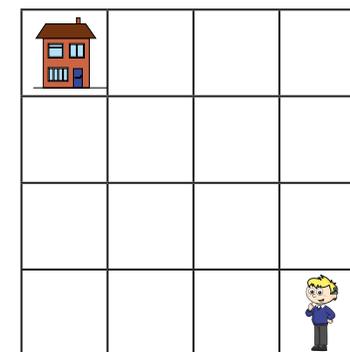
- ▶ Complete the sentences to describe how Jo gets to school.
First she moves _____ square forwards.
Then she turns _____
Then she moves _____ squares forwards.
- ▶ Describe Ron's journey to school.

- Follow the instructions to draw Kim's way home.

- Go forwards 1 square.
- Turn left.
- Go forwards 2 squares.
- Make a quarter turn clockwise.
- Go forwards 2 squares.



- Draw arrows to show how Max could walk home.
Describe Max's journey.



Is there more than one answer?

Describe movement and turns

Reasoning and problem solving



Tell children to go on a walk around the school or the playground, recording their journey.

They then describe their journey to a partner and see if they can recreate the route.

They must include the words clockwise and anticlockwise.



If I make a quarter turn clockwise I will be facing the same direction as if I make a three-quarter turn anticlockwise.

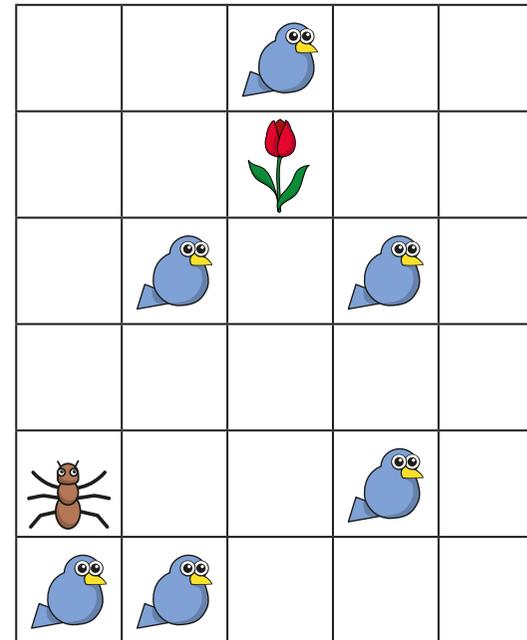
Yes

Is Tiny correct?

Explain your answer.



On this grid, the ant is not allowed to be on the same square as a bird.



How can the ant get to the flower?

How many ways can you find?



multiple possible answers, e.g.

forwards 3 squares,
turn right, forwards
2 squares

Shape patterns with turns

Notes and guidance

In this small step, children explore patterns that involve turns.

Time could be spent recapping patterns that just use different shapes first, including different ways to form patterns, before introducing them to patterns with one or two shapes that include a turn. They should be able to identify what the next shapes in the pattern are and what direction they face. Encourage children to use the language of quarter, half, three-quarter turns as well as clockwise and anticlockwise.

Discuss what happens when a shape completes a full turn and why this may not be useful when creating patterns.

Children can cut out shapes and complete some of these tasks practically before describing their patterns.

Things to look out for

- Children may confuse clockwise and anticlockwise.
- Children may struggle to identify the series of shapes that are repeating when a pattern is made up of more than one shape.
- Children may not be able to identify the turn in each pattern.

Key questions

- What are patterns?
- Which shape(s) is/are repeating?
- How can you describe this pattern?
- How can you make a pattern with one shape?
- How can you describe the turn in each pattern?
- What is the next shape?

Possible sentence stems

- In this pattern, the shape turns a _____ turn _____
- The next shape is _____ because ...

National Curriculum links

- Use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anticlockwise)

Shape patterns with turns

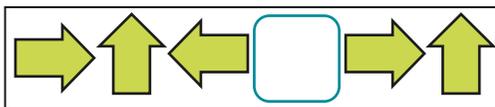
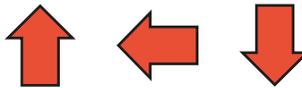
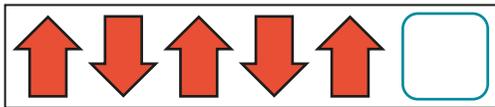
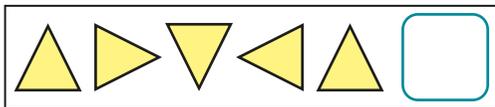
Key learning



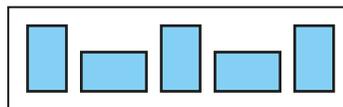
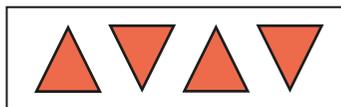
Show children a range of patterns that do not involve turns and ask what they notice. Then ask them to make patterns with different cubes/shapes.

- The patterns are made by turning the shape each time.

Choose the missing shapes.



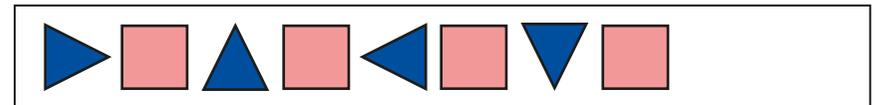
- Complete the sentence to describe the turns between the shapes.



The shape makes a _____ turn _____

Is there more than one answer?

- Draw the next two shapes in each pattern.



How can you describe the patterns?

- Tiny is describing a pattern.



My 1st shape is a triangle. It makes a half turn each time.

- Draw the first five shapes in Tiny's pattern. Have you drawn the same pattern as your partner?
- Describe a pattern for your partner to draw.

- How many different patterns can you make with this shape?



Shape patterns with turns

Reasoning and problem solving

The pattern is made by turning the square each time.



Describe the turns in the pattern.

Compare answers with a partner.



quarter, half, three-quarter or full turn clockwise or anticlockwise

Spot the mistake in the pattern.

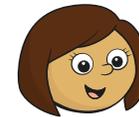
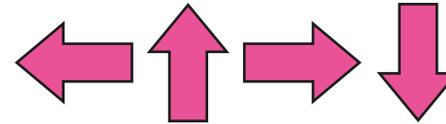


Draw the correct shape.

The 5th shape is incorrect.



Kim and Mo are describing the pattern.



Kim

The arrow makes a quarter turn each time.

The arrow makes a three-quarter turn each time.



Mo

Both children are correct.

Who is correct?

Explain your answer.

