# Properties of Shapes: Measuring Angles in Degrees

Aim	Success Criteria	Resources
Know angles are measured in degrees:	l can describe an angle as a turn.	Lesson Pack
estimate and compare acute, obtuse and reflex angles.	I can identify right, acute, obtuse and reflex angles as an angle of a turn.	
Draw given angles, and measure them in degrees (°).	I can describe angles of a turn in degrees.	
DfE Ready-to-Progress Criteria	Key/New Words	Preparation
Compare angles, estimate and measure angles in degrees (°) and draw angles of a	Angle, turn, degrees, acute, right, obtuse, reflex, quarter-turn, half turn, three-quarter	Differentiated Measuring Angles in Degrees Activity Sheets – one per child
given size (5G-1)	turn, full turn, clockwise, anticlockwise.	Diving into Mastery Activity Sheets – as
To measure angles of a turn in degrees.		required

**Prior Learning** It will be helpful if children can revisit acute, right and obtuse angles and recap how to identify them. This is covered in this <u>Types of Angles</u> lesson.

#### Learning Sequence

<b>Remember It:</b> Using the corresponding slide on the Lesson Presentation, the children will sort angles on to a table based on whether they are acute, right-angled or obtuse. This activity is intended to recap prior learning in year 4. To extend learning further, children can draw three more angles for each section of the table.	
<b>Key Vocabulary:</b> Using the corresponding slides on the Lesson Presentation, the children recap the keywords 'clockwise' and 'anticlockwise'. These words occur within the lesson, so it is important that children are familiar with the terms and can apply them when discussing directions of turns.	
<b>Measuring Turns in Degrees:</b> Using the corresponding slides on the Lesson Presentation, the children learn how to describe turns in terms of quarter-turns, half turns, three-quarter turns and full turns. Children will learn the measurements of these turns using degrees and shown how to calculate them correctly. Children will be introduced to reflex angles within this section of the lesson. Can the children describe an angle as a turn? Can the children identify right and reflex angles as an angle of a turn? Can the children describe angles of a turn in degrees?	
<b>Turning Anticlockwise:</b> Using the corresponding slides on the Lesson Presentation, the children engage in a talk task where they describe Charlie's anticlockwise turns using key vocabulary. They describe his turns using measurements in degrees and state the fraction of a turn that he turns through. Can the children describe an angle as a turn? Can the children identify right and reflex angles as an angle of a turn? Can the children describe angles of a turn in degrees?	
Acute, Obtuse and Reflex Angles: Using the corresponding slides on the Lesson Presentation, the children engage in new learning involving turns around a compass. Children will learn that each turn on the compass measures 45° and use this knowledge to measure any turn on the compass. Children will be encouraged to add values around the compass to find the total. Following this, children will engage in a talk task where they describe turns involving eight points and will use key vocabulary alongside measurements in degrees. Can the children describe an angle as a turn? Can the children identify right, acute, obtuse and reflex angles as an angle of a turn? Can the children describe angles of a turn in degrees?	

	<b>Measuring Angles in Degrees:</b> Using the differentiated Measuring Angles in Degrees Activity Sheets, the children complete tasks that provide them with opportunities to practise measuring angles in degrees	
	To support children working towards expected level, there is a talk task provided which enables children to discuss angles as turns using key vocabulary. Sentence stems are provided to scaffold discussions. Children will be able to practise describing angles in terms of direction, fractions and measurements in degrees.Children working at expected level will engage in a talk task where they discuss angles as turns using key vocabulary. Children will be able to apply new learning on acute, obtuse and reflex angles in terms of direction, fractions and measurements in degrees.To challenge children working at greater depth there is a task provided which allows the application of new learning on acute, obtuse and reflex angles in terms of direction, fractions and measurements in degrees.To challenge children working at greater depth there is a task provided which allows the application of new learning on acute, obtuse and reflex angles in terms of direction, fractions and measurements in degrees.To challenge children will complete an information table linked to finding angles acound a compass. Children will draw a child's bedroom based on a set of instructions, then create their own instruction list for designing a zoo. This will provide children with an opportunity to apply the key vocabulary linked to measuring angles in degrees.	
	<b>Diving into Mastery:</b> Schools using a mastery approach may prefer to use the following as an alternative activity. These sheets might not necessarily be used in a linear way. Some children might begin at the 'Deeper' section and in fact, others may 'dive straight in' to the 'Deepest' section if they have already mastered the skill and are applying this to show their depth of understanding.	
	Children complete fluency questions related to measuring angles in degrees.	
	Children answer reasoning questions related to measuring angles in degrees.	
	Children work individually or collaboratively on problem-solving questions related to measuring angles in degrees.	
<b>Explore</b> it		

Showit: Children can create a large-scale version of an activity to show turns around a point. They can place objects at different compass points and then stand in a position in the middle. They can turn around the point and have their partner describe their measurement of turn in degrees.
 Drawit: Children can create a drawing of their bedroom and describe the positioning of items in their room in terms of degrees.
 Learnit: Children will find this superb \_\_\_\_\_\_ helpful to learn about measuring in degrees.

# DISCLAIMER

We hope you find the information on our website and resources useful.

#### **Displaying the Presentation**

To ensure this presentation displays correctly: If you are a Mac user, the presentation may open in 'slide master' mode - to see all the content, click 'close slide master' and the presentation should display correctly. If you are using Google Drive, the presentation won't display correctly if you open it in Google Slides. If you have opened it in Google Slides, you will need to download it again from the Twinkl website and this time open it from your computer.

#### Animations

This resource has been designed with animations to make it as fun and engaging as possible. To view the content in the correct formatting, please view the PowerPoint in 'slide show mode'. This takes you from desktop to presentation mode. If you view the slides out of 'slide show mode', you may find that some of the text and images overlap each other and/or are difficult to read.

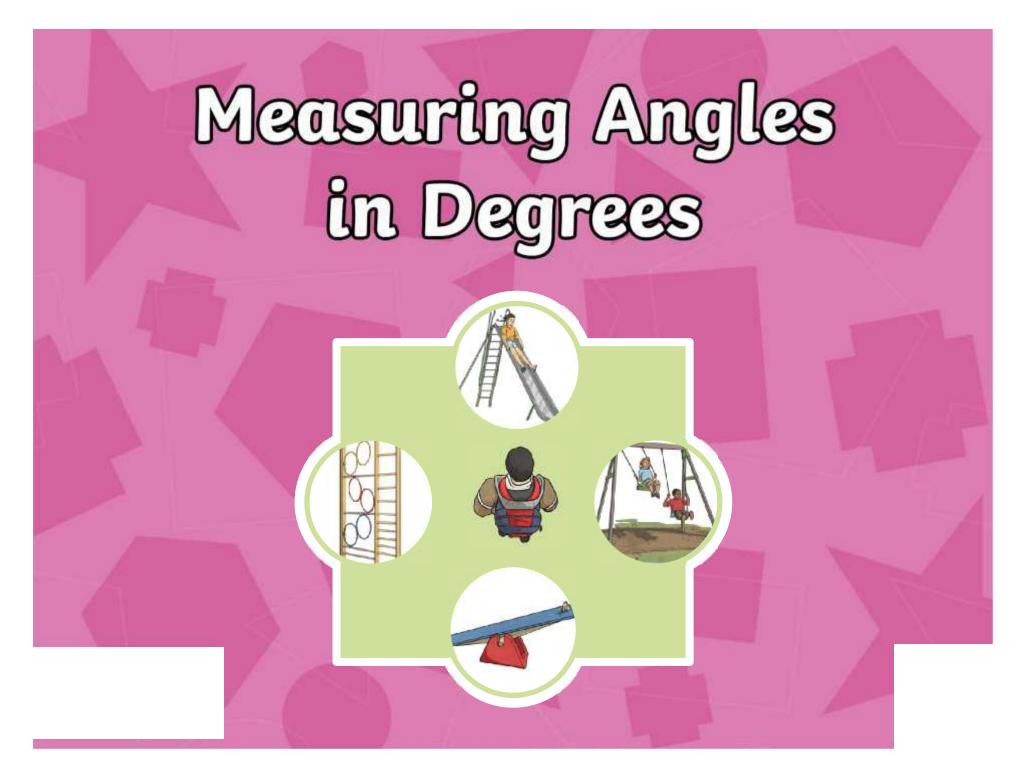
To enter slide show mode, go to the **slide show menu tab** and select either **from beginning or from current slide**.

You may wish to delete this slide before beginning the presentation.

# Maths

# **Properties of Shapes**

Maths | Properties of Shapes | Measure and Draw Angles | Lesson 1 of 4: Measuring Angles in Degrees



# Aim

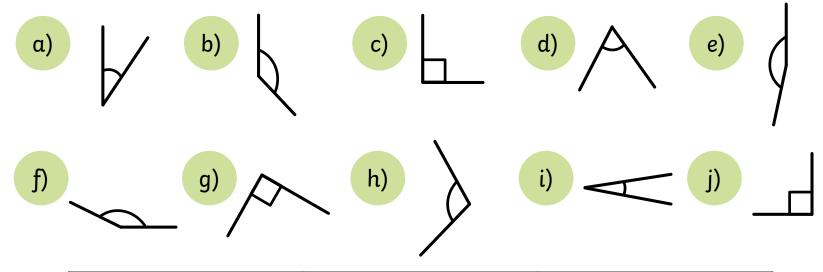
• To measure angles of a turn in degrees.

# Success Criteria

- I can describe an angle as a turn.
- I can identify right, acute, obtuse and reflex angles as an angle of a turn.
- I can describe angles of a turn in degrees.

Remember It

Sort the angles into the table below. Are they acute, right or obtuse? Can you explain your reasoning?



Acute	Right	Obtuse
a d i	c g j	be fh

Ready for a challenge?

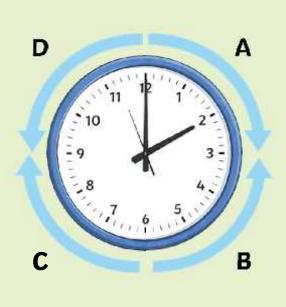
Draw three more angles for each part of the table!

### Key Vocabulary

#### To describe turns, we use the phrases **clockwise** and **anticlockwise**.

Which arrows are showing clockwise turns?

Why do you think the term **clockwise** is used?



Which arrows are showing anticlockwise turns?

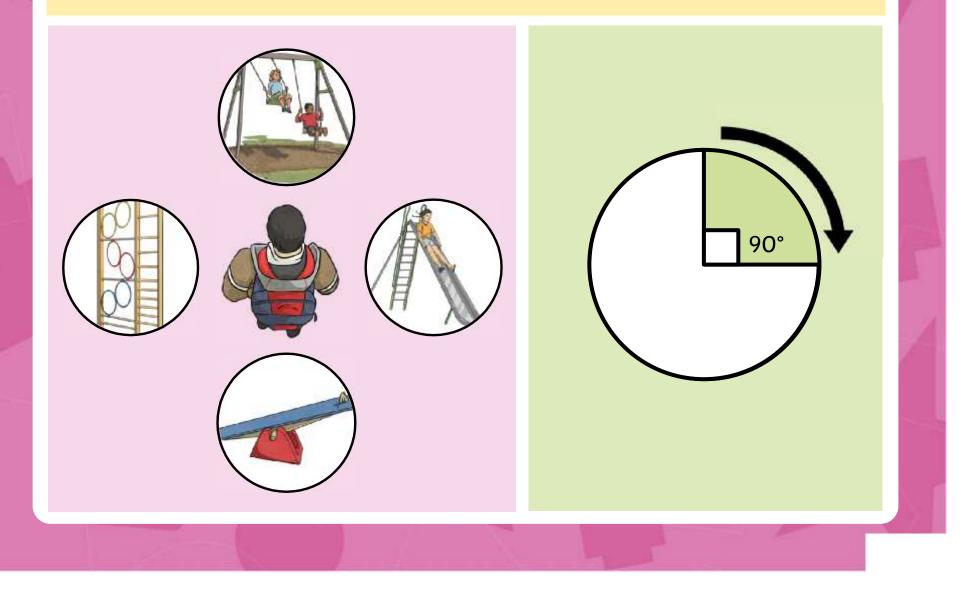
Why do you think the term **anticlockwise** is used?

A and C show clockwise turns.

The movement is in the same direction as the hands on the clock and the numbers are going around the clock face. B and D show anticlockwise turns.

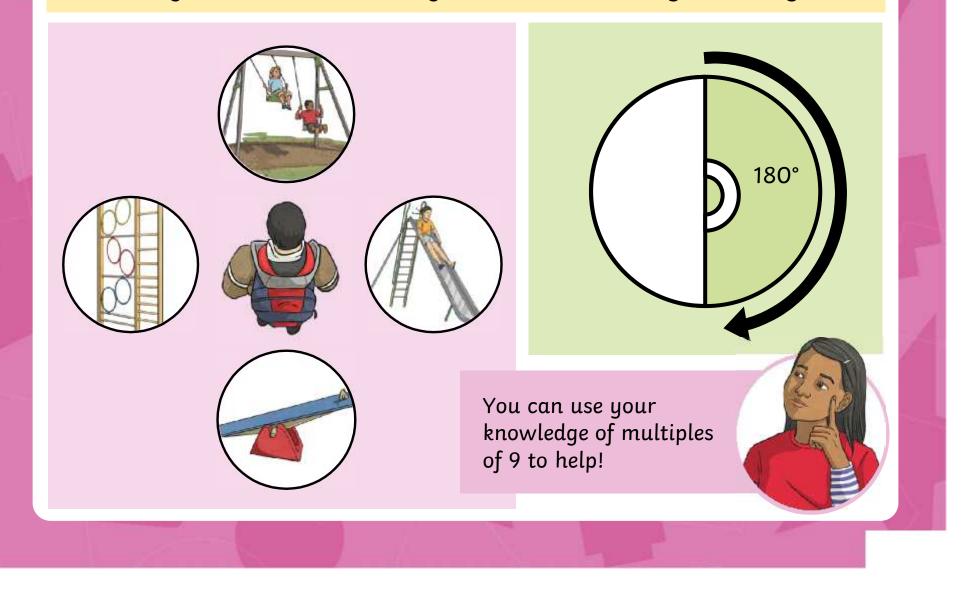
They move in the opposite direction to the clock hands and numbers.

Charlie has turned an lieuishin a pomer Haris fandrig they storings the slide. He has In this lesson, we will be measuring turns in degrees () tur hed Bokes green attending tert clock measures exeasing gais ngulftera tright angle.



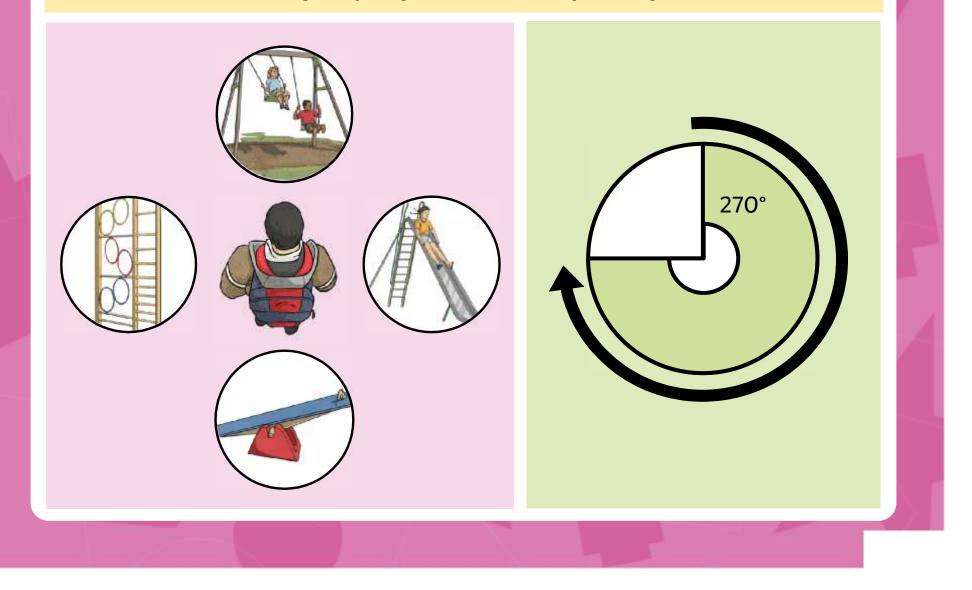
#### **Measuring Turns in Degrees**

Charlie has turned through two right angles. A right angle is 90°, so we can Charlie in facing as exercise a continue and so any facing cloeks exercise multiply 90 by 2 to calculate half a turn. he facing after thentistice the source of the facing after the district of the facing after the source exactly 180° is called a straight time angle.



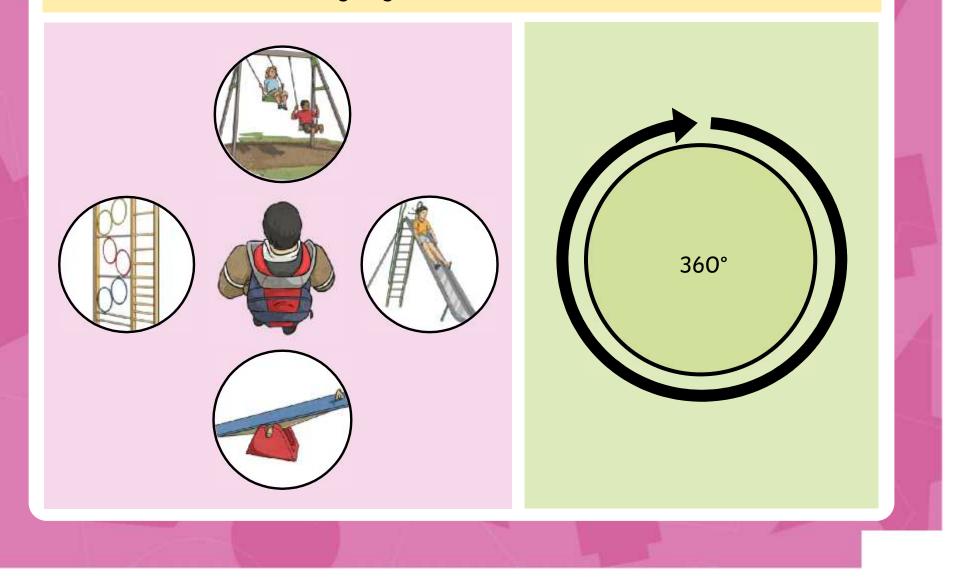
Measuring Turns in Degrees

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Measuring Turns in Degrees

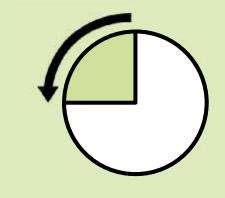
Charlie is facing the swings again. He turns through a full turn clockwise. A full turn is the same as four right angles. A right angle is 90° so we can Charlie has moved herefilstnenfolging taits after and facing the swings. Multiply 90 by 4 to calculate a full turn. 90 x 4 = 360. How many degrees has he turned in total?



**Turning Anticlockwise** 

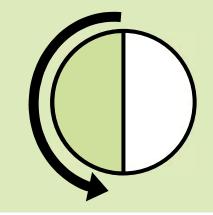
Charlie is facing the swings again. Discuss with a partner what would happen if Charlie turned **one quarter-turn anticlockwise**?





Charlie starts facing the swings. He turns through  $\frac{1}{4}$  turn. Charlie is now facing the **climbing frame** He has turned **90**° This is called a **right** angle. Charlie is facing the swing again. He now moves half a turn anticlockwise.



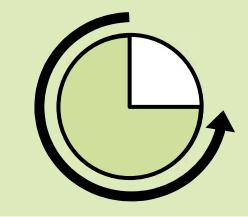


Charlie starts facing the swings. He turns through  $\frac{1}{2}$  turn. Charlie is now facing the **seesaw** He has turned **180**°

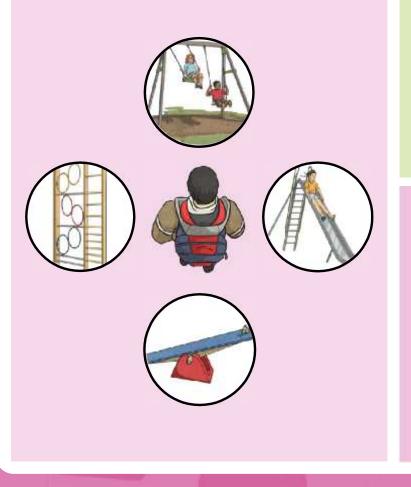
This is called a **straight line** angle.

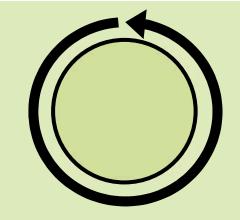
Charlie is facing the swing again. He now moves **three-quarters of a turn anticlockwise**.





Charlie starts facing the swings. He turns through  $\frac{3}{4}$  turn. Charlie is now facing the **slide** He has turned **270**° This is called a **reflex** angle. Charlie is facing the swings again. He finally moves a **full turn anticlockwise**.





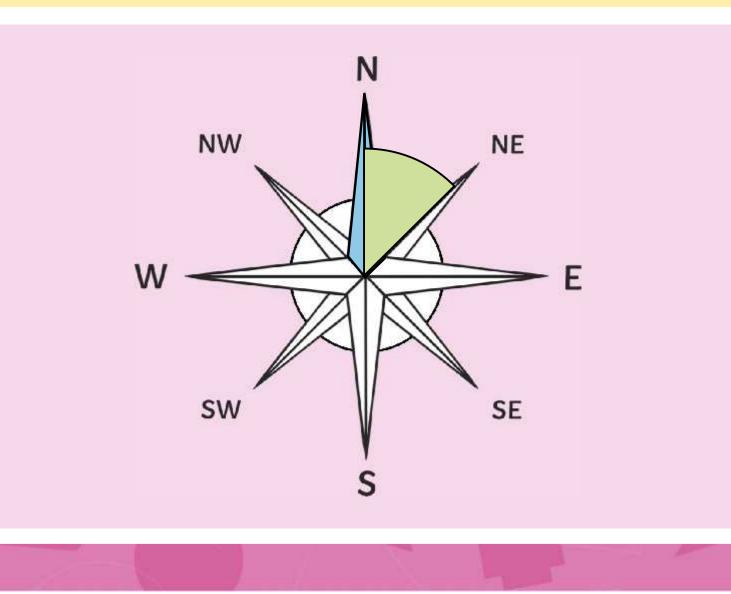
Charlie starts facing the swings.

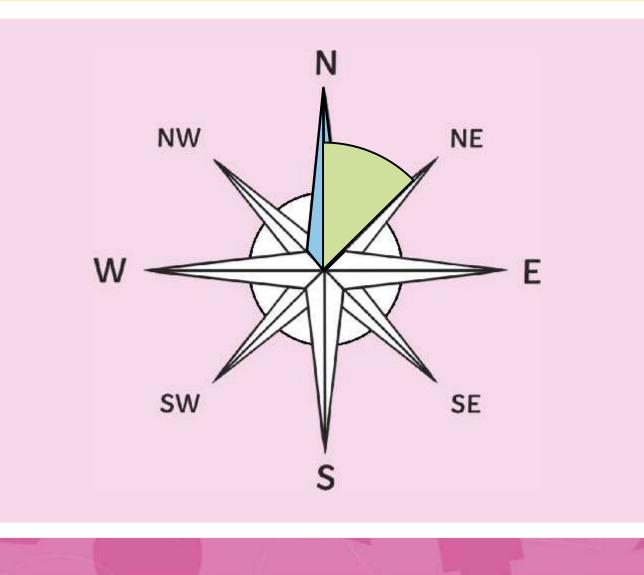
Charlie is now facing the **swings** 

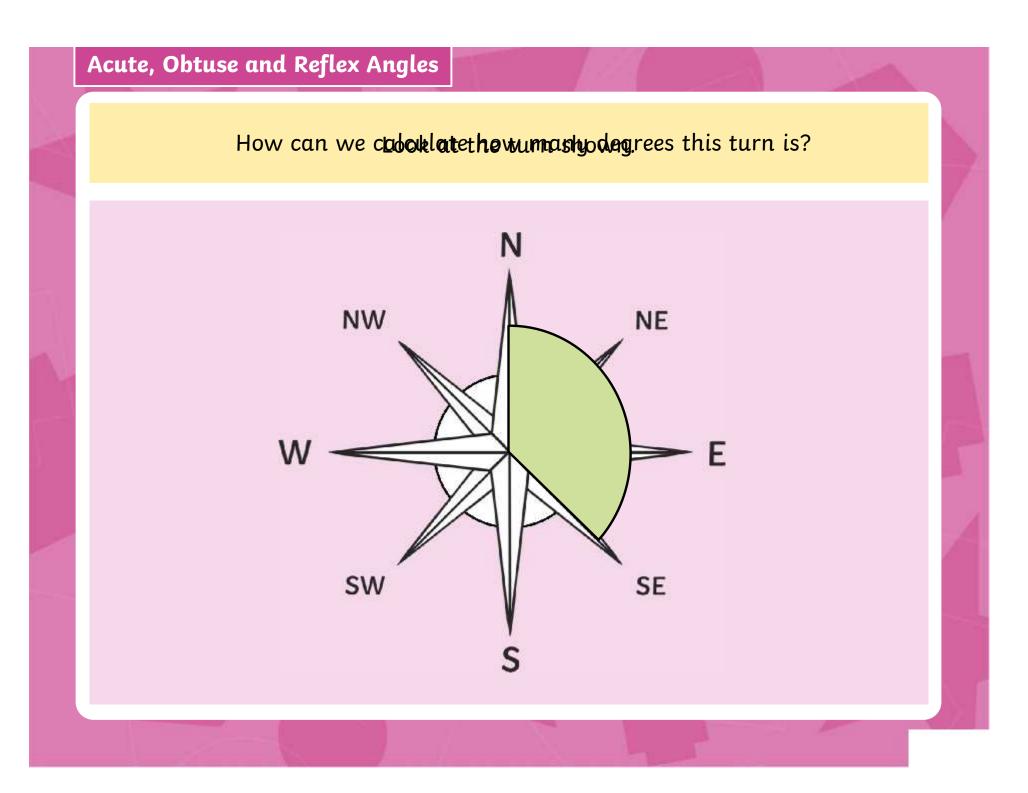
He has turned 360 °

This is called a **full** angle.

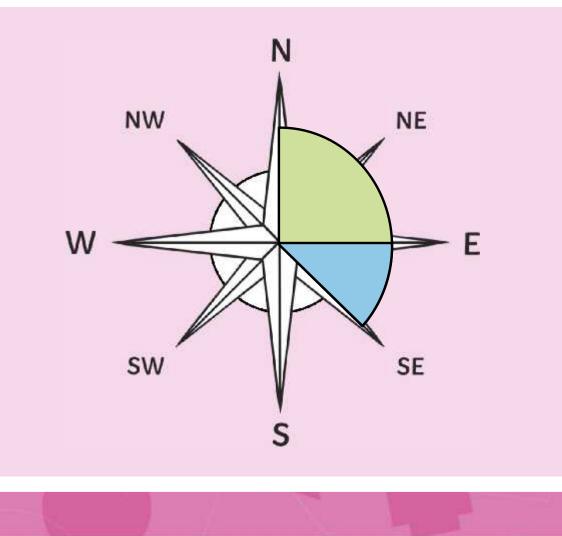
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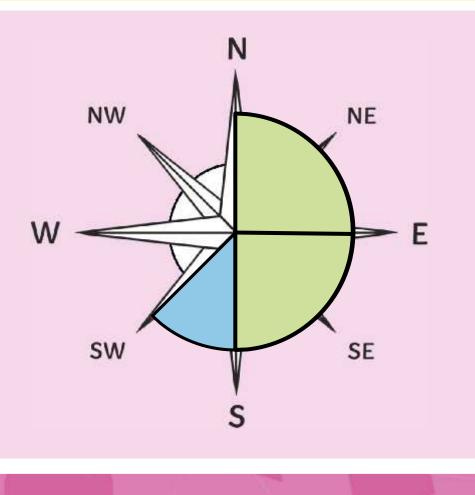


The measurement from N to E is 90°. 135° is an **obtuse** angle saretming frater Entron SEO's buse less than 180°. So, 90° + 45° = 135°.



# Acute, Obtuse and Reflex Angles How can we chook at the stumashy degrees this turn is? Ν NW NE W Ε SE SW S

The measurement from N to E is 90°. The measurement from E to S is 90°. 225° is a **reflex** angle as it is greater than 180° but less than 360°. The measurement from S to SW is 45°. So, 90° + 90° + 45° = 225°.



Charlie is facing the school. Discuss with a partner, what would happen if Charlie turned through 45° clockwise?



## Charlie is facing the cafe. What would he be facing if he turned 135° anticlockwise?



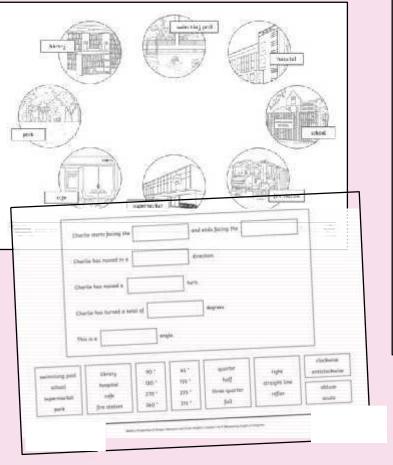
## Charlie is facing the library. What would he be facing if he turned 225° clockwise?

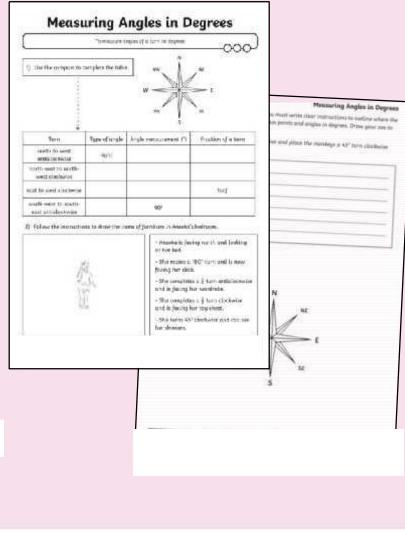


Charlie is facing the hospital. What would he be facing if he turned 315° clockwise?



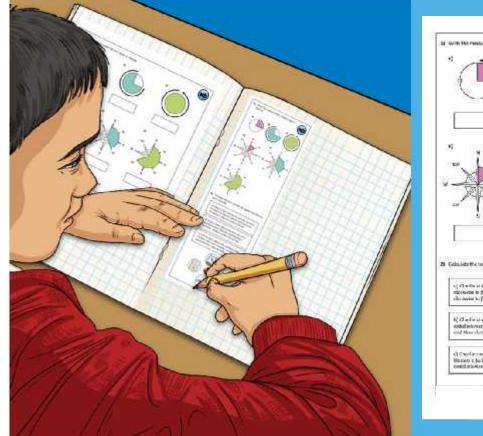
## Measuring Angles in Degrees

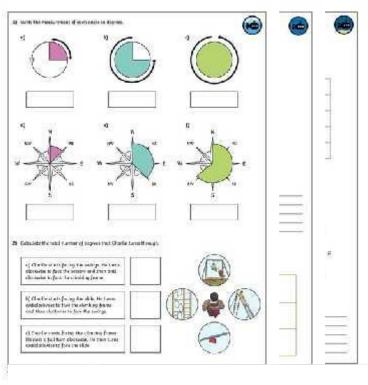




### Diving into Mastery

# Dive in by completing your own activity!



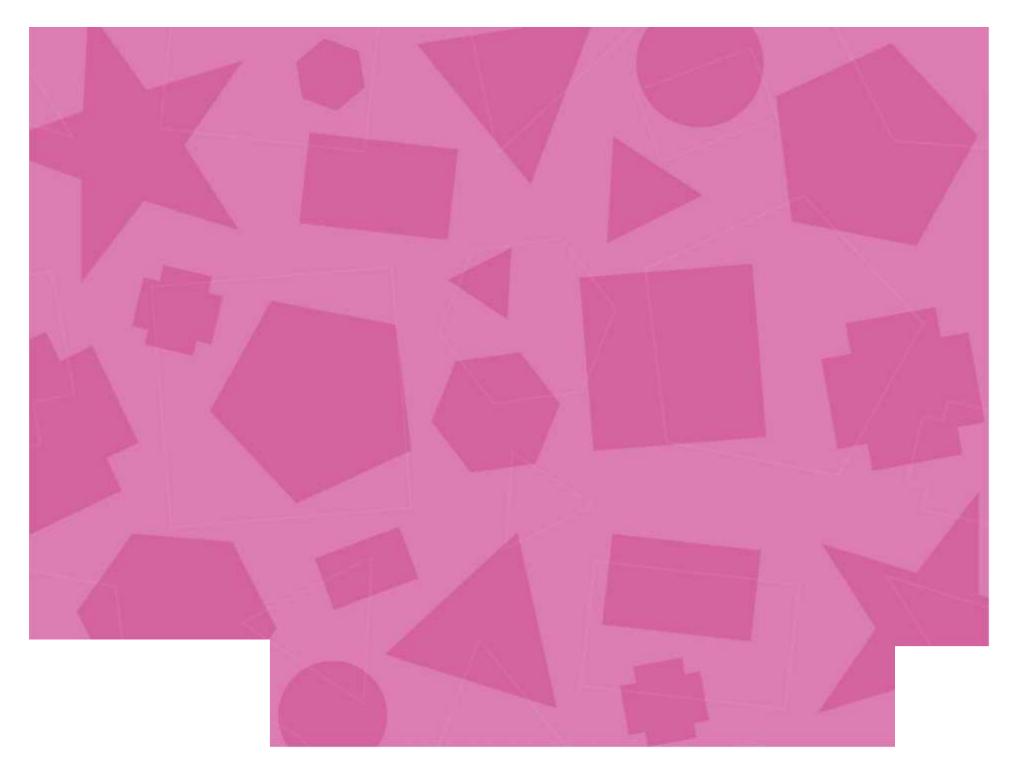


# Aim

• To measure angles of a turn in degrees.

# Success Criteria

- I can describe an angle as a turn.
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- I can describe angles of a turn in degrees.



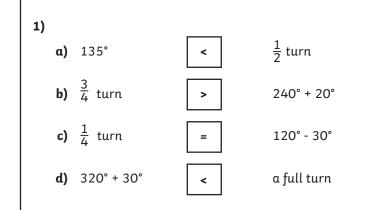
Aim: To measure angles of a turn in degrees.					:						
						Delivered By:			Support:		
Success Criteria	Me	Friend	Teacher	т	РРА	S	I	AL	GP		
I can describe an angle as a turn.				Notes/Evidence							
I can identify right, acute, obtuse and reflex angles as an angle of a turn.											
I can describe angles of a turn in degrees.											
Next Steps											
J											
J											

т	Teacher	I	Independent
PPA	Planning, Preparation and Assessment	AL	Adult Led
s	Supply	GP	Guided Practice

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J											
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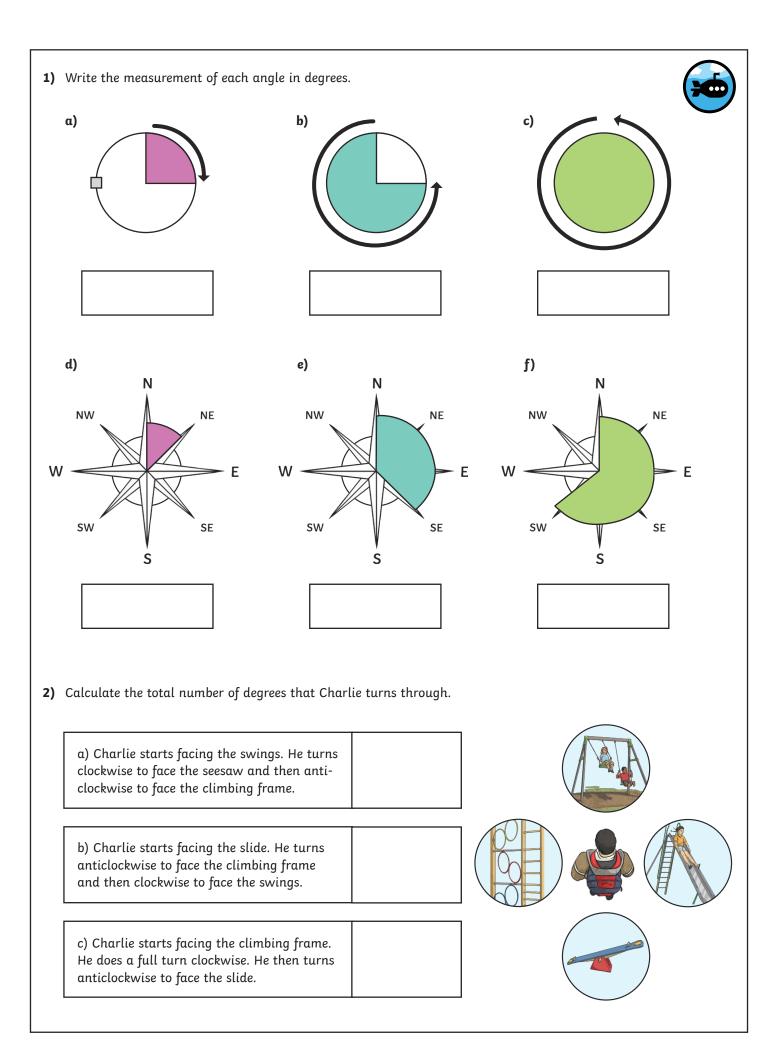
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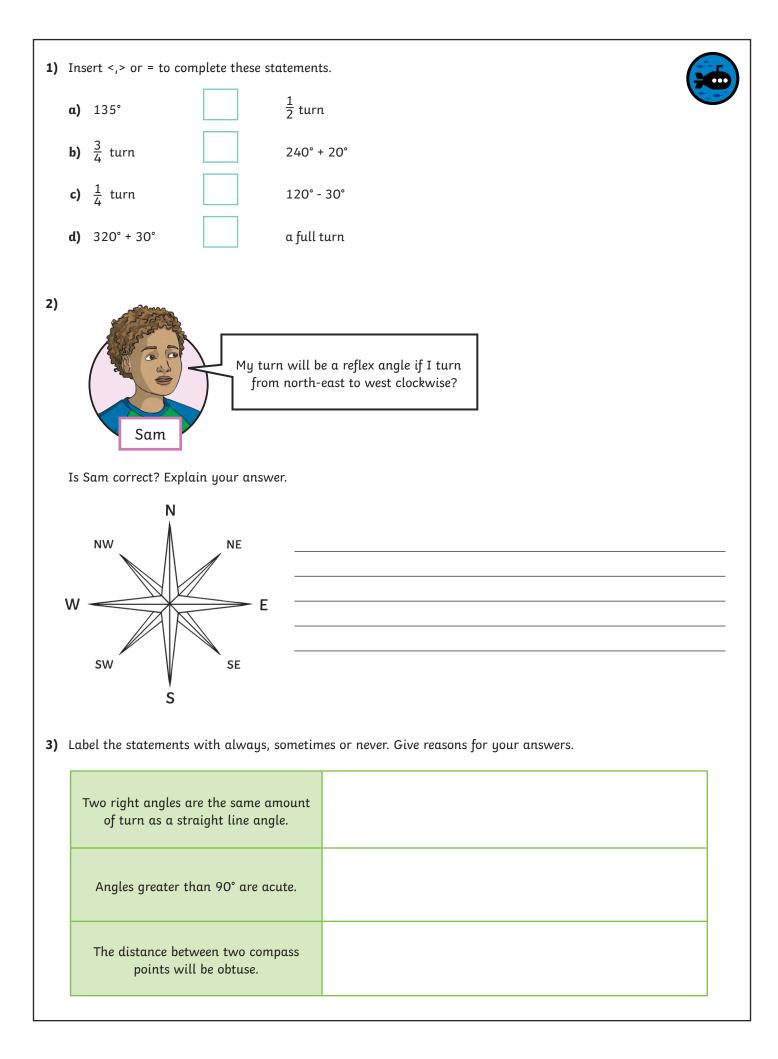
- 1)
- - **α) 90°** 
    - b) 270°
    - c) 360°
    - d) 45°
    - e) 135°
    - f) 225°
- 2)
- a) 450°
- b) 270°
- c) 540°

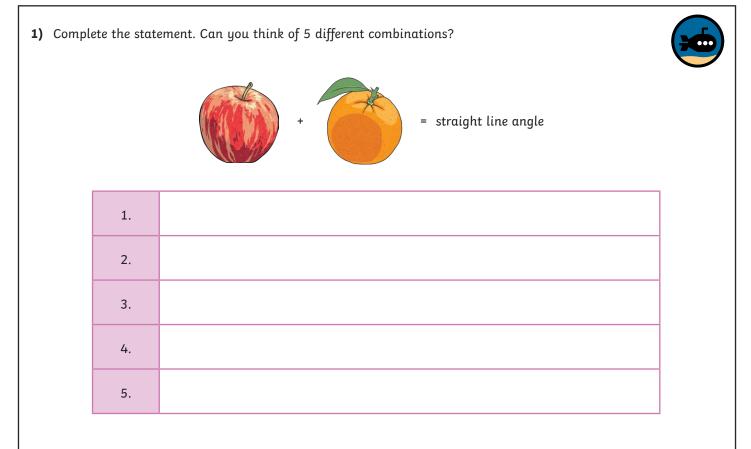


#### 2) Sam is correct because this turn has a value of 225 $^\circ$

3)	Two right angles are the same amount of turn as a straight line angle.	Always
	Angles greater than 90° are acute.	Never
	The distance between two compass points will be obtuse.	Sometimes







2) Follow the instructions to work out the code to unlock the cookie jar.



Imagine you are facing N. Make a  $\frac{3}{4}$  turn anticlockwise.

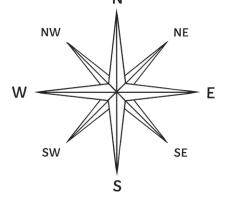
Then turn  $\frac{3}{8}$  clockwise.

Next, turn 90° anticlockwise.

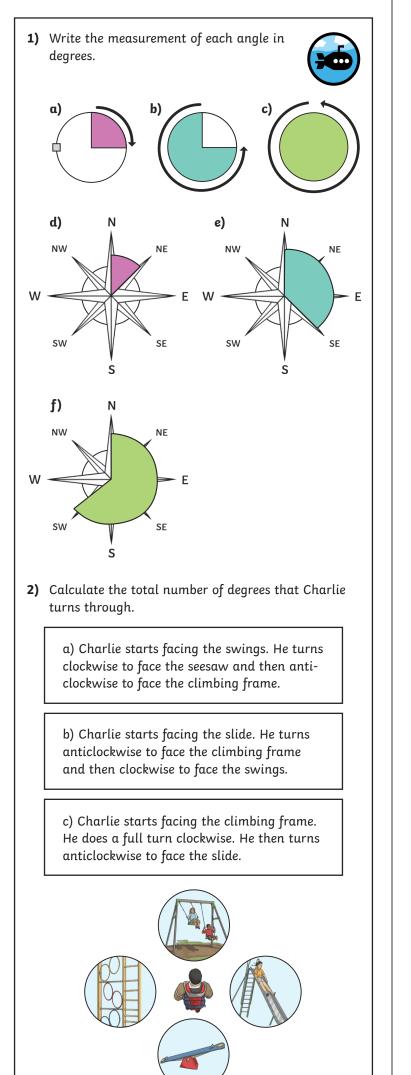
Finally, turn  $\frac{5}{8}$  clockwise.

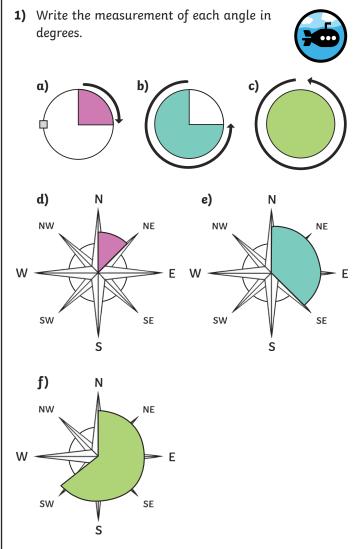






Can you find 2 other ways to write the instructions to give the same code?



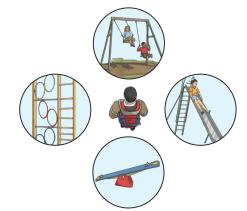


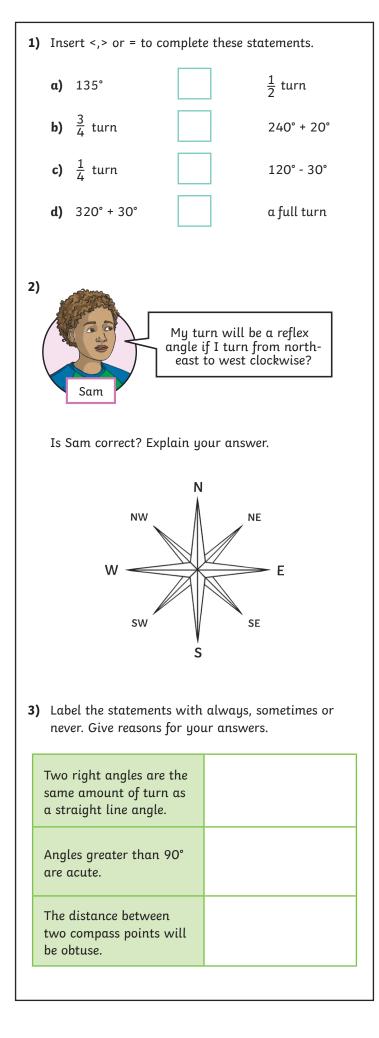
2) Calculate the total number of degrees that Charlie turns through.

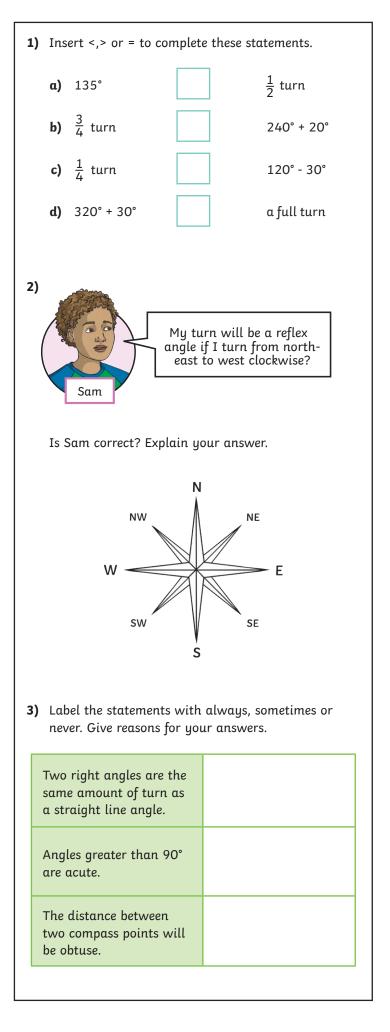
a) Charlie starts facing the swings. He turns clockwise to face the seesaw and then anticlockwise to face the climbing frame.

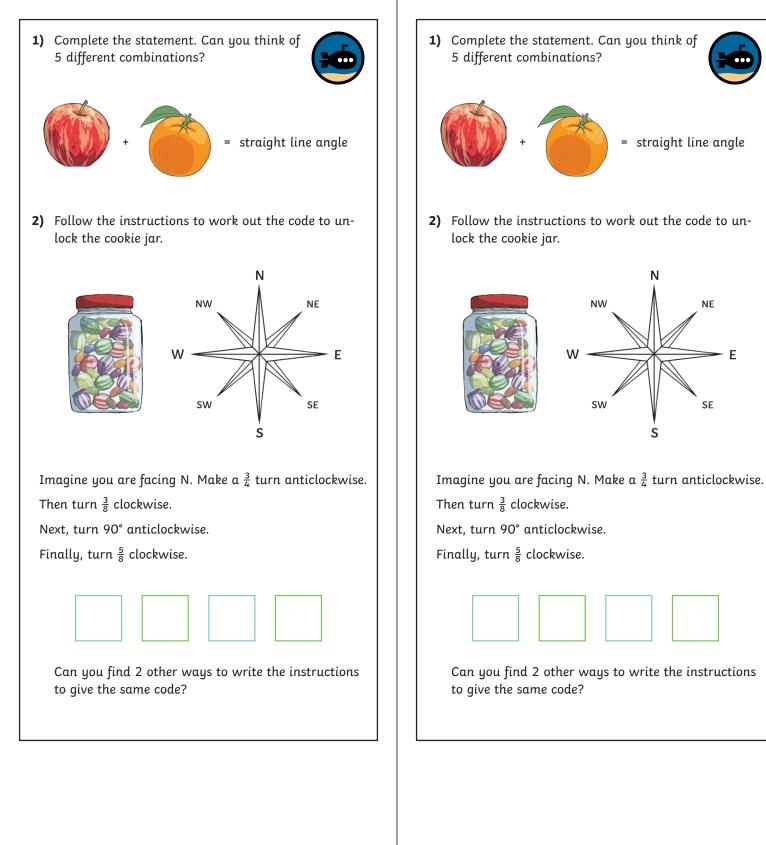
b) Charlie starts facing the slide. He turns anticlockwise to face the climbing frame and then clockwise to face the swings.

c) Charlie starts facing the climbing frame. He does a full turn clockwise. He then turns anticlockwise to face the slide.









NE

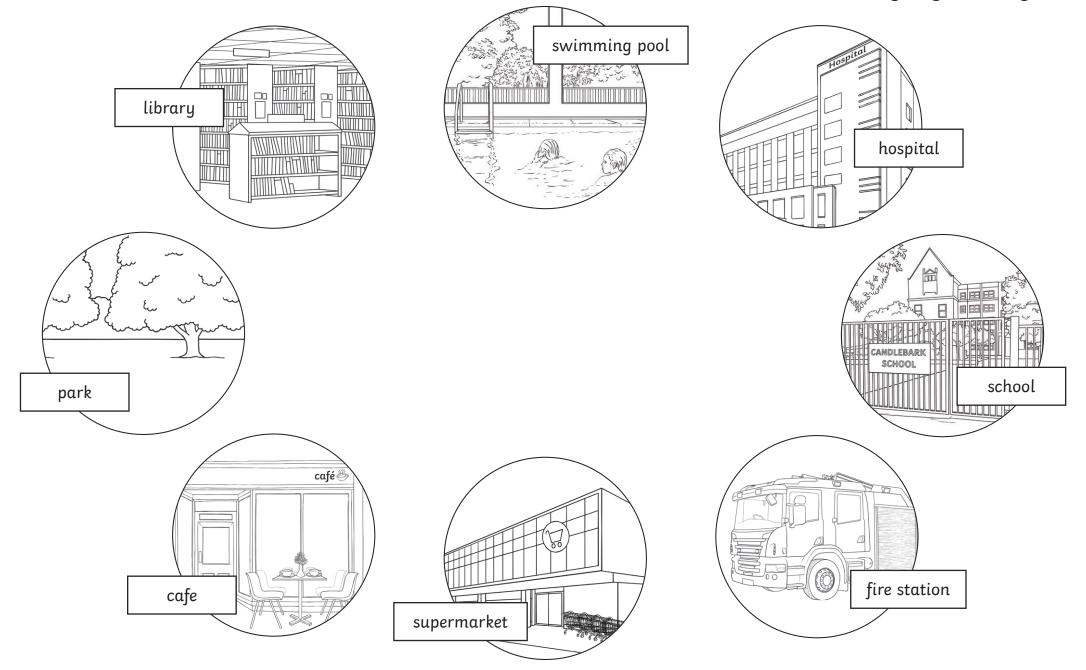
SE

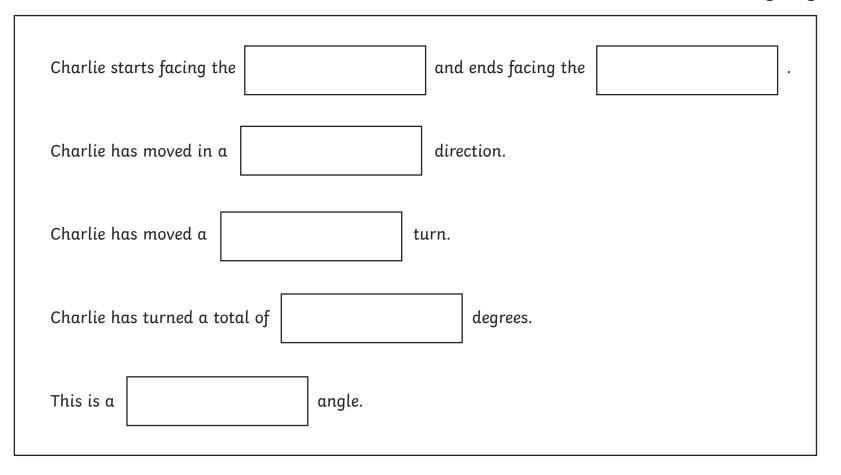
To measure angles of a turn in degrees

### Instructions for adult guided task:

- 1) Organise children into pairs and have them decide who is child A and who is child B.
- 2) Children cut out Charlie and place him in the centre of the building diagram.
- 3) Child A decides where Charlie is facing. They then turn him so he carries out a turn of their choice. Encourage children to explore clockwise and anticlockwise movements.
- 4) Child B describes Charlie's movement by adding missing words to the sentence stems.
- 5) The children then swap roles.
- 6) If children are ready for a challenge, they can use the compass image to turn Charlie and describe his movements using different angles.





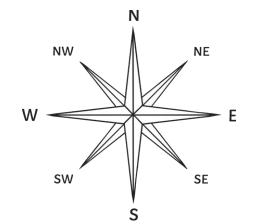


swimming pool	library	90 °	45 °	quarter	·	clockwise
school	hospital	180 °	135 °	half	right	anticlockwise
supermarket	cafe	270 °	225 °	three-quarter	straight line	obtuse
park	fire station	360 °	315 °	full	reflex	acute

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To measure angles of a turn in degrees

1) Use the compass to complete the table.



<b>V</b>			
Turn	Type of angle	Angle measurement (°)	Fraction of a turn
north to west anticlockwise	right		
north-east to north- west clockwise			
east to west clockwise			half
south-west to south- east anticlockwise		90°	

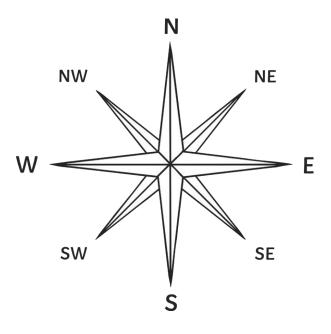
2) Follow the instructions to draw the items of furniture in Aneeka's bedroom.

Aneeka is facing north and looking at her bed.
She makes a 180° turn and is now facing her desk.
She completes a <sup>1</sup>/<sub>4</sub> turn anticlockwise and is facing her wardrobe.
She completes a <sup>1</sup>/<sub>2</sub> turn clockwise and is facing her toy chest.
She turns 45° clockwise and can see her drawers.

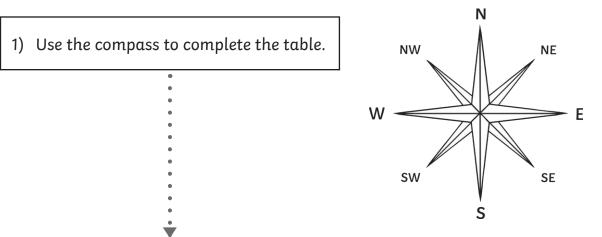
3) You are in charge of designing a zoo. You must write clear instructions to outline where the animals must be placed. Include compass points and angles in degrees. Draw your zoo to match your design brief.

Example, Place the elephants north of the zoo and place the monkeys a 45° turn clockwise from the elephants.



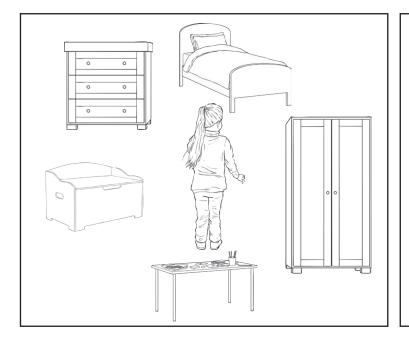


## Measuring Angles in Degrees **Answers**



Turn	Type of angle	Angle measurement (°)	Fraction of a turn
north to west anticlockwise	right	90°	<u>1</u> 4
north-east to north- west clockwise	reflex	270°	<u>3</u> 4
east to west clockwise	straight line angle	180°	half
south-west to south- east anticlockwise	right	90°	<u>1</u> 4

1) Use the compass to complete the table.



- Aneeka is facing north and looking at her bed.
- She makes a 180° turn and is now facing her desk.
- She completes a  $\frac{1}{4}$  turn anticlockwise and is facing her wardrobe.
- She completes a  $\frac{1}{2}$  turn clockwise and is facing her toy chest.

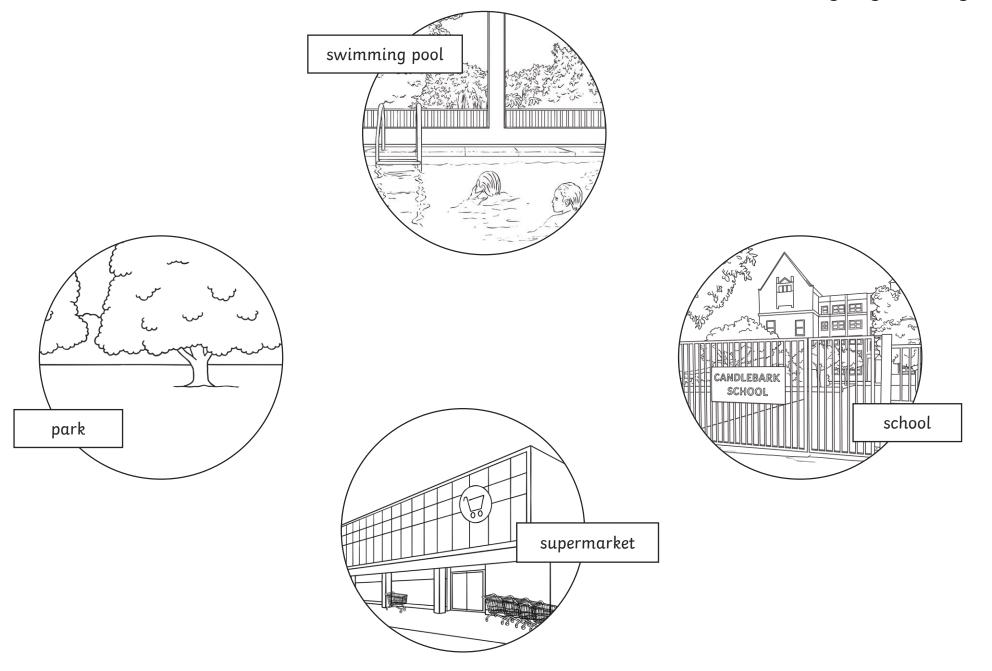
- She turns 45° clockwise and can see her drawers.

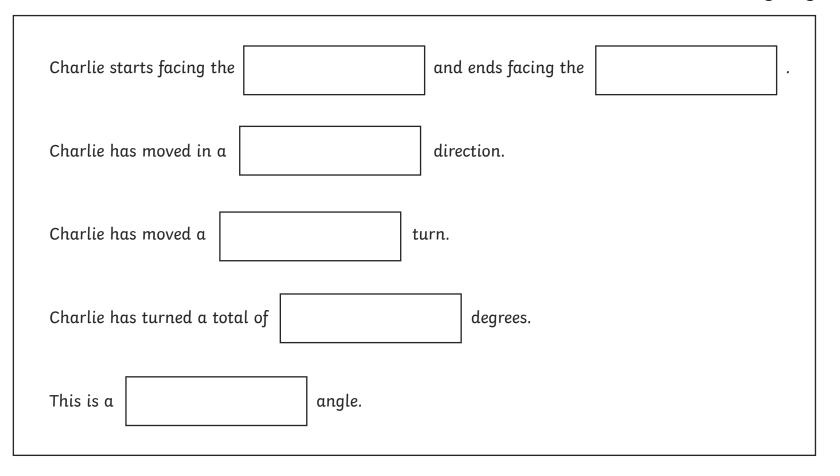
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- 4) Child B describes Charlie's movement by adding missing words to the sentence stems.
- 5) The children then swap roles.
- 6) If children are ready for a challenge, they can use the compass image to turn Charlie and describe his movements using different angles.







swimming pool		quarter	90 °	
school	clockwise	half	180 °	right
supermarket	anticlockwise	three-quarter	270 °	straight line
park		full	360 °	reflex

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