

White Rose
MATHS

White Rose Maths Edition

Year 5 Textbook 5C





Year 5 Textbook 5C



White Rose Maths Edition



flexible



Flo

brave



Astrid

curious



Ash

determined



Dexter

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Your teacher will tell you which page you need.



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Let's get started!



How to use this book

These pages make sure we're ready for the unit ahead. Find out what we'll be learning and brush up on your skills!



Unit 12
Geometry – properties of shapes

In this unit we will ...

- ✓ Measure angles in degrees
- ✓ Learn to measure angles with a protractor
- ✓ Draw lines and angles accurately
- ✓ Calculate missing angles
- ✓ Learn about angles in shapes
- ✓ Recognise, draw and label parallel and perpendicular lines
- ✓ Accurately identify regular and irregular polygons
- ✓ Recognise different 3D shapes from different views

Do you remember how to measure angles as turns?
How do you describe the direction of the turn?

We will need some maths words. Which one can mean an angle that is a quarter turn?

angle whole turn right angle
acute angle obtuse angle degrees (°)
interior angle clockwise anticlockwise
parallel perpendicular regular
irregular top view plan view side view

We will need this tool! Can you see where the mark for 55 mm is?

6 7

Discover

Lessons start with **Discover**.

Here, we explore new maths problems.

Can you work out how to find the answer?

Don't be afraid to make mistakes.
Learn from them and try again!

Unit 12: Geometry – properties of shapes, Lesson 1

Understand and use degrees

Discover

1 a) Who will Lexi be facing after a 180-degree turn?
b) Lexi then tries a 90-degree turn. What could she be facing now?

8



Share

Next, we share our ideas with the class.

Did we all solve the problems the same way?
What ideas can you try?

Share

a) A 360-degree turn is a whole turn.
A 180-degree turn is a half turn.

We measure turns in degrees. The ° symbol means degrees.

Lexi starts facing Reena.
After a 180-degree turn Lexi will be facing Lee.

b) A 90-degree turn is a quarter turn.

anticlockwise

clockwise

This is also called a right angle.

Lexi starts facing Lee.
Lexi could turn 90° clockwise or 90° anticlockwise. She could be facing the flowers or the bench now.

Think together

Then we have a go at some more problems together.
Use what you have just learnt to help you.

We'll try a challenge too!



This tells you which page to go to in your **Practice Book**.

Think together

1 Lexi starts facing Lee. She makes four 90-degree turns clockwise. How many degrees has she turned? What or who is she facing now?

2 Amelia is setting up the gym. She starts facing the bibs. She makes an anticlockwise turn and is now facing the gym mats. How many degrees has she turned?

Challenge

3 a) Mo is standing in the centre of points A to H. Complete the table to describe which points he faces as he turns.

Start	Turn	Finish
facing B	180°	facing <input type="checkbox"/>
facing A	90° anticlockwise	facing <input type="checkbox"/>
facing E	<input type="checkbox"/> °	facing C
facing G	<input type="checkbox"/> °	facing A
facing G	<input type="checkbox"/> °	facing H
facing <input type="checkbox"/>	45° clockwise	facing B

b) Mo faces G. Then he turns to face B. Describe two different turns he could have made.

An angle less than 90° is acute. An angle greater than 180° is reflex. An angle between 90° and 180° is obtuse.

I think he could turn clockwise or anticlockwise.

10

11 Practice book 5C p8

At the end of each unit there's an **End of unit check**. This is our chance to show how much we have learnt.

End of unit check

1 Which shows a 180° turn?

2 What angle does this show?

3 Explain the mistake.

4 Which missing angle is not 50°?

5 Which shape does not have a view that is a rectangle?

6 Which shape has one pair of parallel lines and no perpendicular lines?

7 The protractor is upside down.
8 The centre is not lined up with the turn.
9 The angle is obtuse so the protractor is not big enough.
10 The base line is not lined up with one line of the angle.

56

57 Practice book 5C p8

Unit 12

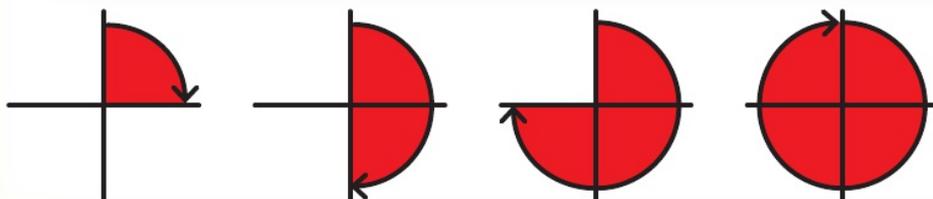
Geometry – properties of shapes



In this unit we will ...

- ⚡ Measure angles in degrees
- ⚡ Learn to measure angles with a protractor
- ⚡ Draw lines and angles accurately
- ⚡ Calculate missing angles
- ⚡ Learn about angles in shapes
- ⚡ Recognise, draw and label parallel and perpendicular lines
- ⚡ Accurately identify regular and irregular polygons
- ⚡ Recognise different 3D shapes from different views

Do you remember how to measure angles as turns?
How do you describe the direction of the turn?





We will need some maths words. Which one can mean an angle that is a quarter turn?

angle

whole turn

right angle

acute angle

obtuse angle

degrees ($^{\circ}$)

interior angle

clockwise

anticlockwise

parallel

perpendicular

regular

irregular

top view

plan view

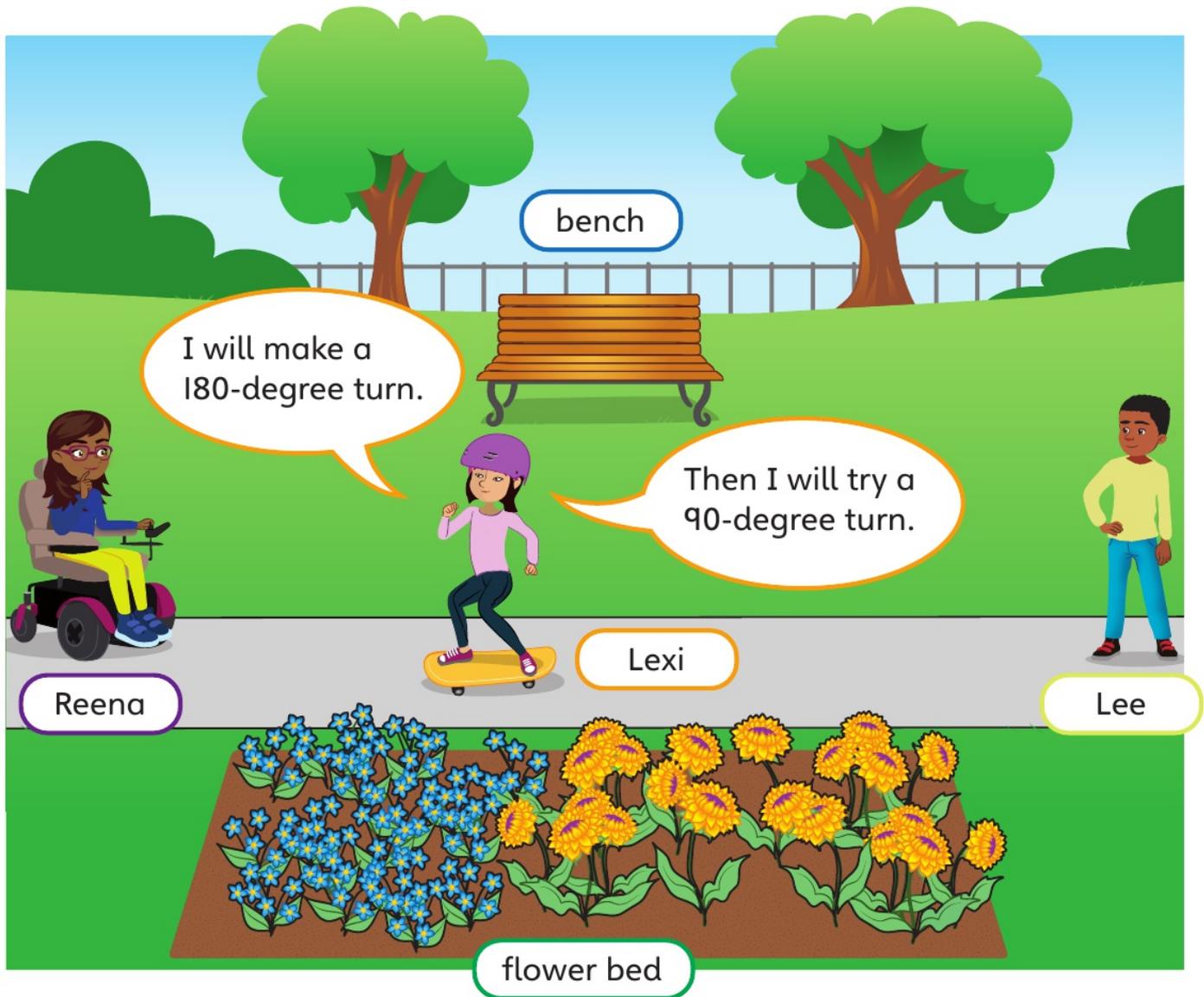
side view

We will need this too! Can you see where the mark for 55 mm is?



Understand and use degrees

Discover



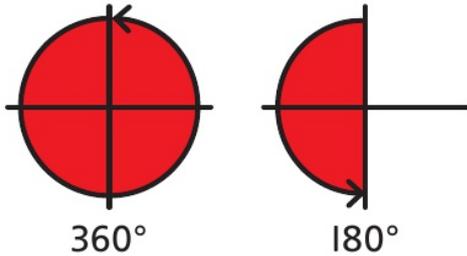
- I** a) Who will Lexi be facing after a 180-degree turn?
- b) Lexi then tries a 90-degree turn. What could she be facing now?

Share

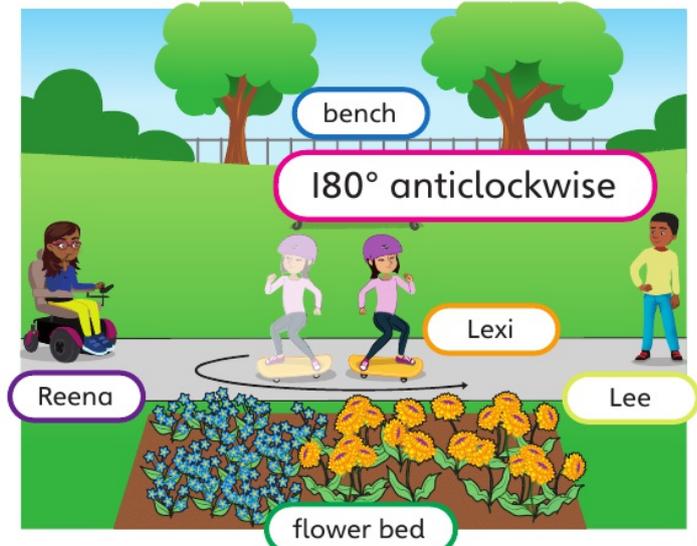


- a) A 360-degree turn is a whole turn.
A 180-degree turn is a half turn.

We measure turns in degrees. The $^{\circ}$ symbol means degrees.

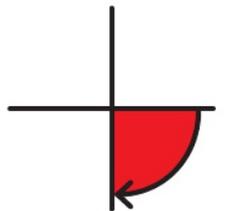
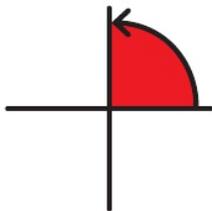


Lexi starts facing Reena.
After a 180-degree turn Lexi will be facing Lee.



- b) A 90-degree turn is a quarter turn.

anticlockwise

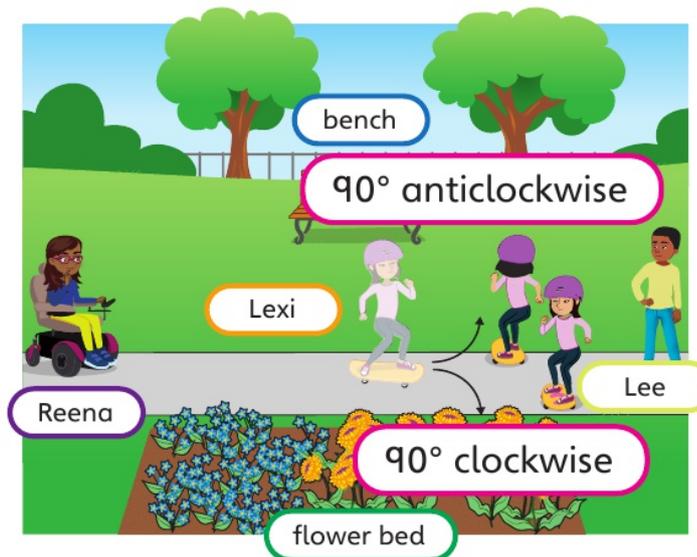


clockwise

This is also called a right angle.

Lexi starts facing Lee.

Lexi could turn 90° clockwise
or 90° anticlockwise.
She could be facing the flowers
or the bench now.



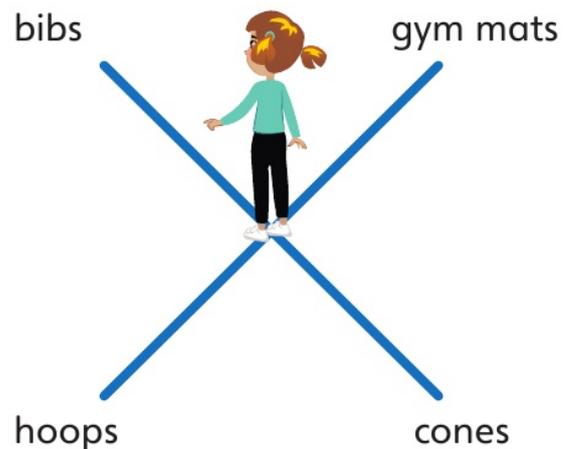
Think together

- 1 Lexi starts facing Lee. She makes four 90-degree turns clockwise. How many degrees has she turned? What or who is she facing now?



- 2 Amelia is setting up the gym. She starts facing the bibs. She makes an anticlockwise turn and is now facing the gym mats. How many degrees has she turned?

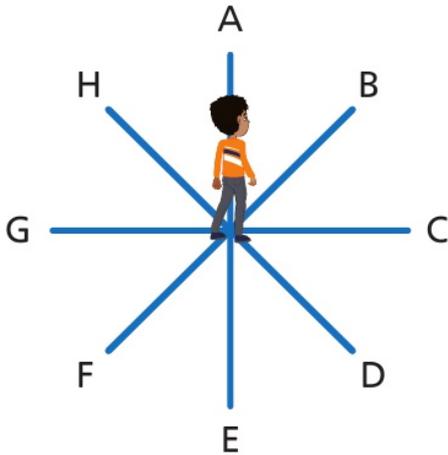
How many degrees has she turned?



CHALLENGE

- 3 a) Mo is standing in the centre of points A to H.

Complete the table to describe which points he faces as he turns.



Start	Turn	Finish
facing B	180°	facing <input type="text"/>
facing A	90° anticlockwise	facing <input type="text"/>
facing E	<input type="text"/> $^\circ$ _____	facing C
facing G	<input type="text"/> $^\circ$ _____	facing A
facing G	<input type="text"/> $^\circ$ _____	facing H
facing <input type="text"/>	45° clockwise	facing B

- b) Mo faces G. Then he turns to face B.

Describe two different turns he could have made.

An angle less than 90° is acute. An angle greater than 180° is **reflex**. An angle between 90° and 180° is obtuse.

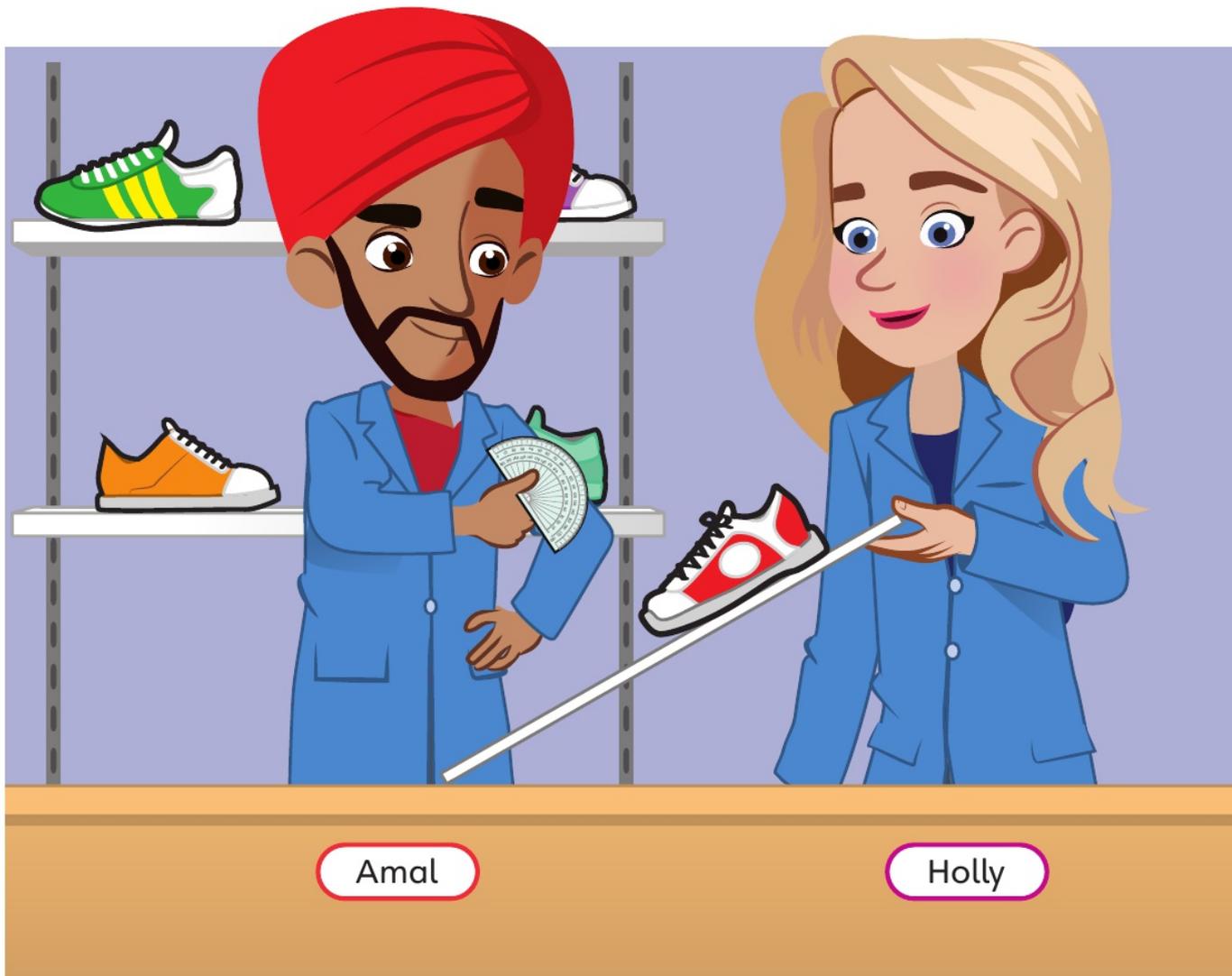


I think he could turn clockwise or anticlockwise.



Measure acute angles

Discover



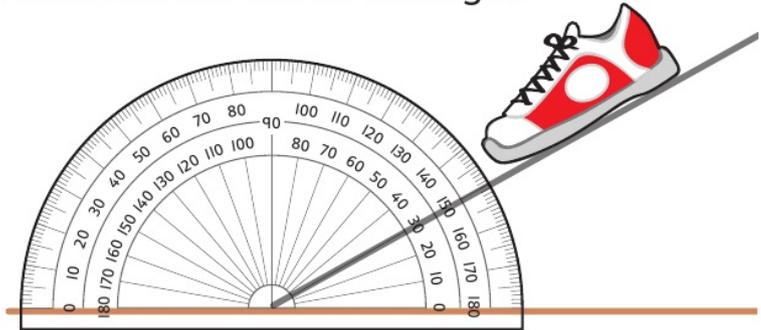
- I**
- Amal and Holly are using a ramp to test the grip of some new trainers. What angle is the ramp at now?
 - Amal records the angle as 150° . Explain his mistake.

Share

- a) You can use a protractor to measure the size of an angle.

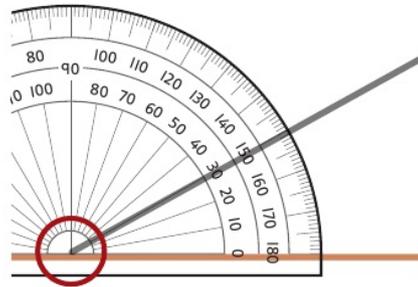
Step 1

Make sure the zero line of the protractor matches the start of the angle turn.



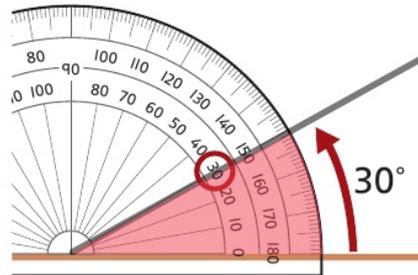
Step 2

Line up the centre mark with the exact point of the angle.



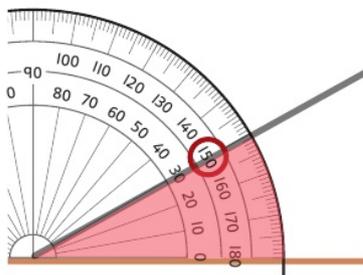
Step 3

Follow the scale from the zero mark to the completed turn. Read the angle from the scale.



The ramp is now at an angle of 30° .

- b) Protractors often have two scales, so you can start measuring from the left or from the right. Amal's mistake is reading the wrong scale.



I saw that the angle is acute, because it is less than 90° . So I knew which scale to read.

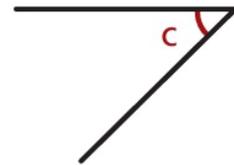
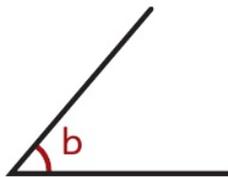
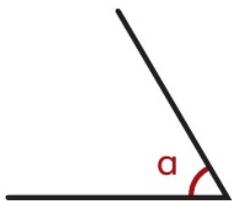


Think together

1 Between which angles could the trainer have slipped down the ramp?



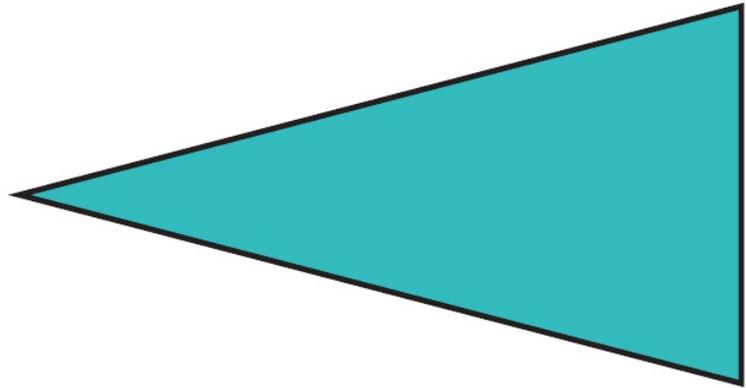
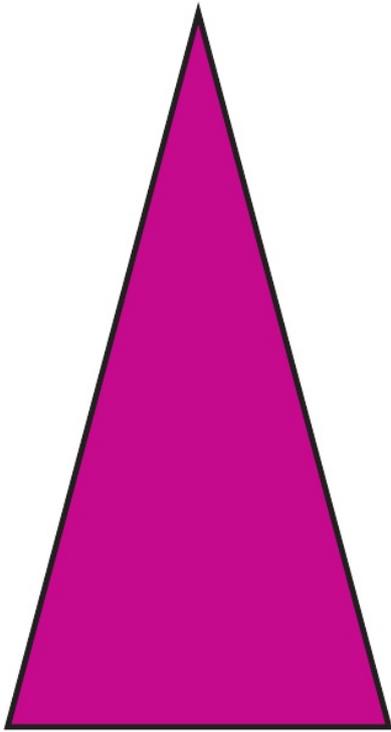
2 Measure these angles using a protractor.



I wonder if it helps to turn the page around.

CHALLENGE

- 3 Estimate each of the angles in these triangles, then measure them accurately. How close were your estimates?



They look roughly the same size, but the angles look different.

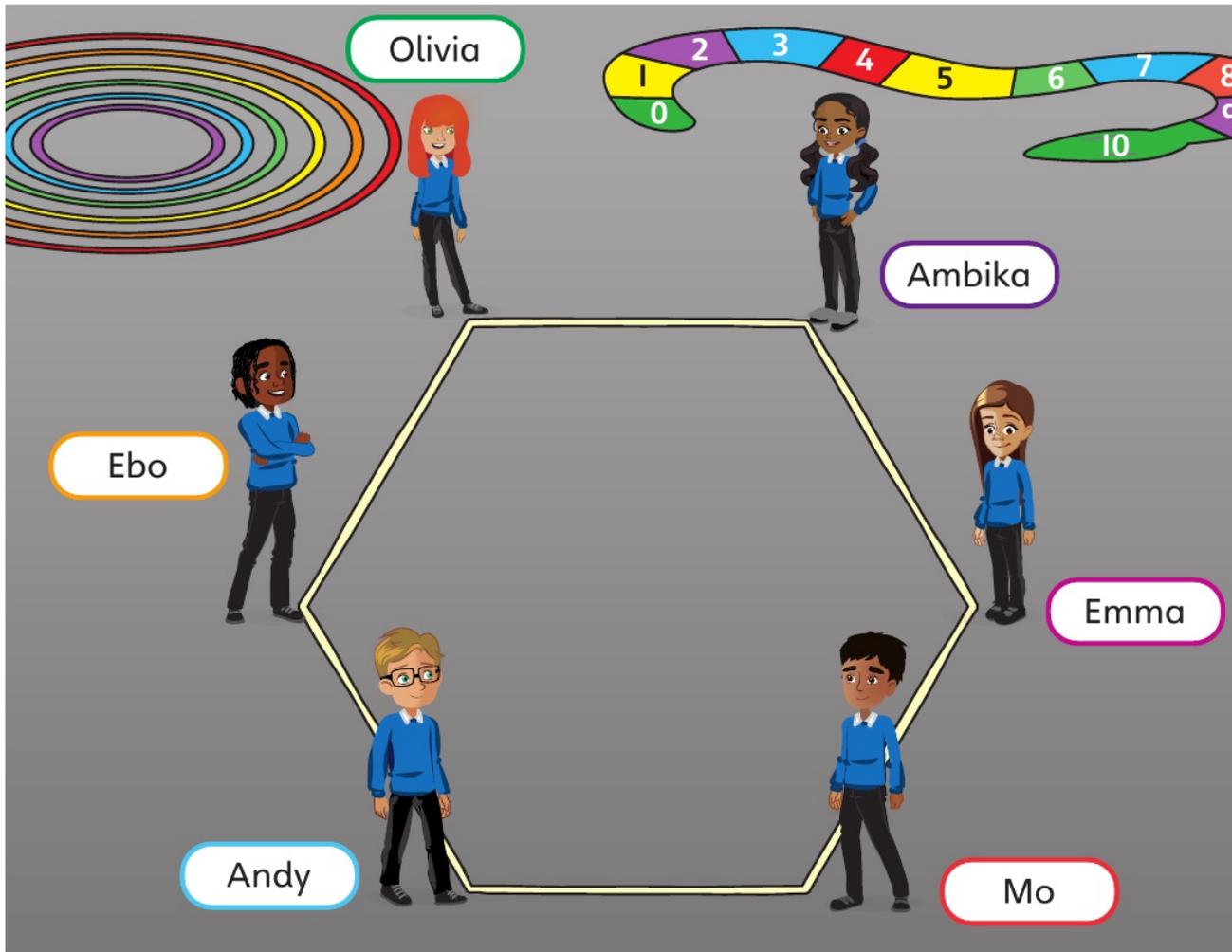


I think all these angles are acute.



Measure angles up to 180°

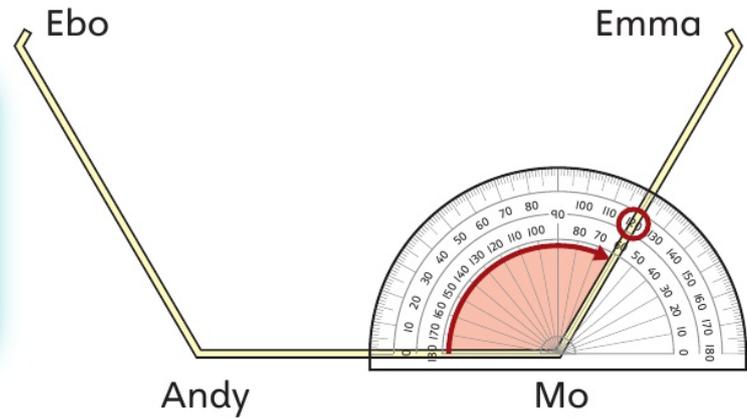
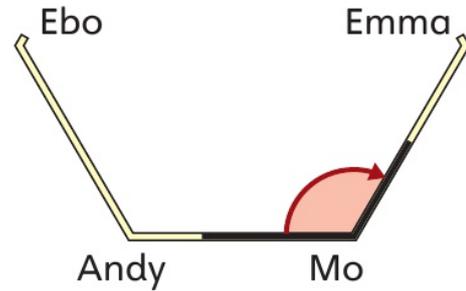
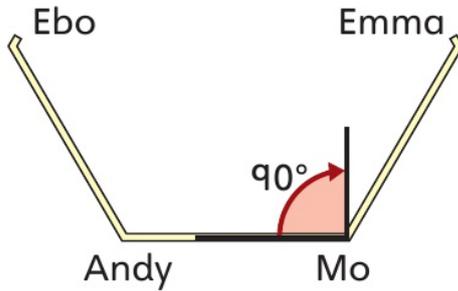
Discover



- 1 a) Mo turns from facing Andy to face Emma. What angle does he turn?
- b) Emma turns from facing Mo to face Ambika. What angle does she turn?

Share

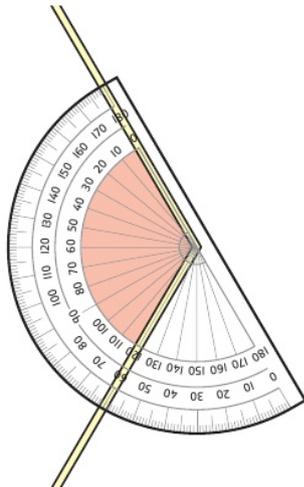
a) This turn makes an obtuse angle. It is greater than 90° .



I knew which scale to use on the protractor because the angle is greater than 90° . It is obtuse.

Mo turns an angle of 120° .

b) Emma turns an angle of 120° .

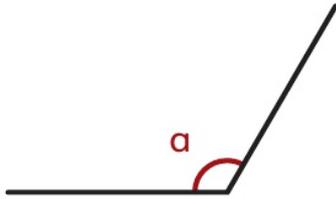


I noticed that each angle inside the hexagon is 120° .

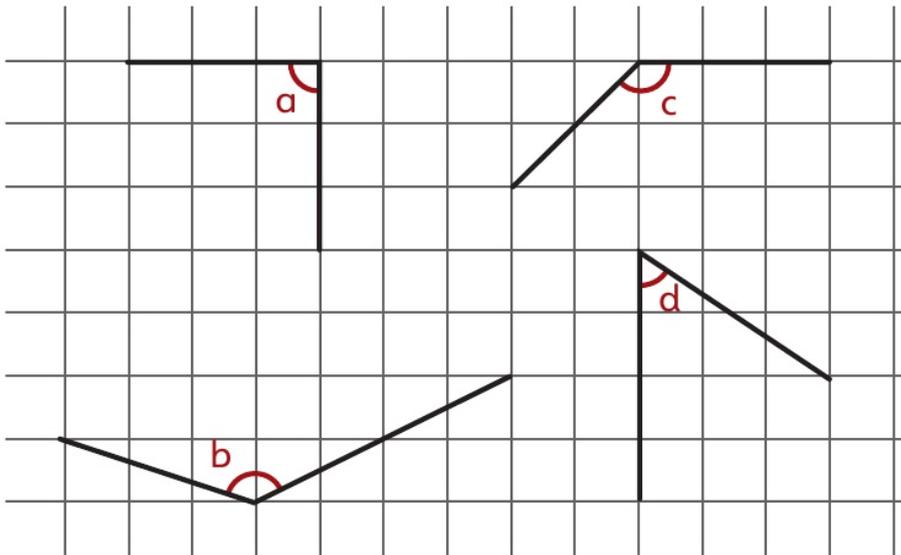


Think together

1 Measure the angles shown with a protractor.



2 Put these angles in order, from smallest to greatest.

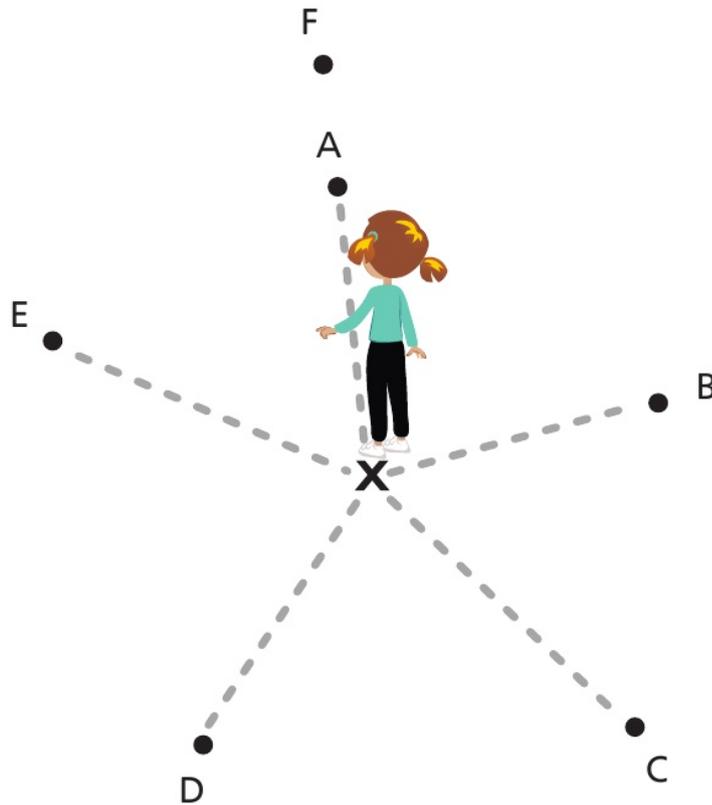


I can work out which is the smallest angle without measuring.



CHALLENGE

- 3 a) Amelia stands in the centre facing A. She turns to face C.



What angle does she turn?

I wonder if I could give two answers.



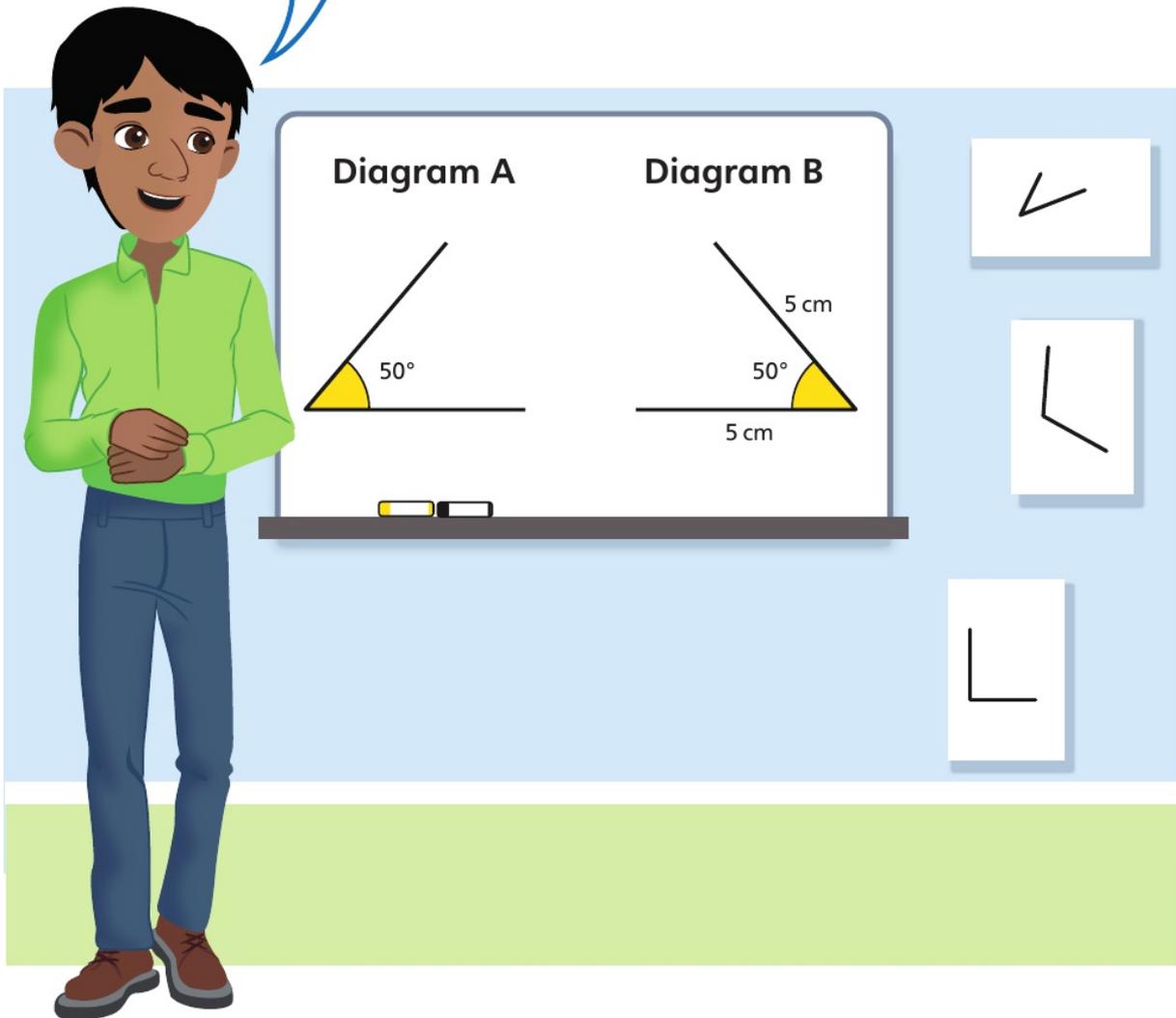
- b) Then Amelia turns from facing C to face F.

What angle does she turn? What do you notice?

Draw lines and angles accurately

Discover

Let's draw some angles.



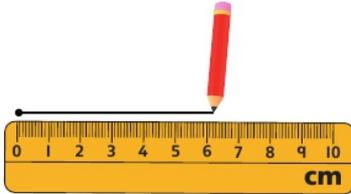
- I** a) Draw a 50° angle.
- b) Copy the angle in diagram B.

Share

a) You need a protractor, ruler and pencil to draw the angle accurately.

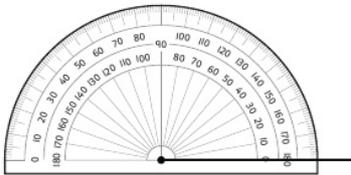
Step 1

Draw a straight line with a dot for measuring the angle.



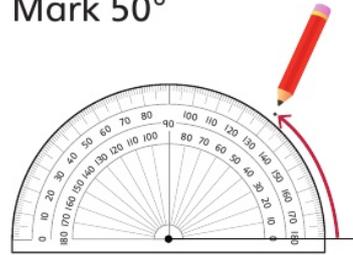
Step 2

Line up the protractor with the centre mark exactly on the dot.



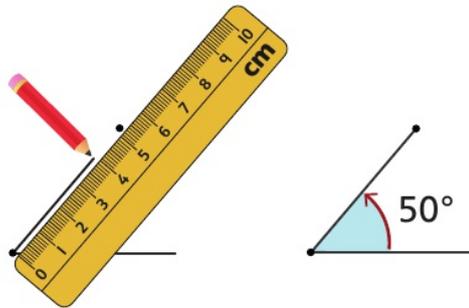
Step 3

Mark 50°

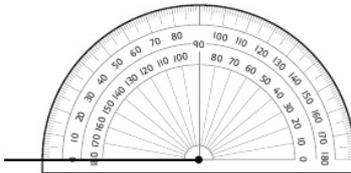


Step 4

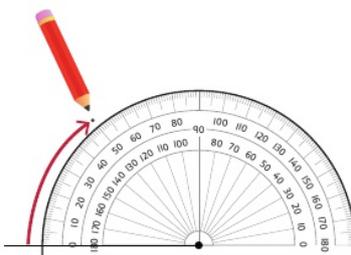
Draw a straight line between the dots.



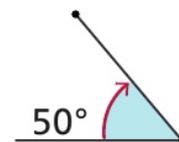
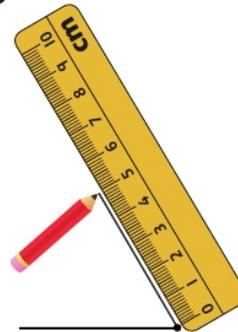
b) Step 1



Step 2



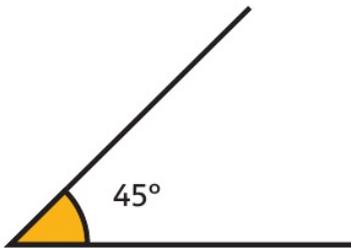
Step 3



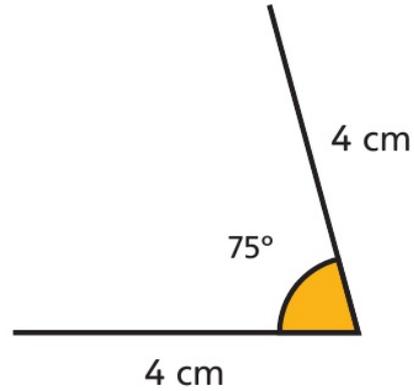
Think together

1 Copy each angle.

a)

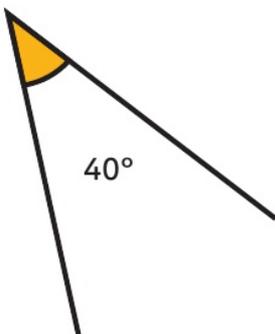


b)



2 Copy each angle.

a)



b)

