

Reasoning and Problem Solving

Properties of Shape – Year 5

About This Resource

This resource is aimed at Year 5 Expected and has been designed to give children the opportunity to consolidate the skills they have learned in Summer Block 2 – Properties of Shape.

The questions are based on a selection of the same ‘small steps’ that are addressed in the block, but are presented in a different way so children can work through the pack independently and demonstrate their understanding and skills.

Small Steps

Measuring angles in degrees
Measuring with a protractor (1)
Measuring with a protractor (2)
Drawing lines and angles accurately
Calculating angles on a straight line
Calculating angles around a point
Calculating lengths and angles in shapes
Regular and irregular polygons
Reasoning about 3D shapes

National Curriculum Objectives

Mathematics Year 5: (5G2a) [Use the properties of rectangles to deduce related facts and find missing lengths and angles](#)

Mathematics Year 5: (5G2b) [Distinguish between regular and irregular polygons based on reasoning about equal sides and angles](#)

Mathematics Year 5: (5G3b) [Identify 3-D shapes including cubes and other cuboids, from 2-D representations](#)

Mathematics Year 5: (5G4a) [Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles](#)

Mathematics Year 5: (5G4b) [Identify angles at a point and one whole turn \(total 360°\); angles at a point on a straight line and half a turn \(total 180°\) other multiples of 90°](#)

Mathematics Year 5: (5G4c) [Draw given angles and measure them in degrees \(°\)](#)

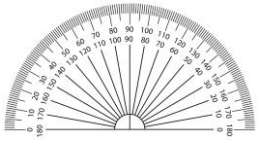
Did you like this resource? Don't forget to [review](#) it on our website.

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Clear Skies Academy

Helping you head into the blue

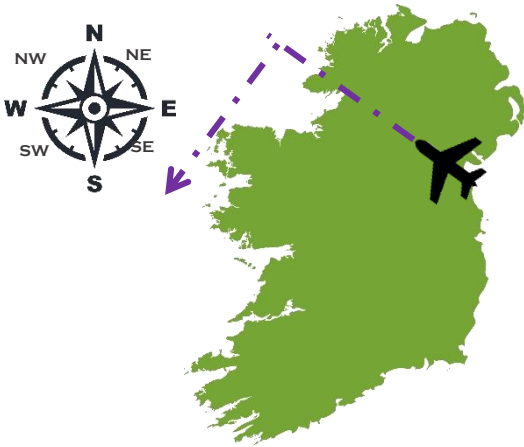
Clear Skies Flying Academy invites you to apply for their pilot training scheme. Complete the following assessment pack to show your skills and take the first step into the blue...



Please note: For this test you will need a protractor.



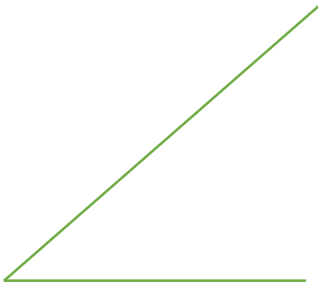
On the route below, the pilot thinks she is making a turn of 180 degrees clockwise to change course from a course set NW to one set SW.



1. Is she correct? Explain your answer.

It is essential you can estimate angles from a map in case of an emergency diversion route. This skill will allow you to change course quickly, but it should always be followed up by working out the accurate angle.

2. Estimate the size of the following angles:



A



B



C

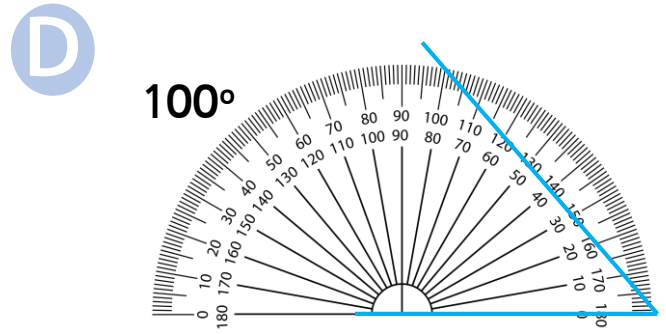
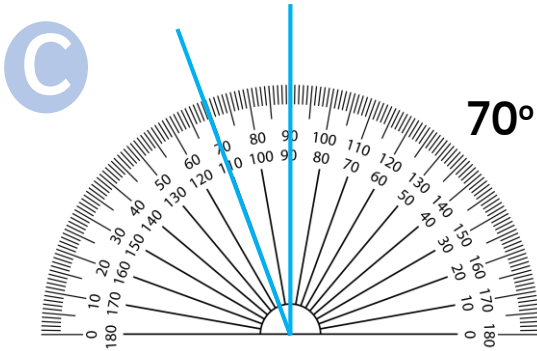
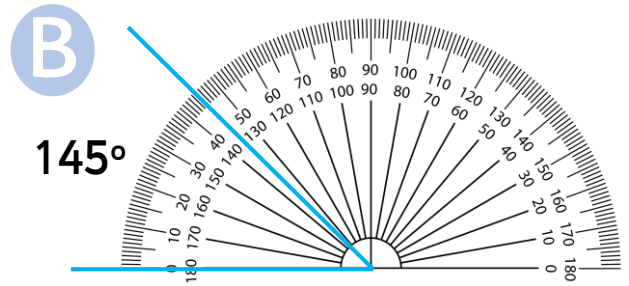
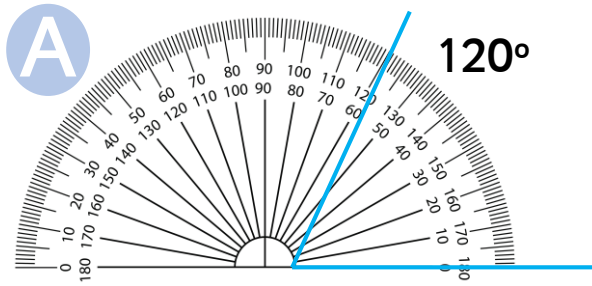
3. Now measure carefully to assess your accuracy.

A

B

C

The pilot has measured these angles.



4. Is he correct? Prove it and explain any mistakes.

5. Use the map below to draw the following flight plan beginning at London Heathrow Airport, marked with a green dot. 1cm = 1000 miles



Travel 2,000 miles west, turn 90° anticlockwise.

Travel 3,000 miles turn 120° clockwise.

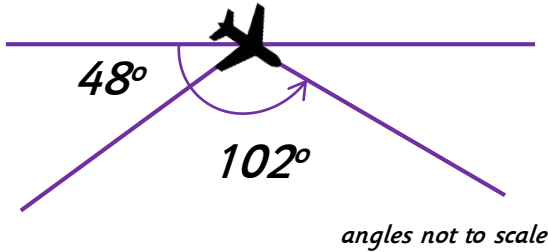
Travel 3,000 miles turn 45° clockwise.

Travel 2,000 miles further and land.

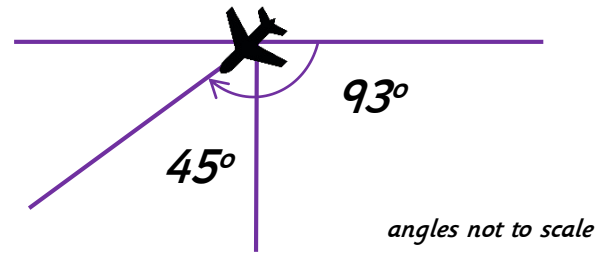
Which country is your destination?

You are half way through a directed turn and your line to air traffic control goes down. You know the destination and have made a partial turn.

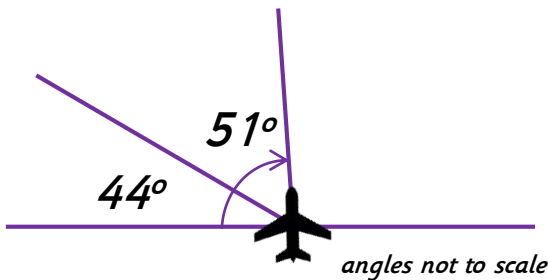
6. Without your protractor calculate the angle which is missing in the three scenarios below...



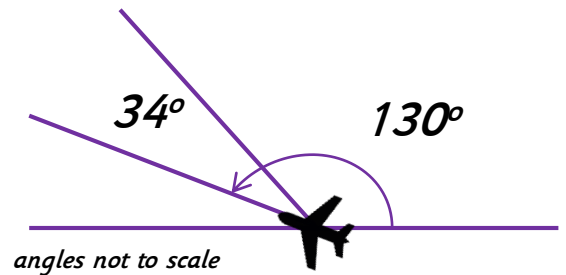
A



B



C



D

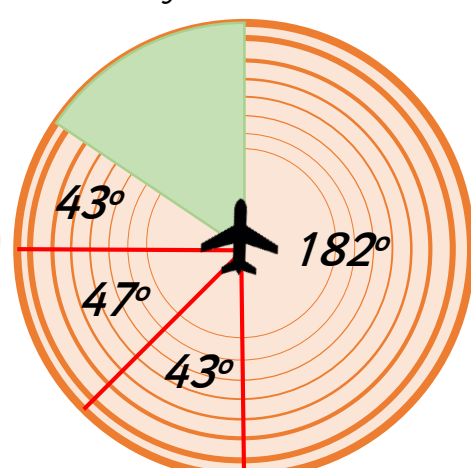
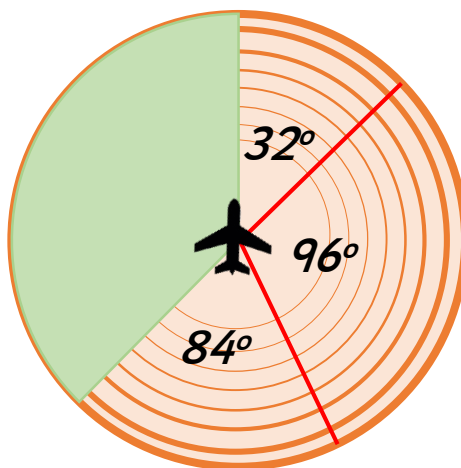
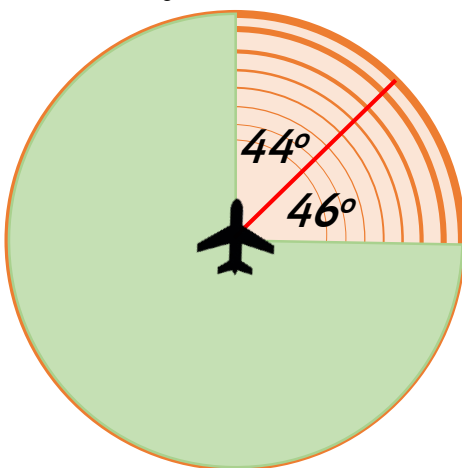
Radar is essential for avoiding obstacles in flight. There has been a malfunction and your radar is partially obscured due to a fault in the internal systems.

7. Use the data below to calculate what angle of your radar is obscured.

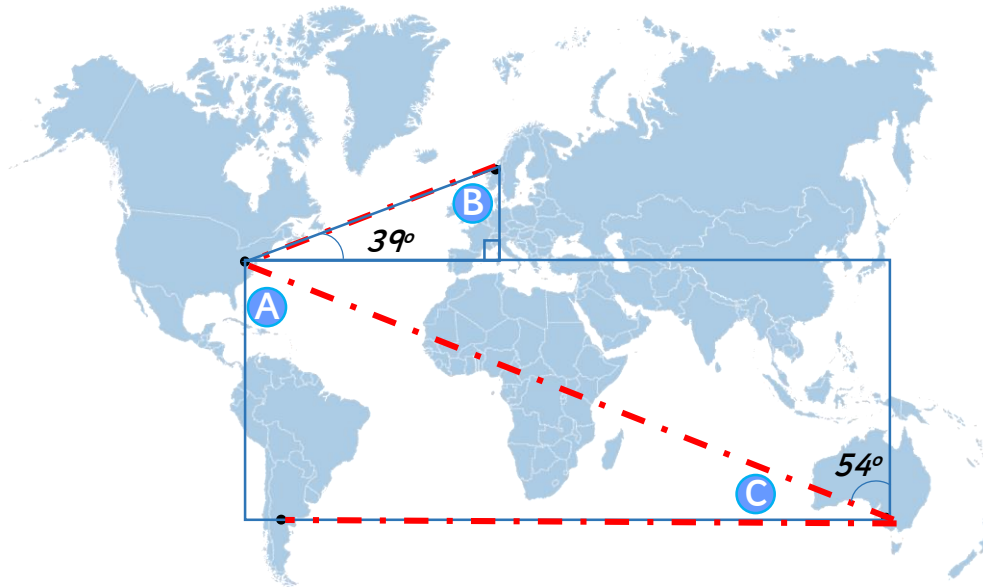
angles not to scale

angles not to scale

angles not to scale



Your flight path is represented in the dotted line on the map.



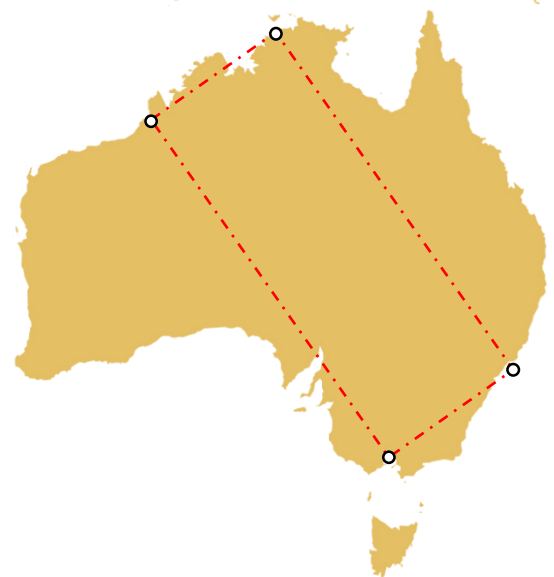
A

B

C

8. Use the overlaid shapes and your knowledge of angles to calculate the angles. Explain your answers.

Compare the two four flight routes around Australia.



9. Measure the internal angles and lengths of each flight path. Discuss your findings.



The final skill we will test is your ability to visualize space and shape. Although not directly linked to your pilot job, the tasks are key to discovering your underlying ability.

Apply yourself to this final task to take off in style.

10. Identify the shape from the descriptions, is there more than one possible answer?

A I have 6 identical faces.

B I have two faces which angles have a sum of 180° . My other 3 faces are quadrilaterals.

C My faces all have 4 angles of 90° .

D My base may change, my other faces have 3 internal angles.



E 2 of my faces are identical, my other 4 have internal angles with a sum of 360° .

F I have no corners, no edges and one surface.

G 2 of my faces are identical, I have 2 curved edges.

H I have one curved surface.

Thank you for taking part in our recruitment drive. We hope to welcome you aboard our company so you can fly the Clear Skies way!



