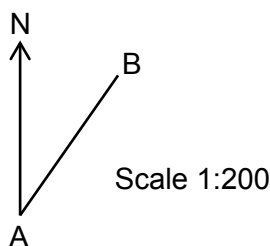
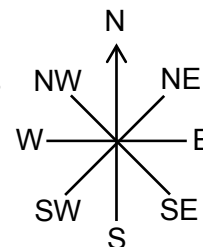


## Topic Check In - 10.01b and 10.01c Units and measurement

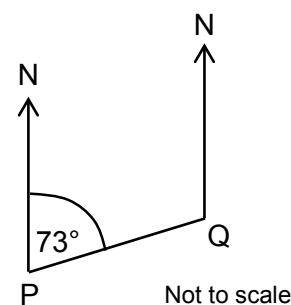
1. A three figure bearing of  $090^\circ$  is the same as which direction on a compass?
2. A compass bearing of SW is the same as which three-figure bearing?
3. A map is drawn to a scale of 1 : 5000 which means:  
1 cm on the map represents \_\_\_\_\_ cm or \_\_\_\_\_ m.
4. A road on a map is 5 cm long and represents an actual distance of 200 m.  
What scale is used for the map?
5. Carl travels from point A to point B, as shown on the scale diagram below.



Complete this statement.

Carl travels on a bearing of \_\_\_\_\_ for \_\_\_\_\_ m.

6. The diagram on the right shows a journey from P to Q.  
Show that the bearing of P from Q is  $253^\circ$ .



7. A boat navigates around a coastline.  
Choose a suitable scale and draw the path the boat takes.  
Show that the boat has travelled approximately 400 m North in total.

	Bearing	Distance
From W to X	$060^\circ$	500 m
From X to Y	$090^\circ$	300 m
From Y to Z	$075^\circ$	600 m

8. Lifeboat station X is due West from lifeboat station Y, 8 km apart on the coast.  
They both receive an SOS from a boat in difficulty out at sea.  
Station X receives the signal on a bearing of  $040^\circ$  and station Y on a bearing of  $290^\circ$ .  
Explain which station should send a lifeboat out for the rescue operation.
9. A light aircraft flies on a bearing of  $080^\circ$  for 400 km from Town A to Town B. It then flies to Town C on a bearing of  $130^\circ$  for 100 km. Find the distance and bearing of the direct route from Town C back to Town A.



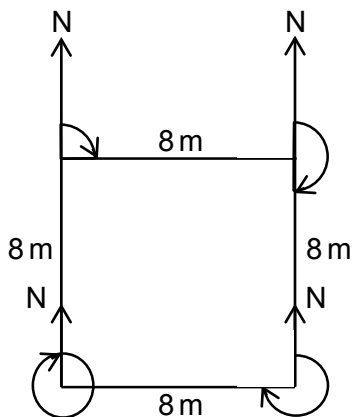
10. A submarine, anchored at sea, detects a moving object with its sonar. The table below shows two sonar readings taken at a 10 second interval.

Time	Bearing from submarine	Distance from the submarine
0 seconds	$150^\circ$	50 m
10 seconds	$070^\circ$	100 m

Using a scale of 1 cm to represent 10 m, draw a scale diagram to show this information and calculate the speed of the object.

### Extension

- a) A robot is programmed to move around a square lawn of side 8 m. Write the instructions giving the angles it turns as bearings.



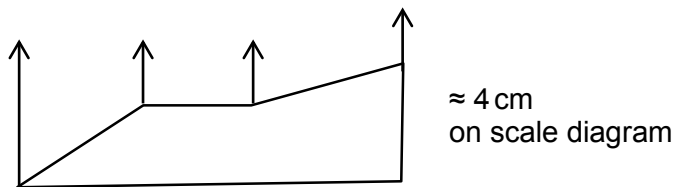
- b) The robot is then programmed to move in the shape of a regular hexagon of side 6 m. Write the instructions giving the angles it turns as bearings.



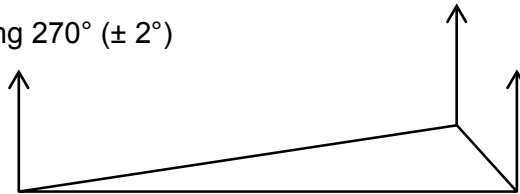
# GCSE (9-1) MATHEMATICS

## Answers

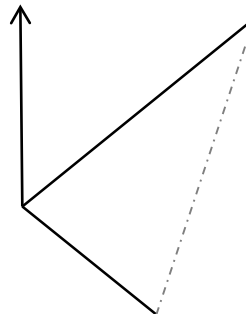
1. East
2.  $225^\circ$
3. 5000 cm or 50 m
4. 1 : 4000
5. Angle =  $035^\circ$   
Length = measured length dependent upon reprographic effects  $\times 2$  for distance in m  
(measured length dependent upon reprographic effects  $\times 200$  = distance in cm)
6. Bearing is  $73^\circ + 180^\circ = 253^\circ$  oe
7. Possible scale 1 : 10000 or 1 cm represents 100 m  
Distance North = 400 m ( $\pm 20$  m)



8. Students to recognise that bearing of  $290^\circ$  will mean a  $20^\circ$  angle inside triangle.  
Scale diagram gives  $XB = 2.9$  km and  $YB = 6.5$  km.  
Alternatively, students may sketch diagram and use knowledge of relationship between angles and lengths of triangles (smallest interior angle opposite shortest side length).
9. Distance 470 km ( $\pm 20$  km), bearing  $270^\circ$  ( $\pm 2^\circ$ )



10. Distance travelled in 10 seconds = 104 m ( $\pm 2$  m)  
Speed = 10.4 m/s ( $\pm 0.2$  m/s)



# GCSE (9-1) MATHEMATICS

## Extension

a) Square

Bearing	Distance
090°	8 m
180°	8 m
270°	8 m
360°	8 m

b) Hexagon

Bearing	Distance
090°	6 m
150°	6 m
210°	6 m
270°	6 m
330°	6 m
390°	6 m



We'd like to know your view on the resources we produce. By clicking on the 'Like' or 'Dislike' button you can help us to ensure that our resources work for you. When the email template pops up please add additional comments if you wish and then just click 'Send'. Thank you.

### OCR Resources: *the small print*

OCR's resources are provided to support the teaching of OCR specifications, but in no way constitute an endorsed teaching method that is required by the Board, and the decision to use them lies with the individual teacher. Whilst every effort is made to ensure the accuracy of the content, OCR cannot be held responsible for any errors or omissions within these resources. We update our resources on a regular basis, so please check the OCR website to ensure you have the most up to date version.

© OCR 2015 - This resource may be freely copied and distributed, as long as the OCR logo and this message remain intact and OCR is acknowledged as the originator of this work.

OCR acknowledges the use of the following content: Maths and English icons: AirOne/Shutterstock.com



Assessment Objective	Qu.	Topic	R	A	G
AO1	1	Translate a three figure bearing to a compass direction.			
AO1	2	Translate a compass bearing to a three figure bearing.			
AO1	3	Interpret the scale of a map.			
AO1	4	Define the scale of a map.			
AO1	5	Measure a bearing and distance from a scale diagram.			
AO2	6	Calculate bearings from a diagram.			
AO2	7	Draw a scale diagram.			
AO2	8	Use bearings to draw a triangle.			
AO3	9	Solve a return journey problem.			
AO3	10	Use a scale diagram to solve a speed problem.			

Assessment Objective	Qu.	Topic	R	A	G
AO1	1	Translate a three figure bearing to a compass direction.			
AO1	2	Translate a compass bearing to a three figure bearing.			
AO1	3	Interpret the scale of a map.			
AO1	4	Define the scale of a map.			
AO1	5	Measure a bearing and distance from a scale diagram.			
AO2	6	Calculate bearings from a diagram.			
AO2	7	Draw a scale diagram.			
AO2	8	Use bearings to draw a triangle.			
AO3	9	Solve a return journey problem.			
AO3	10	Use a scale diagram to solve a speed problem.			

Assessment Objective	Qu.	Topic	R	A	G
AO1	1	Translate a three figure bearing to a compass direction.			
AO1	2	Translate a compass bearing to a three figure bearing.			
AO1	3	Interpret the scale of a map.			
AO1	4	Define the scale of a map.			
AO1	5	Measure a bearing and distance from a scale diagram.			
AO2	6	Calculate bearings from a diagram.			
AO2	7	Draw a scale diagram.			
AO2	8	Use bearings to draw a triangle.			
AO3	9	Solve a return journey problem.			
AO3	10	Use a scale diagram to solve a speed problem.			

Assessment Objective	Qu.	Topic	R	A	G
AO1	1	Translate a three figure bearing to a compass direction.			
AO1	2	Translate a compass bearing to a three figure bearing.			
AO1	3	Interpret the scale of a map.			
AO1	4	Define the scale of a map.			
AO1	5	Measure a bearing and distance from a scale diagram.			
AO2	6	Calculate bearings from a diagram.			
AO2	7	Draw a scale diagram.			
AO2	8	Use bearings to draw a triangle.			
AO3	9	Solve a return journey problem.			
AO3	10	Use a scale diagram to solve a speed problem.			

