

Bearings Worksheets

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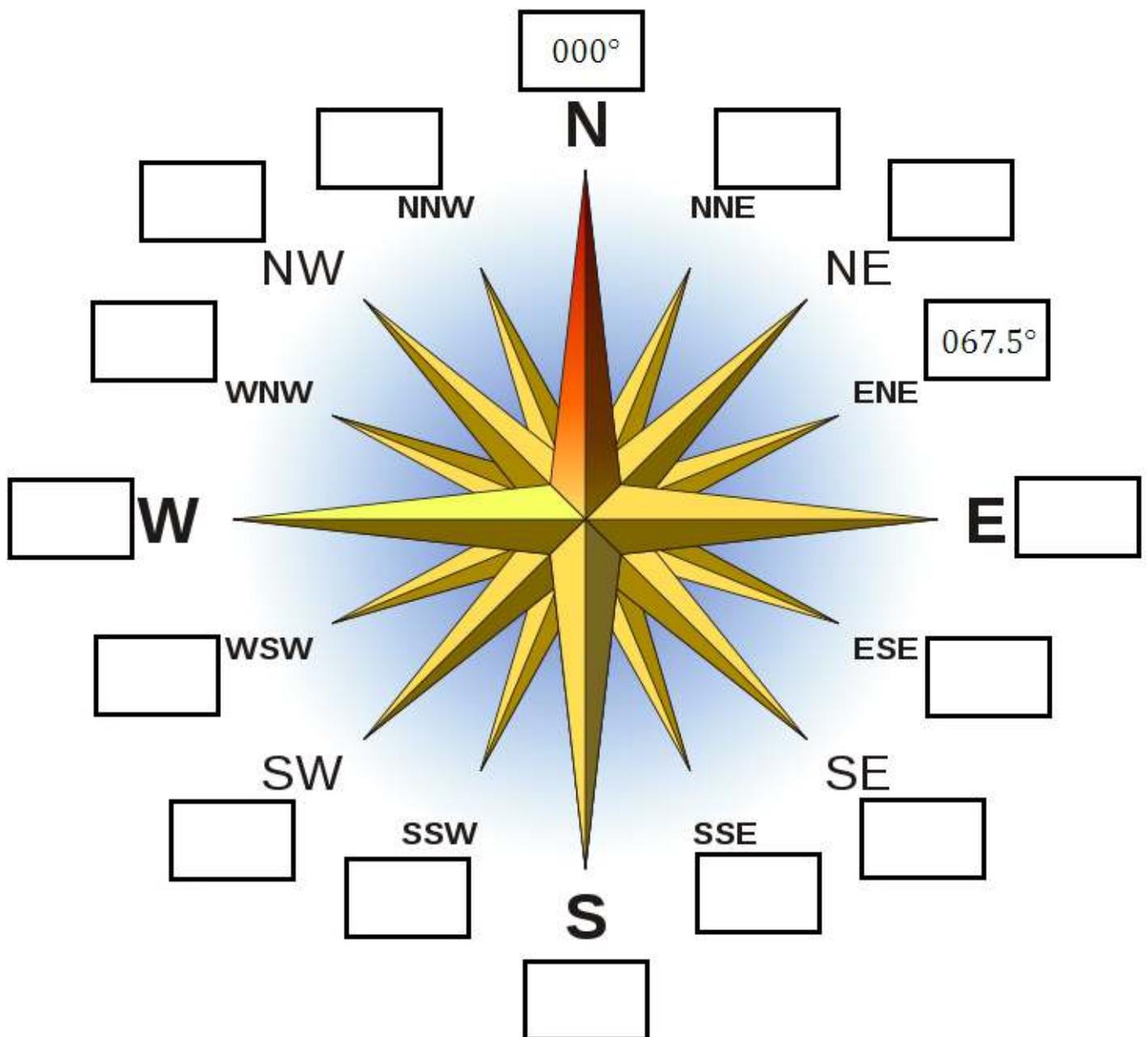
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Compass Bearings

All bearings are measured:

- **Clockwise**
- **From north**
- **In 3 figures**

Complete the compass rose below with the correct bearings.
Two have been done for you.



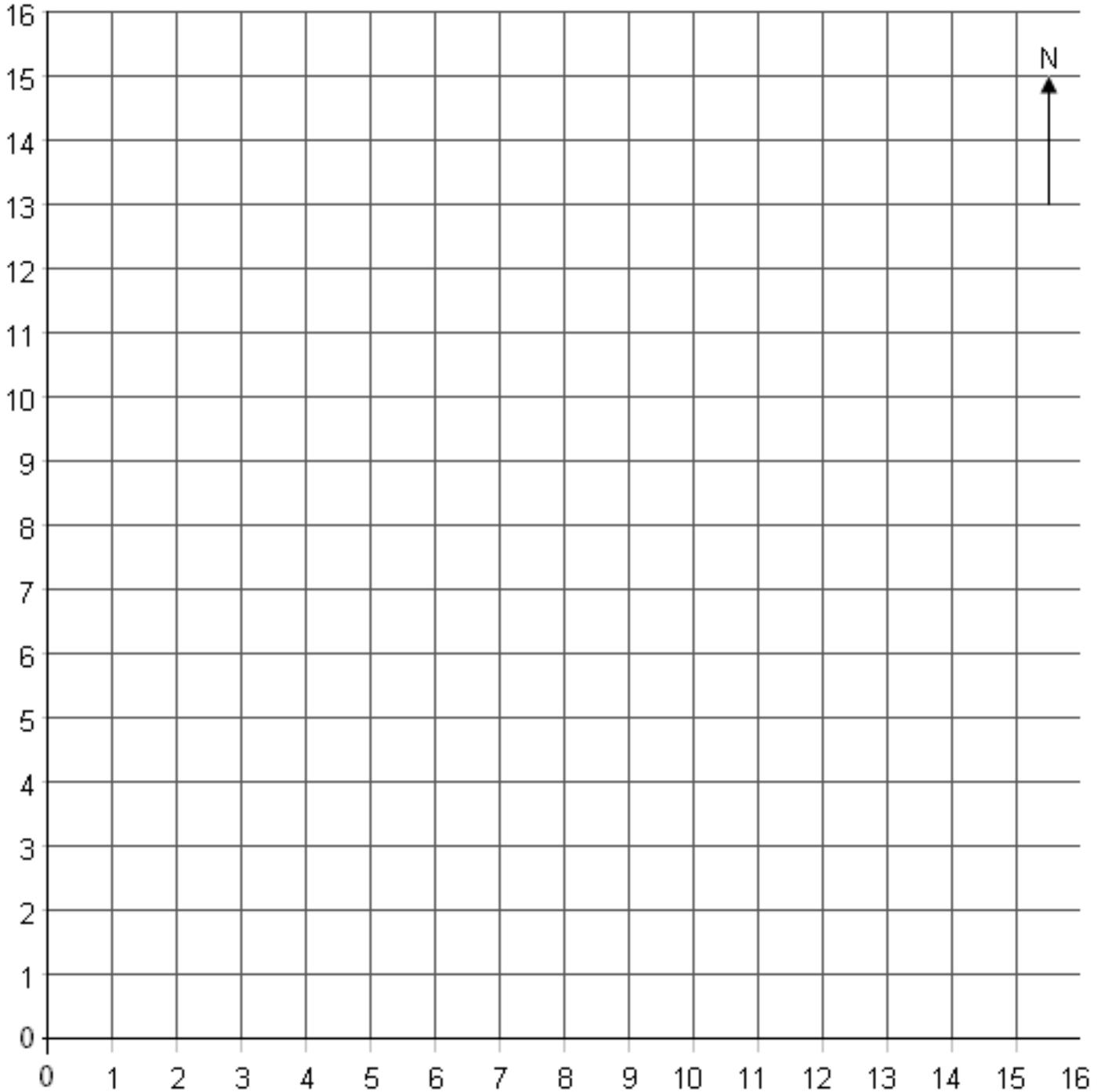
Calculating Bearings

Recall: All bearings are measured **clockwise, from north**, and are written as **3 digits**, eg 013°.

To find the bearing of **B from A**, draw a line from A to B, draw a north-line at A and measure the angle clockwise from the north-line to your line.

Mark the location of these points and calculate the bearings between them:

A:(2,10)	B:(5,10)	C:(3,13)	D:(5,15)	E:(10,9)	F:(6,2)	G:(15,5)	H:(12,8)	I:(8,6)	J:(8,11)
B from A:		D from C:		F from E:		H from G:		J from I:	
A from B:		C from D:		E from F:		G from H:		I from J:	



Is there a link between a bearing of B from A and the equivalent bearing of A from B? Can you prove it using what you know about angles? *Hint: find the difference between the two bearings.*

Extension: Two radio masts are stationed at the points (14,5) and (10,10). The first detects a mobile phone on a bearing of 225°, and the second detects the same phone on a bearing of 180°. Can you locate the phone?

Bearings Homework

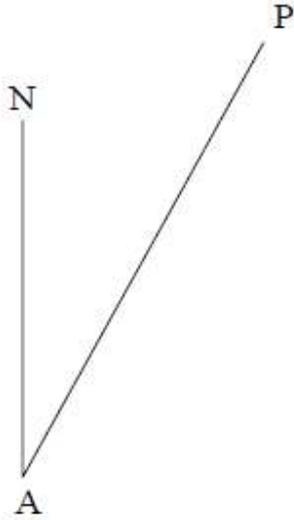
Name: _____

Remember:

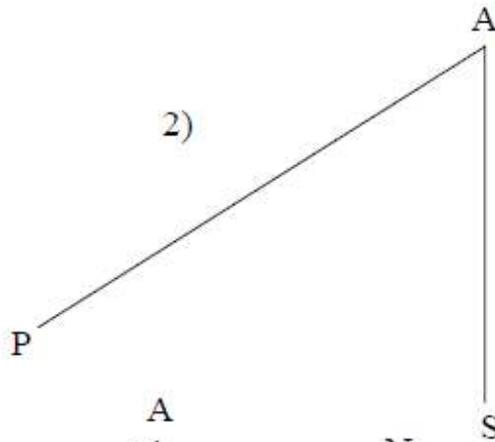
- 1) Clockwise
- 2) From north
- 3) 3 figures

By measuring these angles, write down the bearing of point P from point A in each case.

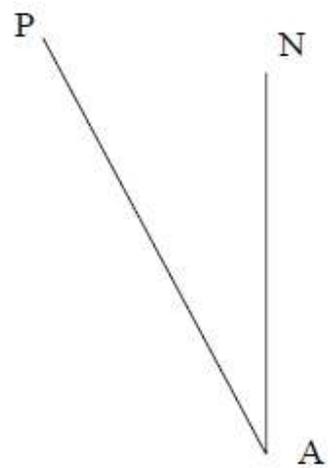
1)



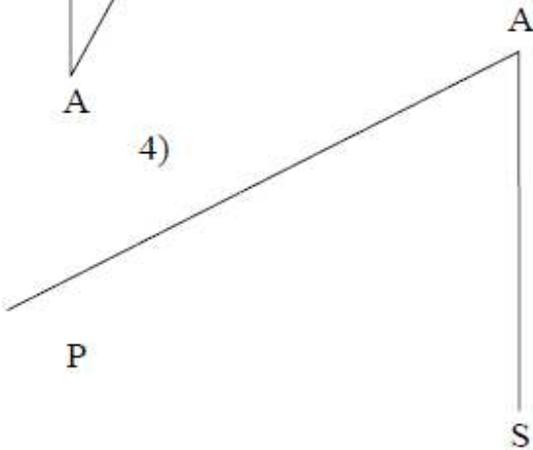
2)



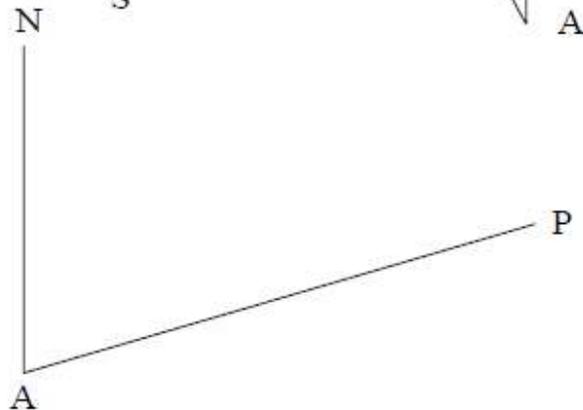
3)



4)



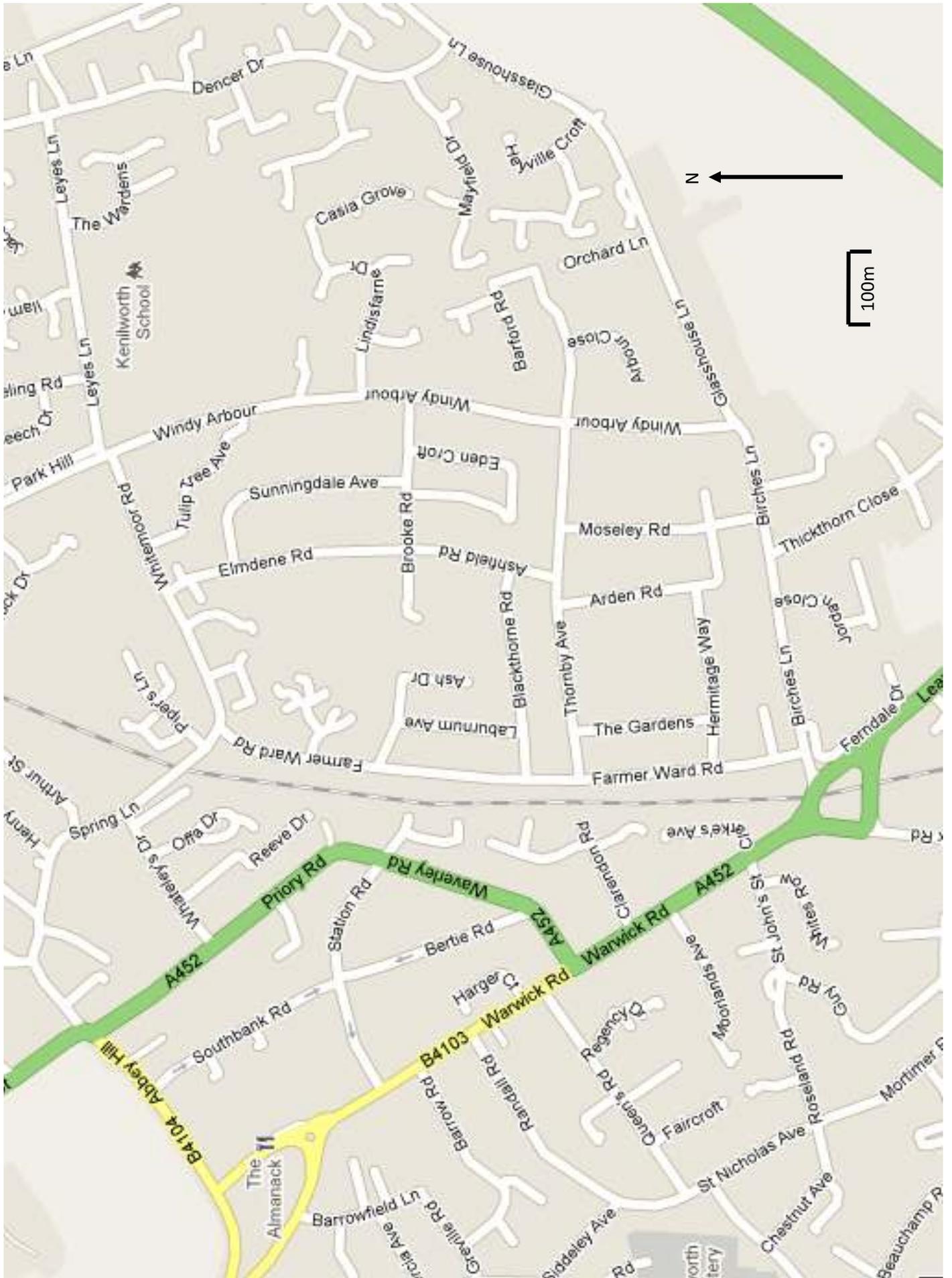
5)



Note: In these questions, N means north and S means south.

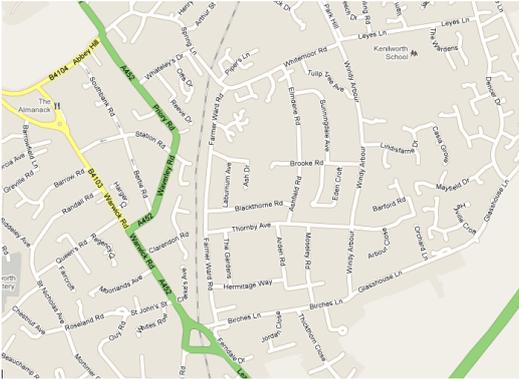
6)
An aeroplane sets off on a bearing of 028° , but after some time has to turn back to the airport it came from. On what bearing must it travel?

7)
A ship sets sail on a bearing of 163° . It then turns through an angle of 90° anticlockwise. What is the new bearing?



Kenilworth Map Task Sheet

Name(s): _____



You have been given a large map of the local area.

Using your map, and your knowledge of bearings, complete the following tasks, writing your solutions on this sheet in the spaces provided.

Good luck!

Preparation

Mark these points on your map using the appropriate letters:

Point A: School Crossroads – where Leyes Lane meets Windy Arbour.

Point B: Glasshouse Crossroads – where Windy Arbour meets Glasshouse Lane.

Point C: Railway Roundabout – the middle of the large roundabout over the railway.

Point D: Almanack Roundabout – the middle of the roundabout near The Almanack.

Your points should be marked with a cross and labelled with the appropriate letter.

Task 1

You are to prepare directions for a model plane autopilot. It will fly from **A** to **D**, but in order for us to keep an eye on it, we need it to roughly follow the roads, so it needs to go via **B** and **C**. Complete the instructions below to plot a flight-path that goes **A-B-C-D**.

Use the scale on the map to convert distances into metres, and follow the rules for writing bearings.

Leg 1 (**A** to **B**): Fly a distance of _____ on a bearing of _____.

Leg 2 (**B** to **C**): Fly a distance of _____ on a bearing of _____.

Leg 3 (**C** to **D**): Fly a distance of _____ on a bearing of _____.

Task 2

You now have two model planes, and plan to race them to point **C**, the railway roundabout. Plane Bravo will fly the route **A – B – C**. Plane Delta will fly the route **A – D – C**.

Calculate the distance each plane will cover, and make a race prediction.

Planes will fly in straight lines between points, so there is no need to follow roads.

Plane Bravo will travel a total distance of _____.

Plane Delta will travel a total distance of _____.

I predict that _____ will win the race.

Kenilworth Map Task Sheet

Task 3

One of the planes was given incorrect instructions and has been lost. The instructions it followed are given below. The plane took off from Point **A**. Use these directions to mark the point on the map where you expect the plane to have landed.

Draw the bearing, then use the scale on the map to convert the distance to cm and measure along your line.

Leg 1: Fly a distance of 450m on a bearing of 080°.

Leg 2: Fly a distance of 1000m on a bearing of 242°.

Task 4

A firework goes up somewhere in the middle of Kenilworth. It is sighted from the School Crossroads (**A**) and from the Almanack Roundabout (**D**).

Both observers made a note of the direction, but couldn't make an accurate estimate of how far away the firework was. Using the bearings they wrote down, mark on your map the most likely location of the firework. Label this point with the letter **F**.

*Draw lines at the correct bearings from **A** and **D**, and find a point which is on both lines.*

"The firework was on a bearing of 100° from where I stood on the Almanack roundabout."

"I saw the firework go up from where I was standing at the school crossroads. It was on a bearing of 136° from me."

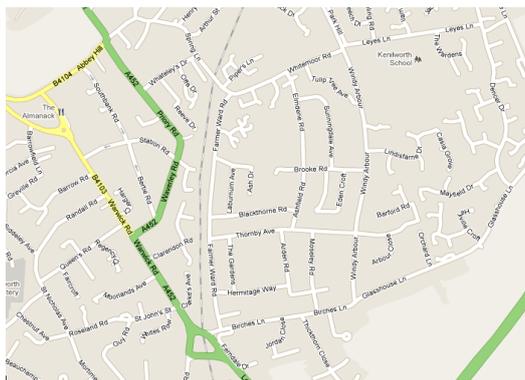
Task 5 - Challenge each other

This task will test your skills at calculating bearings and at measuring them.

- 1) Choose a point on the map, and write down its location (don't mark anything on the map).
Describe as: "Where Spring Lane crosses the railway" or "Where Thornby Avenue meets Arden Road"
- 2) Calculate the bearing of your point from **A** and from **D**. Write these down too.
Try to do this by placing a ruler on the map instead of drawing a line, so as not to leave any clues.
- 3) Give your bearings to your partner and see if they can correctly identify your point.
When you've tried it this way round, swap over and let them choose a point.

Kenilworth Map Task Sheet – SOLUTIONS

Name(s): _____



You have been given a large map of the local area.

Using your map, and your knowledge of bearings, complete the following tasks, writing your solutions on this sheet in the spaces provided.

Good luck!

Preparation

Mark these points on your map using the appropriate letters:

Point A: School Crossroads – where Lyes Lane meets Windy Arbour.

Point B: Glasshouse Crossroads – where Windy Arbour meets Glasshouse Lane.

Point C: Railway Roundabout – the middle of the large roundabout over the railway.

Point D: Almanack Roundabout – the middle of the roundabout near The Almanack.

Your points should be marked with a cross and labelled with the appropriate letter.

Task 1

You are to prepare directions for a model plane autopilot. It will fly from **A** to **D**, but in order for us to keep an eye on it, we need it to roughly follow the roads, so it needs to go via **B** and **C**. Complete the instructions below to plot a flight-path that goes **A-B-C-D**.

Use the scale on the map to convert distances into metres, and follow the rules for writing bearings.

Leg 1 (**A** to **B**): Fly a distance of **875m** on a bearing of **178°**.

Leg 2 (**B** to **C**): Fly a distance of **550m** on a bearing of **259°**.

Leg 3 (**C** to **D**): Fly a distance of **885m** on a bearing of **327°**.

Task 2

You now have two model planes, and plan to race them to point **C**, the railway roundabout. Plane Bravo will fly the route **A – B – C**. Plane Delta will fly the route **A – D – C**.

Calculate the distance each plane will cover, and make a race prediction.

Planes will fly in straight lines between points, so there is no need to follow roads.

Plane Bravo will travel a total distance of **1425m**.

Plane Delta will travel a total distance of **1885m**.

I predict that **Plane Bravo** will win the race.

Kenilworth Map Task Sheet – SOLUTIONS

Task 3

One of the planes was given incorrect instructions and has been lost. The instructions it followed are given below. The plane took off from Point **A**. Use these directions to mark the point on the map where you expect the plane to have landed.

Draw the bearing, then use the scale on the map to convert the distance to cm and measure along your line.

Leg 1: Fly a distance of 450m on a bearing of 080°.

- East end of Leyes Lane

Leg 2: Fly a distance of 1000m on a bearing of 242°.

- Between Farmer Ward Road and the railway (in a straight line with Brooke Road)

Task 4

A firework goes up somewhere in the middle of Kenilworth. It is sighted from the School Crossroads (**A**) and from the Almanack Roundabout (**D**).

Both observers made a note of the direction, but couldn't make an accurate estimate of how far away the firework was. Using the bearings they wrote down, mark on your map the most likely location of the firework. Label this point with the letter **F**.

*Draw lines at the correct bearings from **A** and **D**, and find a point which is on both lines.*

"The firework was on a bearing of 100° from where I stood on the Almanack roundabout."

"I saw the firework go up from where I was standing at the school crossroads. It was on a bearing of 136° from me."

- Just to the east of Glasshouse Lane, south of Dencer Drive

Task 5 – Challenge each other

This task will test your skills at calculating bearings and at measuring them.

- 1) Choose a point on the map, and write down its location (don't mark anything on the map).
Describe as: "Where Spring Lane crosses the railway" or "Where Thornby Avenue meets Arden Road"
- 2) Calculate the bearing of your point from **A** and from **D**. Write these down too.
Try to do this by placing a ruler on the map instead of drawing a line, so as not to leave any clues.
- 3) Give your bearings to your partner and see if they can correctly identify your point.
When you've tried it this way round, swap over and let them choose a point.

How to pinpoint a location using bearings

Try to work out how bearings could help you locate a ship in distress.



Hint: The ship's distress flare may be seen by two different lighthouses, and each one could record the compass bearing. It is very difficult to judge *distance*, so all you have to go on is the *direction* from each lighthouse.

The lighthouse on the left records a sighting of a distress flare on a bearing of 058°
The lighthouse on the right records a sighting of the flare on a bearing of 275°

Copy down from the PowerPoint slide the 3 steps for finding a location below:

1) _____

2) _____

3) _____
