The Panda Math Tutor

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Bearings

IGCSE Mathematics

The Panda Math Tutor

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Contents

1 Introduction to Bearings 2

2 What is a Bearing? 2

3 Compass Points and Their Bearings 3

4 Measuring and Drawing Bearings 4

5 Calculating Bearings Using Angle Rules 6

6 Back Bearings (Reverse Bearings) 7

7 Calculating Bearings with Geometry 9

8 Bearings and Trigonometry 10
8.1 Using SOHCAHTOA with Bearings 11
8.2 Using the Sine and Cosine Rules 12

9 Finding an Unknown Bearing 13

10 Summary 15

11 Additional Resources 17
11.1 Tips for Success in IGCSE Exams 17
11.2 Common Exam Question Types 17

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1 Introduction to Bearings

Note

Bearings are used to describe direction precisely in navigation, surveying, and map-reading. They give an exact angle that tells you which direction to travel or look. Bearings are used by pilots, sailors, hikers, and military personnel to navigate accurately.

In this chapter, we will explore:

- What a bearing is and the three rules for writing bearings
- Compass directions and how they relate to bearings
- How to measure and draw bearings using a protractor
- Back bearings (reverse bearings)
- Using angle rules to calculate bearings without measuring
- Solving bearings problems using trigonometry (SOHCAHTOA and the sine/cosine rules)

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2 What is a Bearing?

Definition

A **bearing** is a way of describing a direction as an angle measured:

1. **From** North
2. **Clockwise**
3. Written using **three digits** (e.g. 045°, not 45°)

Bearings range from 000° to 360°.
Example: A bearing of **072**° means: start facing North, then rotate 72° clockwise.

Note

The Three Golden Rules of Bearings — never forget these!

Rule	Requirement	Example
1	Measured **from North**	Always draw the North line first
2	Measured **clockwise**	Going right from the North line
3	Written with **three digits**	045°, 008°, 120°, 270°

Warning

Common Mistakes:

- Writing 45° instead of 045° — bearings MUST have three digits
- Measuring anti-clockwise instead of clockwise
- Forgetting to draw the North line at the *starting point* (not the destination)

3 Compass Points and Their Bearings

Cardinal and Intercardinal Bearings

The eight main compass directions and their corresponding bearings are:

Direction	Bearing	Direction	Bearing
North (N)	000°	South (S)	180°
North-East (NE)	045°	South-West (SW)	225°
East (E)	090°	West (W)	270°
South-East (SE)	135°	North-West (NW)	315°

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