Bearings and directions

6 questions | 14 marks

Equivalent correct methods earn the corresponding marks.

1. Find the reverse bearing of 045°. [2 marks]

Add 180°.

Answer: 225°

2. A walker goes 9 km north and 12 km east. Find direct distance and bearing to 0.1°. [3 marks]

$d = \sqrt{9^2 + 12^2} = 15$ km.

$\theta = \tan^{-1}\left(\frac{12}{9}\right) = 53.130\ldots^\circ$.

Answer: 15 km on bearing 053.1°

3. Find the northward/eastward movements of a 100 m journey on bearing 030°, to 0.1 m. [3 marks]

North $= 100\cos 30^\circ = 86.602\ldots$ m.

East $= 100\sin 30^\circ = 50$ m.

Answer: 86.6 m north; 50.0 m east

4. The bearing of B from A is 230°. Find the bearing of A from B. [2 marks]

Subtract 180° and use three digits.

Answer: 050°

5. Paths leave one point on bearings 035° and 110°. Find the smaller included angle. [2 marks]

$110^\circ - 35^\circ = 75^\circ$.

Answer: 75°

6. A student says bearing 300° travels east. Correct the direction and explain. [2 marks]

300° lies between west (270°) and north (360°).

Its eastward component is negative.

Answer: North-west, with a westward component.