GCSE Maths: Bearings problems: journeys, Pythagoras and trigonometry (Foundation): worksheet

GCSE Maths - Loci, Bearings and Vectors - Foundation - Lesson 22.7

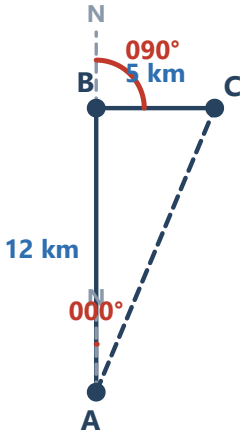
Name: _____ Date: _____ Score: _____

15 questions. Write your answers in the spaces. Answers and step-by-step help are free at **websink.site/gcse/maths/ch22-constructions-loci-bearings-vectors/foundation/bearings-problems-journeys-pythagoras-and-trigonometry/**

Exercise 22H Bearings and right-angled triangles

Calculator allowed

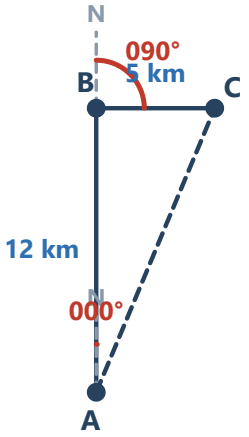
1 A ship sails 12 km due north and then 5 km due east. Work out (a) how far the ship is from where it started, (b) the bearing of the ship from its start.



Answer:

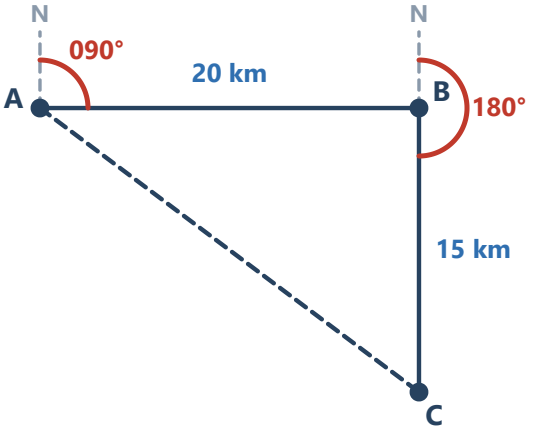
2 For each journey, work out (a) the distance AC and (b) the bearing of C from A. Each journey is two legs at right angles: from A to B, then B to C.

(a) A to B: 12 km on 000°. B to C: 5 km on 090°.



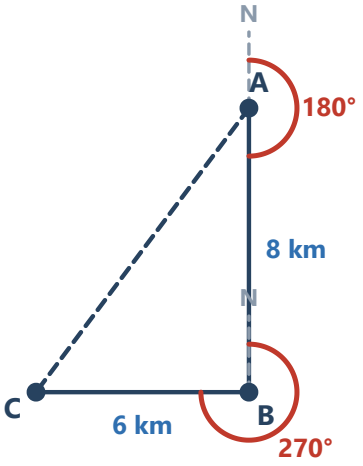
Answer:

(b) A to B: 20 km on 090°. B to C: 15 km on 180°.



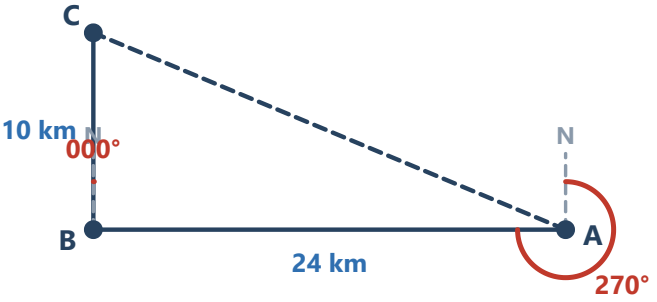
Answer:

(c) A to B: 8 km on 180°. B to C: 6 km on 270°.



Answer:

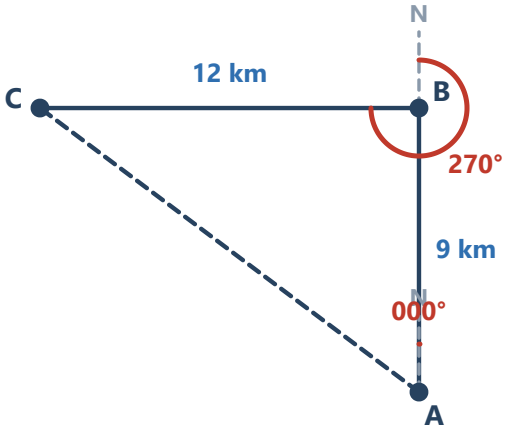
(d) A to B: 24 km on 270°. B to C: 10 km on 000°.



Answer:

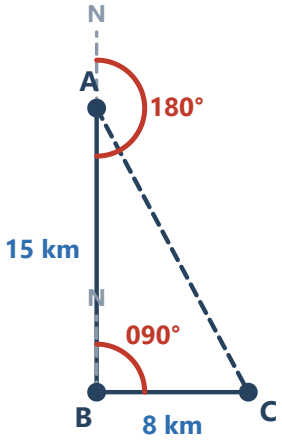
3 Work out the distance AC and the bearing of C from A for each journey. The ship turns **left** at B.

(a) A to B: 9 km on 000°. B to C: 12 km on 270°.



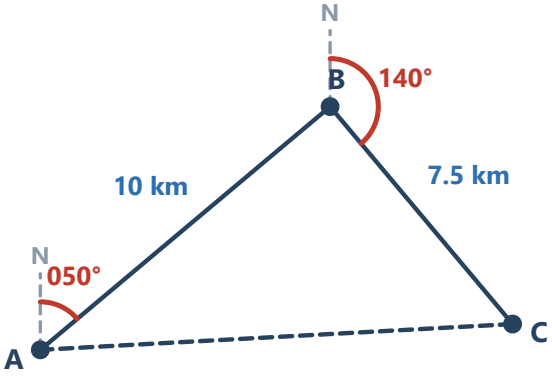
Answer:

(b) A to B: 15 km on 180°. B to C: 8 km on 090°.



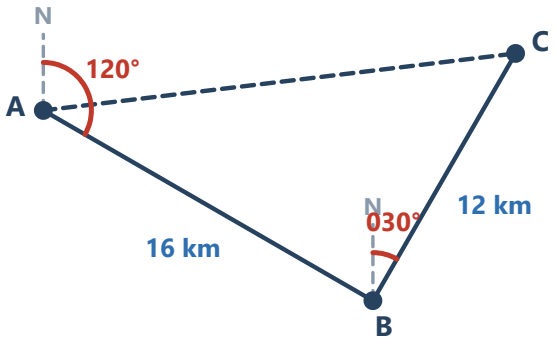
Answer:

4 A boat sails 10 km from A to B on a bearing of 050°. It then sails 7.5 km from B to C on a bearing of 140°. Work out the distance AC and the bearing of C from A.



Answer:

5 A plane flies 16 km from X to Y on a bearing of 120°, then 12 km from Y to Z on a bearing of 030°. Work out (a) the distance XZ, (b) the bearing of Z from X, (c) the bearing of X from Z.



Answer:

6 **Work out the bearing of B from A in each case. Give your answers to the nearest degree. All the distances are in kilometres.**

(a) B is 8 km east and 6 km north of A.

Answer:

(b) B is 7 km east and 4 km south of A.

Answer:

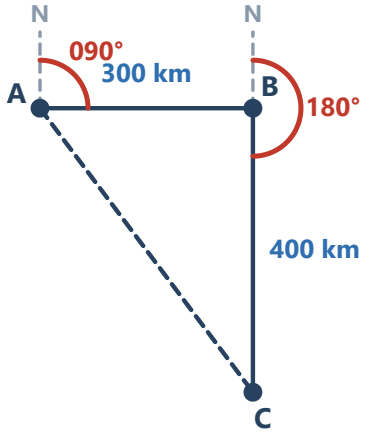
(c) B is 5 km west and 12 km south of A.

Answer:

(d) B is 3 km west and 9 km north of A.

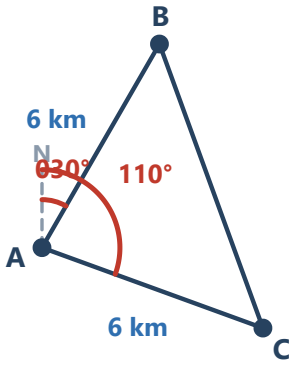
Answer:

7 **An aeroplane flies 300 km from an airport A due east to B. It then turns and flies 400 km due south to C. Work out (a) how far C is from the airport, (b) the bearing on which the plane must fly to return from C directly to A.**



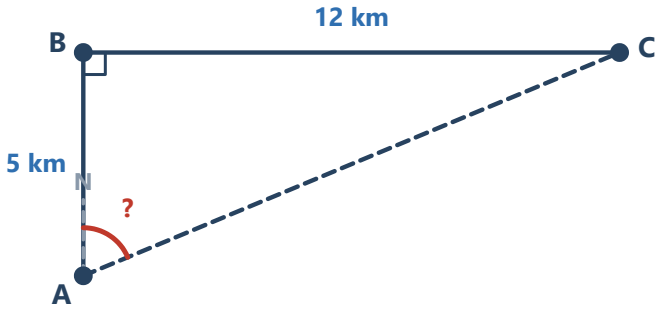
Answer:

8 **A, B and C are three trees. AB = AC = 6 m. The bearing of B from A is 030° and the bearing of C from A is 110°. Work out the bearing of C from B.**



Answer:

9 A ship sails 5 km due north and then 12 km due east. **Show that** the ship is 13 km from its starting point, on a bearing of 067° to the nearest degree.

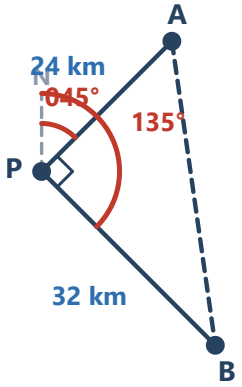


Answer:

10 Leo works out that angle BAC = 36.9° in a journey where the bearing of B from A is 070° and the ship then turns right at B. He says: "The bearing of C from A is 036.9°." Explain his mistake and give the correct bearing.

Answer:

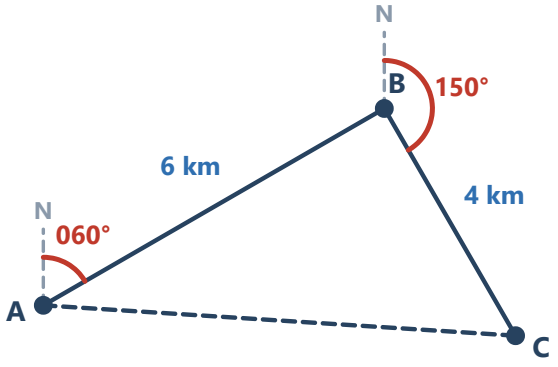
11 **Challenge.** Two ships leave a port P at the same time. Ship A sails on a bearing of 045° at 12 km/h. Ship B sails on a bearing of 135° at 16 km/h. After 2 hours, work out (a) how far apart the ships are, (b) the bearing of B from A, to the nearest degree.



Answer:

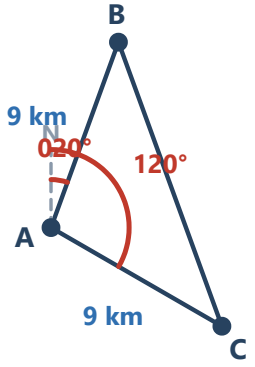
Exercise 22I Harder bearings problems Calculator allowed

1 A boat sails 6 km from A to B on a bearing of 060°, then 4 km from B to C on a bearing of 150°. (a) Make a scale drawing with 1 cm to 1 km. (b) Use your drawing to find AC and the bearing of C from A. (c) Check your answers by calculation.



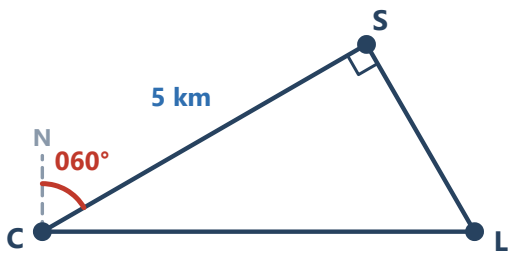
Answer:

2 A, B and C are the corners of an isosceles triangle with AB = AC = 9 km. B is on a bearing of 020° from A and C is on a bearing of 120° from A. Work out the bearing of C from B.



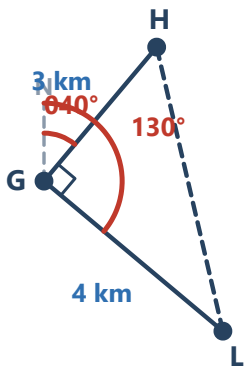
Answer:

3 A coastguard station C sees a ship on a bearing of 060°. A lighthouse L is due east of C. The ship S is 5 km from C and the angle at S is 90° (angle CSL = 90°). Work out the bearing of L from S.



Answer:

4 Two paths leave a gate G. Path 1 goes 3 km on a bearing of 040° to a hut H. Path 2 goes 4 km on a bearing of 130° to a lake L. Work out (a) the distance HL, (b) the bearing of L from H, to the nearest degree.



Answer:

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