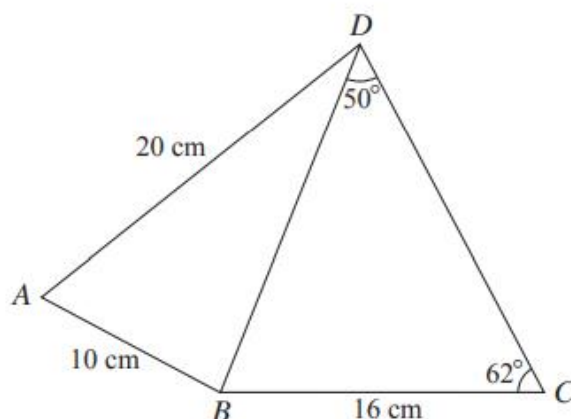




Sine and Cosine Rules and Area of a Triangle (From OCR 4722)

Q1, (Jan 2008, Q4)

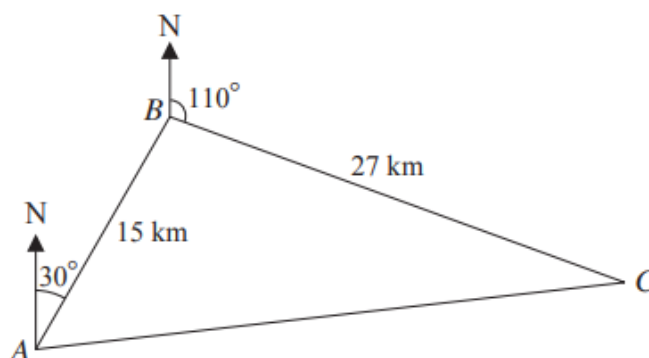


In the diagram, angle  $BDC = 50^\circ$  and angle  $BCD = 62^\circ$ . It is given that  $AB = 10$  cm,  $AD = 20$  cm and  $BC = 16$  cm.

- (i) Find the length of  $BD$ . [2]
- (ii) Find angle  $BAD$ . [3]

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Q2, (Jun 2008, Q6)

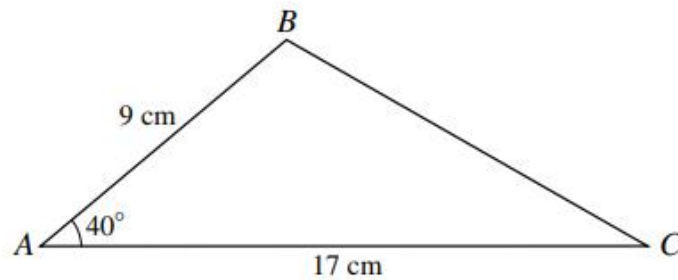


In the diagram, a lifeboat station is at point  $A$ . A distress call is received and the lifeboat travels 15 km on a bearing of  $030^\circ$  to point  $B$ . A second call is received and the lifeboat then travels 27 km on a bearing of  $110^\circ$  to arrive at point  $C$ . The lifeboat then travels back to the station at  $A$ .

- (i) Show that angle  $ABC$  is  $100^\circ$ . [1]
- (ii) Find the distance that the lifeboat has to travel to get from  $C$  back to  $A$ . [2]
- (iii) Find the bearing on which the lifeboat has to travel to get from  $C$  to  $A$ . [4]
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Q3, (Jun 2011, Q1)

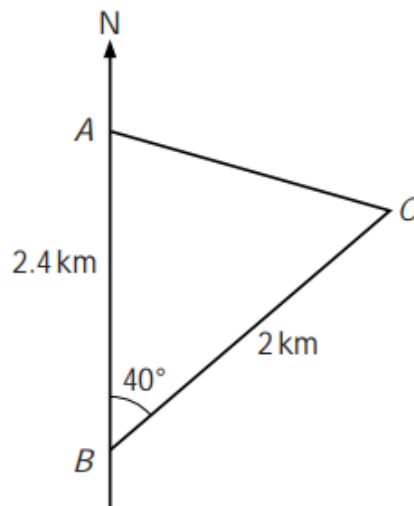


The diagram shows triangle  $ABC$ , with  $AB = 9$  cm,  $AC = 17$  cm and angle  $BAC = 40^\circ$ .

- (i) Find the length of  $BC$ . [2]
- (ii) Find the area of triangle  $ABC$ . [2]
- (iii)  $D$  is the point on  $AC$  such that angle  $BDA = 63^\circ$ . Find the length of  $BD$ . [3]

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Q4, (Jan 2012, Q4)

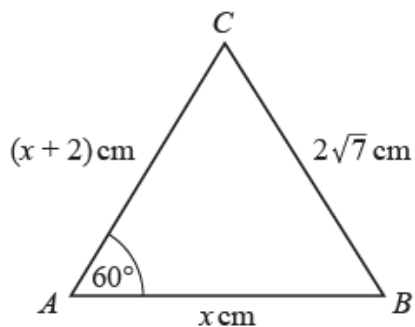


The diagram shows two points  $A$  and  $B$  on a straight coastline, with  $A$  being 2.4 km due north of  $B$ . A stationary ship is at point  $C$ , on a bearing of  $040^\circ$  and at a distance of 2 km from  $B$ .

- (i) Find the distance  $AC$ , giving your answer correct to 3 significant figures. [2]
  - (ii) Find the bearing of  $C$  from  $A$ . [3]
  - (iii) Find the shortest distance from the ship to the coastline. [2]
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Q5, (Jun 2017, Q1)



The diagram shows triangle  $ABC$ , with  $AB = x$  cm,  $AC = (x + 2)$  cm,  $BC = 2\sqrt{7}$  cm and angle  $CAB = 60^\circ$ .

(i) Find the value of  $x$ . [4]

(ii) Find the area of triangle  $ABC$ , giving your answer in an exact form as simply as possible. [2]

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