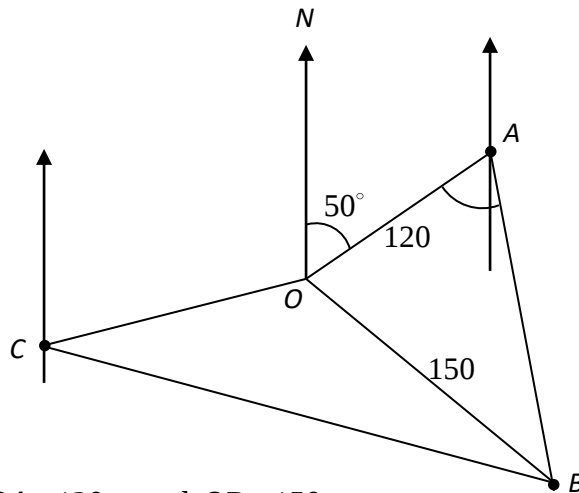


Topical Revision Paper 12

Term 3 Unit 12: Bearings, Sine Rule, Cosine Rule and Area of Triangle

Question 1:

The diagram below shows the position of three locations A , B and C with respect to a reference point O . The bearings of A , B and C from O are 050° , 135° and 240° respectively.

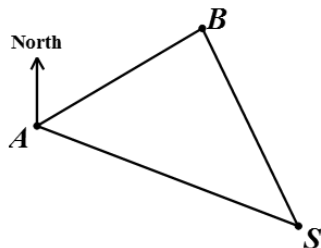


It is also given that $OA = 120$ m and $OB = 150$ m.

- (i) Find the bearing of B from A . 175.6 deg [2]
- (ii) If the bearing of B from C is 100° , calculate the length of OC . 133.8m [2]
- (iii) A mast stands vertically at B such that the angle of elevation of the top of the mast from O is 62° . Find the height of the mast. 282.1m [2]

Question 2:

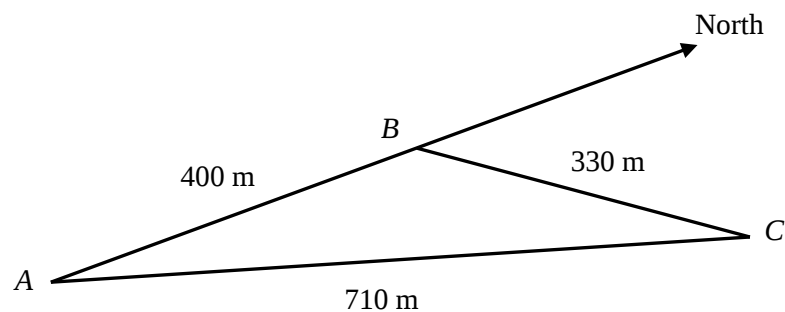
In the diagram A , B and S represent three points in the sea. B is 3 km from A on a bearing of 060° . The bearings of S from A and B are 110° and 155° respectively.



- (i) Calculate the distance AS . **4.23km** [2]
- (ii) A ship at S sails directly to A at a steady speed of 2 kmh^{-1} . After 40 minutes, the ship is at T , a point on AS .
- (a) Calculate the distance BT . **2.49km** [3]
- (b) Find the bearing of B from T . **357.3 deg** [2]
- (iii) A hot air balloon, H , is lowering at a point 600 m vertically above B . Calculate the greatest angle of elevation of H from an observer on the ship as the ship sails from S to A . **14.6 deg** [2]

Question 3:

The diagram shows three points, A , B and C on a piece of horizontal land. It is given that $AB = 400 \text{ m}$, $BC = 330 \text{ m}$, $AC = 710 \text{ m}$ and B is due North of A .

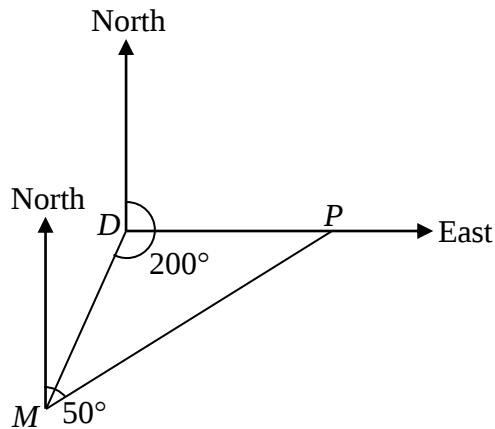


- (i) Calculate
- (a) $\angle ABC$, **153.0 deg** [2]
- (b) the area of triangle ABC , **30,000 m²** [2]
- (c) the bearing of C from A . **12.2 deg** [2]

- (ii) BZ is a tower crane standing vertically at B and the angle of elevation of Z from A is 18° . Calculate the height of the tower crane. **130m** [2]
- (iii) A car moves along the path AC until it reaches a point P which is nearest to the tower crane BZ . Calculate the largest angle of depression of the point P from Z . **57.0 deg** [2]

Question 4:

A man, at point M , is 80 metres at a bearing of 200° from an observation deck, D , which stands 25 metres tall. He begins to walk to a point P which is due East of D at a bearing of 050° .



Ignoring the man's height, calculate

- (i) the angle of elevation of the top of the deck from the man at M , **17.4 deg** [2]
- (ii) the distance he walks when the angle of elevation of the top of the deck from his position is the greatest, and **62.2 m** [2]
- (iii) the distance DP . **$40\sqrt{3}$ or 69.3m** [2]