

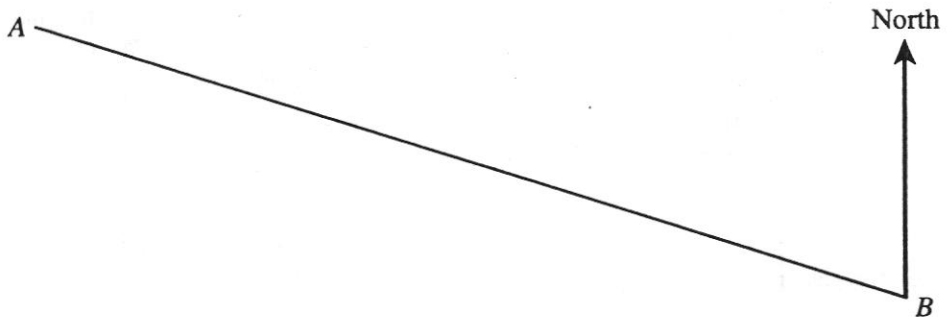
PAST EXAMINATION QUESTIONS

1. Two corners, A and B , of a horizontal triangular field are 240 m apart. The diagram below is part of a scale drawing of the field.

- Find the scale of the drawing in the form $1 : n$.
- Find the bearing of A from B .

The third corner, C , of the field is south of AB . It is 220 m from A and 170 m from B .

- Using ruler and compasses only, find and label the position of C on the scale drawing.
- A tree, T , in the field is equidistant from the three corners A , B and C .
 - Showing your construction clearly, find and label the position of the tree.

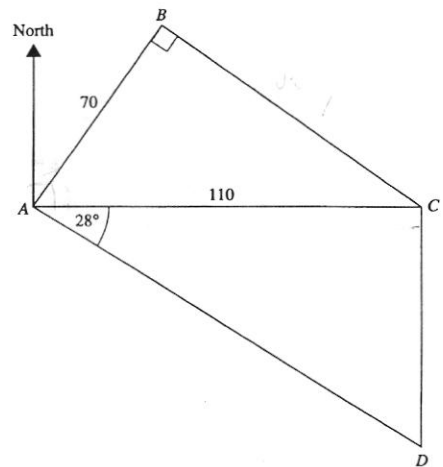


(ii) Find the distance of the tree from the corners of the field.

(N99/1/25)

2. The diagram shows four towns, A , B , C and D .
 C is 110 km due East of A .
 $\hat{A}BC = 90^\circ$ and $AB = 70$ km.

- Calculate
 - the distance BC ,
 - the bearing of B from A .
- Given that D is due South of C and that $\hat{C}AD = 28^\circ$, calculate the distance CD .
- An aircraft flies from A to B , then from B to C , then from C to D and finally from D to A .
 Calculate the total distance that it flies.

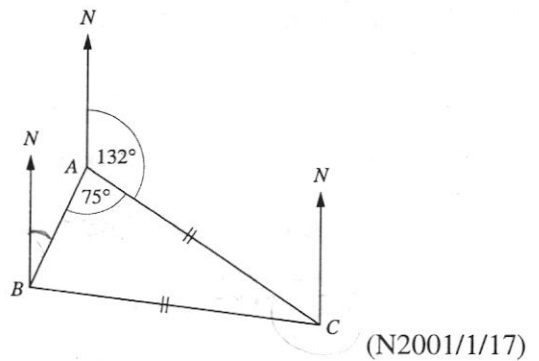


(N2000/2/5)

3. A, B and C are three towns.
 C is equidistant from A and B .
 The bearing of C from A is 132° and $\hat{BAC} = 75^\circ$.

Find

- (a) (i) the acute angle ACB ,
 (ii) the reflex angle ACB ,
 (b) the bearing of A from C ,
 (c) the bearing of A from B .

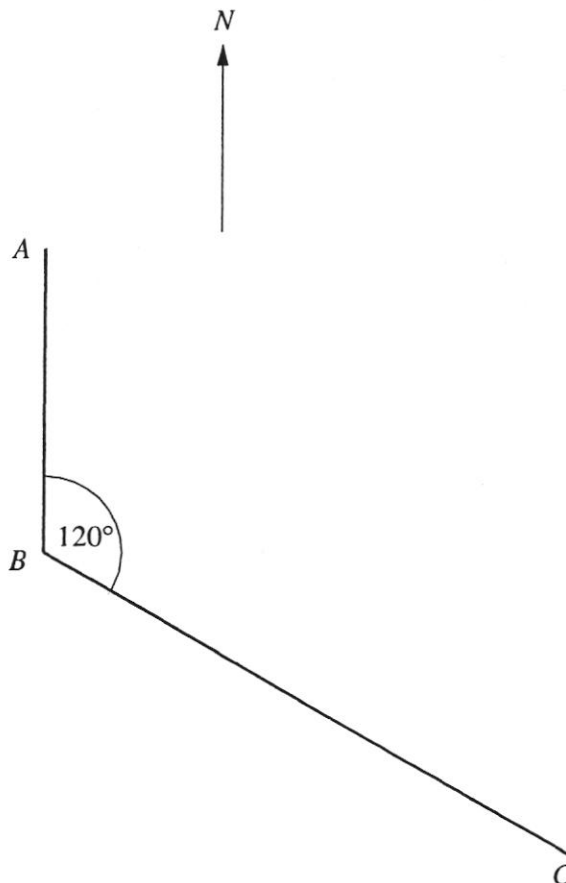


4. Three shops, A, B and C , are such that B is 800 m due South of A and such that C is 1600 m from B on a bearing of 120° .

A map is being drawn to a scale of 1 cm to 200 m. The positions of A, B and C are shown below. Another shop, D , is 1200 m from C on a bearing of 057° .

- (a) Complete the map to show the position of D .
 (b) A new shop is to be built
 I equidistant from B and C , II nearer to BC than BA ,
 III at least 1200 m from C .

Using ruler and compasses only, construct 3 loci corresponding to I, II and III. Hence find where the shop could be built and label the extreme positions S and P .

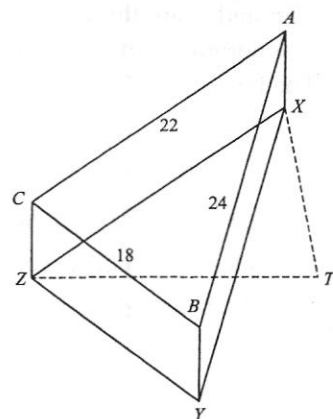


(N2002/1/22)

5. An aircraft waiting to land is flying around a triangular circuit ABC .
 A , B and C are vertically above three beacons, X , Y and Z .

T is the control tower at the airport, and T , X , Y and Z lie in a horizontal plane.

$BC = 18$ km, $CA = 22$ km and $AB = 24$ km.

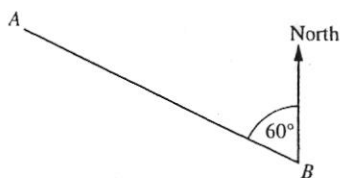


- (a) (i) The plane is flying at 200 km/h.
 Calculate the time, in minutes and seconds, that the aircraft takes to complete one circuit.
 (ii) Calculate the largest angle of triangle ABC .
- (b) Z is due West of T .
 The bearing of X from Z is 042° and the bearing of X from T is 338° .
- (i) Find the angles of triangle TXZ .
 (ii) Calculate TX .
- (c) The aircraft is flying at a constant height of 2600 metres.
 Calculate the angle of depression of the tower, T , from the aircraft when it is at A .

(N2003/2/10)

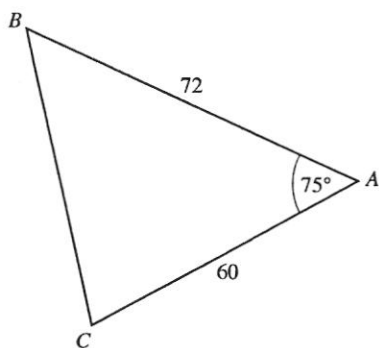
6. The diagram shows the positions of A and B .
 Find the bearing of

- (a) A from B ,
 (b) B from A .



(N2004/1/9)

7.

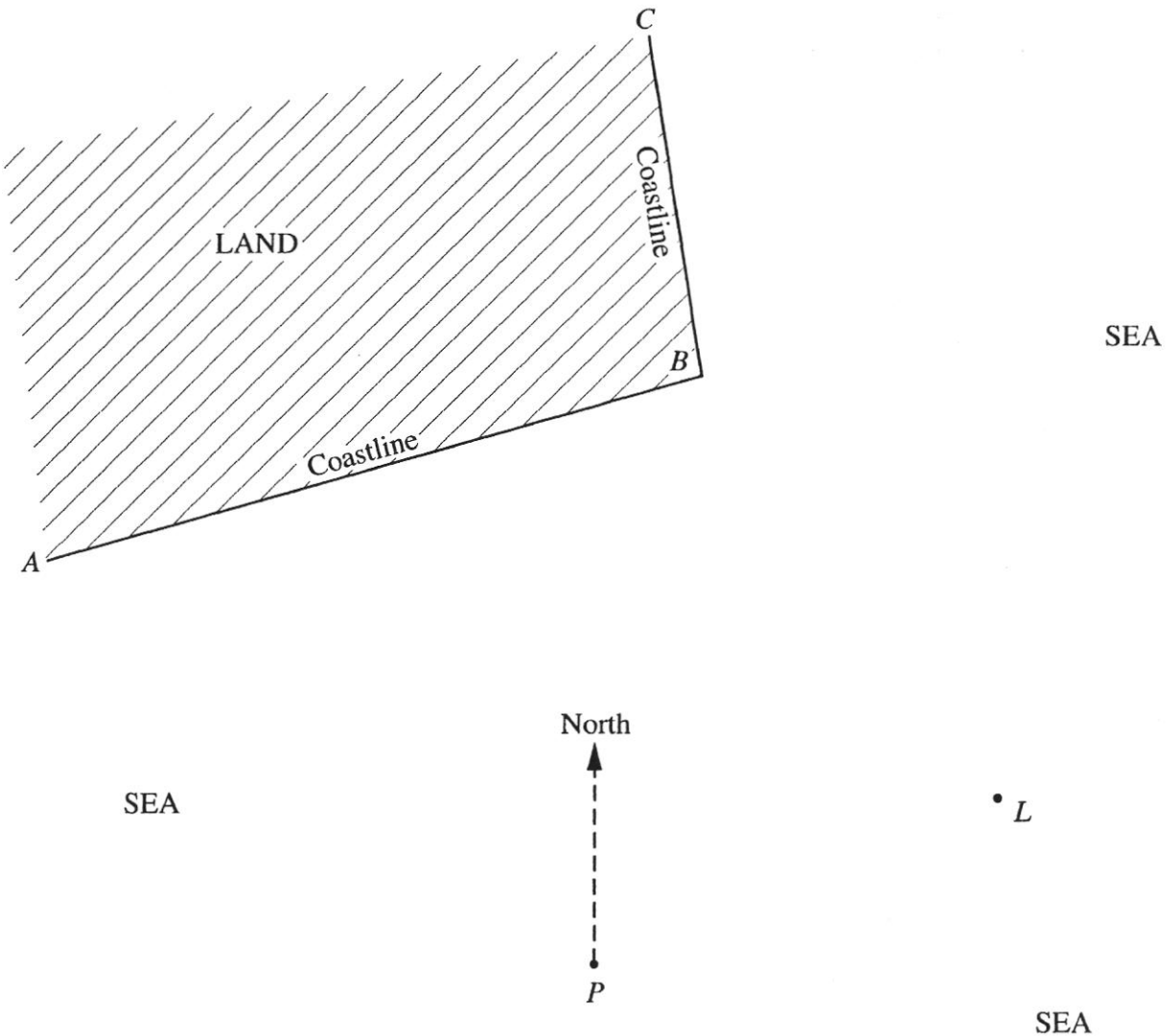


Three points, A , B and C , lie on a horizontal field.
 Angle $BAC = 75^\circ$ and the bearing of C from A is 217° .
 $AB = 72$ m and $AC = 60$ m.

- (a) Calculate
- the bearing of B from A ,
 - BC ,
 - angle ABC ,
 - the bearing of C from B .

- (b) A girl standing at B is flying a kite.
 The kite, K , is vertically above A .
 The string, BK , attached to the kite is at 24° to the horizontal.
 Calculate the angle of elevation of the kite when viewed from C . (N2005/2/8)

8. The diagram below is a map showing a coastline ABC , a lighthouse L and a point P .
 The map is drawn to a scale of 1 cm to 100 m.
 Ships must not sail within 200 m of the coastline nor within 200 m of the lighthouse.
- (a) Construct the locus of points 200 m from the lighthouse L .
 (b) Construct the locus of points 200 m from the coastline ABC .



- (c) Two ships sail from point P on bearings of θ_1° and θ_2° , such that $\theta_1 - \theta_2 \geq 10$.
 Both ships passed between B and L without breaking the 200 m limits.
 Find one possible pair of values for θ_1 and θ_2 .

(N2006/1/23)

9. In the diagram, the rectangle $ABCD$ represents a vertical cliff face. The bottom of the cliff, AB , runs from West to East, and is at sea level. A yacht is in the sea at Y . Angle $BAY = 75^\circ$, angle $AYB = 63^\circ$ and $AB = 35$ m.

- Find the bearing of Y from B . 228°
- Show that $BY = 37.9$ m, correct to three significant figures.
- Calculate the area of triangle ABY . 443.8 m^2
- Calculate the shortest distance from the yacht to the cliff.
- The angle of depression of the yacht when viewed from C is 18° .
 - Find the height of the cliff.
 - Calculate the greatest possible value of the angle of elevation of the top of the cliff when viewed from the yacht. (N2007/2/7)

