

BEARINGS PROBLEMS USING TRIGONOMETRY

1) Ayton is 60 miles due North of Oxford, and Beeton is 80 miles due West. Calculate the bearing of Beeton from Ayton, and the distance between the two towns.

2) Draw coordinate axes and label them from 0 to 12 on each axis, using a scale of 1cm to 1 unit. Plot and label the following points: X (8,3), A (12,4), B (9,5), M (12,8), C (2,2). The graph represents a simplified map, on a scale of 1cm to 8 km, showing Oxford (X), Aylesbury, Bicester, Milton Keynes, and Cirencester.

- Calculate the bearing of Milton Keynes from Oxford.
- Calculate the bearing of Cirencester from Bicester.
- A light aircraft (P) is flying over Oxford in the direction of Milton Keynes, at 180 km per hour. If it is over Oxford at 1400 hours, at what time will it be over Milton Keynes?
- Draw a line on the map showing the path of this aircraft, and mark on the line the position of the aircraft at 1405, 1410, and 1415.
- Another light aircraft (Q) passes over Cirencester at 1400, travelling in the direction of Aylesbury at 150km/hr. Draw a line showing the path of this aircraft, and mark on the line its position at 1405, 1410 and 1415.
- By measuring, find the distance which the two aircraft are apart at 1410, and the bearing of aircraft Q from aircraft P at this time.

3) A and B are two coastguard stations. B is 20km due east of A. At 1500 hours a ship is observed at sea at point X, on a bearing of 056° from A and 326° from B. Make an accurate scale drawing using a scale of 1cm to 2 km.

- What is angle AXB? Explain why.
- Calculate the distance of the ship from B. Check by measuring.
- The ship is sailing due east at 8km/hr. After a time it reaches point Y which is due north of B. Show this on the scale drawing, and find:
 - How long the ship takes to sail from X to Y.
 - the bearing of the ship from A at this point.

4) Draw axes and label them from 0 to 12 on each axis. Use a scale of 1cm to 1 unit. Plot and label the points A (3,1), B (7,9), C (6,12) and D (10,12). A and D represent the start and finish of a walk, B and C represent landmarks.

- A walker sets out from A, heading directly for B. He continues in this direction until he reaches a point due south of C. He then heads directly for C, until he is north west of B, at which point he turns and heads directly for D. Show his route on the map.
- Calculate the bearing which the walker is travelling on along the first part of the walk.
- By measuring, estimate the total length of the walk.
- Mark on the map the point at which the walker is closest to C. On what bearing would he have to walk to reach C from this point?

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