Practice worksheet | Practical trigonometry

Non-right-triangle surveying/navigation problems

Name: _____ Date: _____

6 questions | 17 marks

1. A 40 m baseline AB has a point P to one side. Angle $PAB = 35^\circ$ and $PBA = 65^\circ$. Find AP. [3 marks]

2. Routes from a depot have bearings 020° and 110°. Points 12 km and 16 km along them are joined. Find the joining distance. [2 marks]

3. A triangular plot has sides 30 m and 42 m enclosing 55°. Find its area to one decimal place. [2 marks]

4. Two ground-level observers and the tower base lie on the same straight level line. Both observers are on one side of the tower, 20 m apart. The nearer elevation is 60° and the farther 30°. Find the tower height. [4 marks]

5. P is 20 km from O on bearing 350°. Q is 15 km from O on bearing 030°. Find the smaller angle POQ and PQ. [3 marks]

6. A survey assumes level ground, but a measured baseline slopes up a hill. Explain why its sloping length cannot automatically replace a horizontal baseline. [3 marks]