1. Solve each triangle. Round answers to the nearest tenth, if necessary.
   a) In \( \triangle ABC \), \( \angle A = 90^\circ \), \( a = 2.5 \text{ m} \), and \( c = 1.6 \text{ m} \).
   b) In \( \triangle DEF \), \( \angle E = 90^\circ \), \( \angle F = 31.8^\circ \), and \( d = 50.2 \text{ cm} \).

2. Find the length of \( DE \), to the nearest tenth of a centimetre.

3. The point \((-12, 9)\) lies on the terminal arm of an angle \( \theta \) in standard position. Find \( \sin \theta \) and \( \cos \theta \).

4. Evaluate, to four decimal places.
   a) \( \sin 82.3^\circ \)
   b) \( \cos 19.9^\circ \)
   c) \( \sin 149.5^\circ \)
   d) \( \cos 159.2^\circ \)

5. Find \( \angle A \), to the nearest tenth of a degree, if \( 0^\circ \leq A \leq 180^\circ \).
   a) \( \sin A = 0.6678 \)
   b) \( \cos A = -0.5519 \)

6. If the cosine of an angle is \(-0.4328\), can the angle be acute? Explain.

7. If the sine of an angle is \(0.3781\), can the angle be obtuse? Explain.

8. Solve each triangle. Round each answer to the nearest tenth, if necessary.
   a)
   b)
   c)
   d)
e) In \( \triangle ABC \), \( a = 38.4 \text{ m}, \ b = 25.2 \text{ m}, \) and \( c = 19.3 \text{ m}. \)
f) In \( \triangle GHI \), \( \angle G = 98.8^\circ, \ g = 42.7 \text{ cm}, \) and \( h = 30.1 \text{ cm}. \)

9. Inaccessible cliff To measure the height, \( XY \), of an inaccessible cliff, a surveyor recorded the data shown. If the height of the theodolite used was 1.7 m, find the height of the cliff, to the nearest tenth of a metre.

10. Determine the number of triangles that could be drawn with the given measures. Then, find the measures of the other angles and the other side in each possible triangle. Round side lengths to the nearest tenth of a unit and angle measures to the nearest tenth of a degree, where necessary.
   a) \( \triangle ABC \), where \( \angle A = 125^\circ, \ a = 3 \text{ m}, \ b = 5 \text{ m} \)
   b) \( \triangle STU \), where \( \angle S = 29^\circ, \ s = 3.5 \text{ cm}, \ t = 6 \text{ cm} \)
   c) \( \triangle XYZ \), where \( \angle X = 96.3^\circ, \ x = 2.5 \text{ m}, \ y = 0.8 \text{ m} \)
   d) \( \triangle FGH \), where \( \angle G = 41.7^\circ, \ g = 7.2 \text{ cm}, \ h = 9.9 \text{ cm} \)

11. The distance between the centres of the circles, A and B, is 60 m. Each circle has a radius of 40 m. Point C lies on the circle with centre B. \( \angle BAC = 41^\circ \). What are the possible lengths of AC, to the nearest metre?

12. A plane leaves an aircraft carrier and flies due north at 500 km/h. The aircraft carrier proceeds 30° west of south at 35 km/h. If the plane has enough fuel for 4 h of flying, what is the maximum distance north it can fly, so that the fuel remaining will allow a safe return to the aircraft carrier?