Non-right-triangle area

6 questions | 18 marks

Equivalent correct methods earn the corresponding marks.

1. Find area from sides 7 cm,10 cm and included angle 30°. [3 marks]

$K = 35(\frac{1}{2}) = 17.5$.

Answer: 17.5 cm²

2. Find area from sides 6 cm,8 cm and included angle 60° exactly. [3 marks]

$K = 24(\frac{\sqrt{3}}{2})$.

Answer: $12\sqrt{3}\ \text{cm}^2$

3. Find exact area for sides 9 m,14 m and included angle 45°. [3 marks]

$K = 63\sin 45^\circ = \frac{63\sqrt{2}}{2}$.

Answer: $\frac{63\sqrt{2}}{2}\ \text{m}^2$

4. Sides 4 cm and 10 cm enclose an obtuse angle. Area is 10 cm². Find the angle. [3 marks]

$\sin C = \frac{10}{20} = \frac{1}{2}$.

Select the obtuse supplementary solution.

Answer: 150°.

5. A sail has sides 3.5 m and 4 m meeting at 75°. Find area to two decimal places. [3 marks]

$K = 7\sin 75^\circ \approx 6.76148$.

Answer: 6.76 m²

6. Can sides 6 cm and 8 cm enclose area 25 cm²? Explain. [3 marks]

$K \le \frac{1}{2}(6)(8) = 24$.

Answer: No; maximum area is 24 cm².