# Checking possible solutions

6 questions | 16 marks

Equivalent correct methods earn the corresponding marks.

**1.** Can lengths 7, 9 and 17 form a triangle? Explain. [2 marks]

$7+9=16<17$, violating triangle inequality.

**Answer:** No.

**2.** $A=30^\circ$, $a=10$ and $b=14$. How many triangles fit, and what are the candidate angles B? [3 marks]

$\sin B=0.7$.

Both candidates leave a positive third angle.

**Answer:** Two; $B\approx 44.4^\circ$ or $135.6^\circ$.

**3.** $A=50^\circ$, $a=8$ and $b=13$. Explain the absence of a real inverse-sine result. [3 marks]

$\sin B=\frac{13\sin 50^\circ}{8}\approx 1.245>1$.

This is impossible geometry, not insufficient calculator precision.

**Answer:** The data are inconsistent; no triangle exists.

**4.** A triangle has $A = 80^\circ$ and $B = 40^\circ$. Which of a and b must be longer? [2 marks]

Larger angle A faces longer side a.

**Answer:** a

**5.** A length calculation gives 18.76491 m. Round to one decimal place and explain whether to round each intermediate value too. [3 marks]

The hundredths digit is 6.

Early rounding may change the final result.

**Answer:** 18.8 m; keep intermediate precision.

**6.** A proposed solution gives angles $60^\circ$, $70^\circ$ and $55^\circ$. State a check that rejects it. [3 marks]

$60 + 70 + 55 = 185$.

Recalculate before accepting its side lengths.

**Answer:** Their sum is $185^\circ$, not $180^\circ$.