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. $A=30°$, $a=10$ 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; $B\approx44.4°$ or $135.6°$.

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

$\sin B=13\sin50°/8\approx1.245>1$.

This is impossible geometry, not insufficient calculator precision.

Answer: The data are inconsistent; no triangle exists.

4. A triangle has A=80° and B=40°. 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°, 70° and 55°. State a check that rejects it. [3 marks]

60+70+55=185.

Recalculate before accepting its side lengths.

Answer: Their sum is 185°, not 180°.