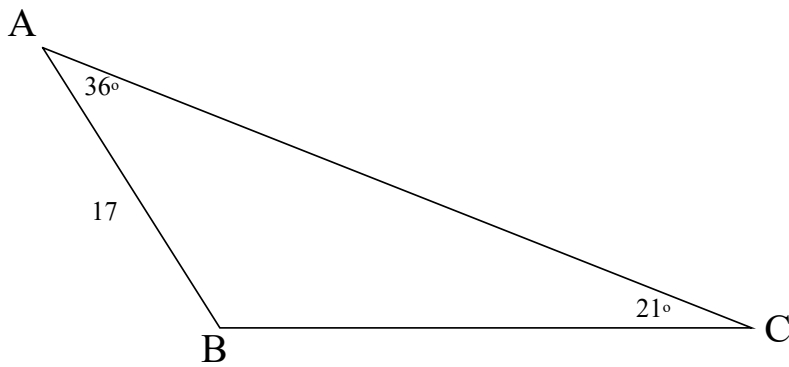


Solve Triangle ABC



Is it possible to solve this triangle? Why or why not?

Chapter 3- Acute Triangle Trigonometry

3.1- The Sine Law

Goal: Introduce the sine law as a method of solving non-right angled triangles using trigonometry.

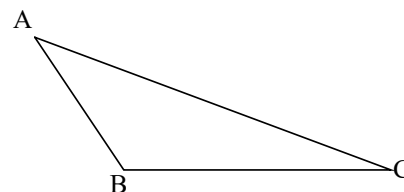
Non-right angled triangles.

- SOH CAH TOA and the Pythagorean theorem only applies to **right triangles**.
- For non-right triangles, we need new tools: **this is where the sine law and the cosine law come in.**

Labelling Triangles

Remember an angle and the side opposite of it have the same label.

- Sides are lower case and angles are UPPER CASE.



Sine Law:

When finding an angle:

$$\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$$

When finding a side:

$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

Proof: using the following diagram, prove the sine law.

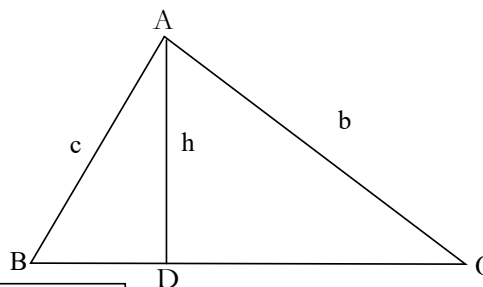
Sin C =

Rearranged

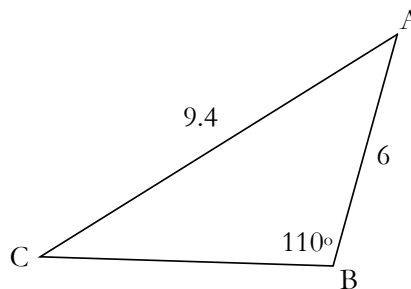
Sin B =

Rearranged

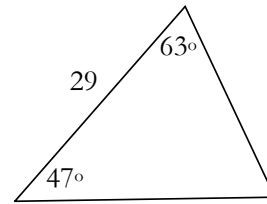




Example 1: Find C and a



Example 2: Identify which side can be found using sine law and calculate its value:



Example 3: $\triangle ABC$ has the following angle and side lengths: $b = 58$ cm, $B = 38^\circ$ and $A = 72^\circ$. Draw and label a diagram, then determine the length of a and the measure of C .

You try: A surveyor measures a base line PQ 440 m long. He takes measurements of a landmark R from P and Q and finds that $\angle QPR=46^\circ$ and $\angle PQR = 75^\circ$

a) Calculate the perimeter of $\triangle PQR$ to the nearest metre.

Assignment Pg 124 # 2, 3ad, 6bd