**APPLICATIONS OF TRIGONOMETRY**

• **When can we use Sine Law?**



The Sine Law can be used when we have a side length opposite a known angle and another side length or angle

• **When can we use Cosine Law?**



 The Cosine Law can be used when we have a contained angle or all three-side lengths





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9

ex: 1. In acute , , , and . Find the measure of , to the nearest unit.

Keys to solving word problems

1. Read the problem carefully
2. **Sketch a diagram** and record your known measurements in the appropriate places.
3. Identify unknown.
4. Use triangle relationships to determine the unknown measures.

**Example 1**: Lynn and Fred, standing 2 000 metres apart, spotted a hot air balloon at angles of elevation of 50° and 70° respectively. The hot air balloon is located between them. What is the distance from Fred directly to the hot air balloon? Show your work.

**Example 2:** A triathlon is an event that has competitors swim, run, and bicycle over a set course. The organizers of a triathlon wish to know the total length of the course and took the measurements shown.

Determine the total length of the course, represented in the diagram by the arrows.



**Example 3**: Determine lengths a and b

b D

C



8cm

a





A 6cm B