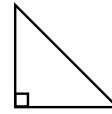


4.4 Problems in Two Dimensions

Review

Right triangle problems → SOH CAH TOA



Oblique triangle problems → Sine Law
Cosine Law



Sine law

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

Used when:

- i) two sides and an opposite angle are known
- ii) two angles and one side are known

Cosine Law

$$a^2 = b^2 + c^2 - 2bc \cos A$$

$$b^2 = a^2 + c^2 - 2ac \cos B$$

$$c^2 = a^2 + b^2 - 2ab \cos C$$

Used When:

- two sides and a contained angle are known

$$\cos A = \frac{b^2 + c^2 - a^2}{2bc}$$

$$\cos B = \frac{a^2 + c^2 - b^2}{2ac}$$

$$\cos C = \frac{a^2 + b^2 - c^2}{2ab}$$

Used When:

- all three sides are known

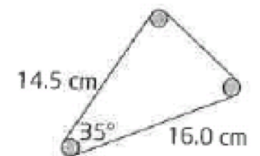
Example 1: Jonathan needs a new rope for his flagpole but is unsure of the length required. He measures a distance of 10m away from the base of the pole. From this point, the angle of elevation to the top of the pole is 42° . What is the height of the pole, to the nearest tenth of a metre?

Example 2: Pam, Steven and Rachel are standing on a soccer field. Steven and Rachel are 23m apart. From Steven's point of view, the other two are separated by 72° . From Pam's point of view, the others are separated by an angle of 55° .

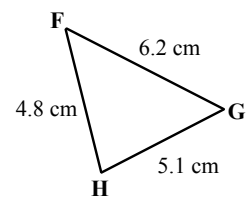
a) Sketch a diagram

b) Determine the distance from Pam to Rachel.

Example 3: A drive belt wraps around three pulleys as shown. Find the perimeter of the drive belt to the nearest tenth of a cm.



Example 4: Find the measure of angle G



Complete Worksheet