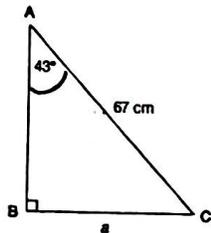


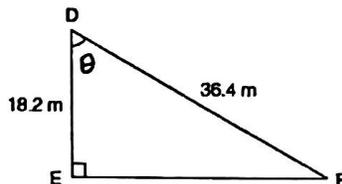
Day 1: Do you remember?

Primary Trigonometry Ratio: SOH CAH TOA



$$\sin 43^\circ = \frac{a}{67}$$

$$a = (67) \sin 43^\circ \\ \approx 45.69 \text{ cm}$$



$$\cos \theta = \frac{18.2}{36.4}$$

$$\cos \theta = \frac{1}{2}$$

$$\angle \theta = \cos^{-1}\left(\frac{1}{2}\right) = 60^\circ$$

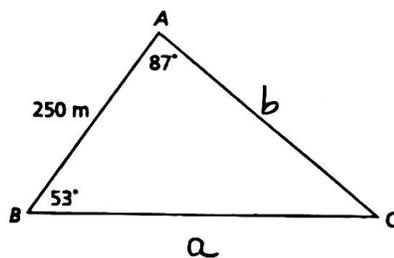
SINE LAW:

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

$$\angle C = 180^\circ - 87^\circ - 53^\circ = 40^\circ$$

$$\frac{a}{\sin 87^\circ} = \frac{250}{\sin 40^\circ}$$

$$a = \frac{250 \sin 87^\circ}{\sin 40^\circ} \approx 388.4 \text{ m}$$

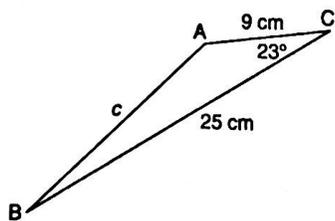


$$\frac{b}{\sin 53^\circ} = \frac{250}{\sin 40^\circ}$$

$$b = \frac{250 \sin 53^\circ}{\sin 40^\circ} \approx 310.6 \text{ m}$$

COSINE LAW:

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

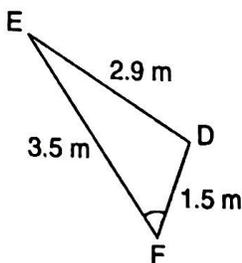


$$c^2 = 9^2 + 25^2 - 2(9)(25)(\cos 23^\circ)$$

$$c^2 = 291.773$$

$$c \approx 17.1 \text{ cm}$$

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



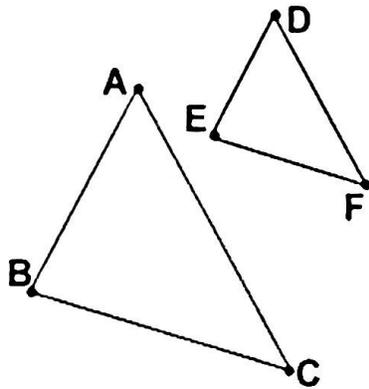
$$\cos F = \frac{3.5^2 + 1.5^2 - 2.9^2}{2(1.5)(3.5)}$$

$$\cos F = \frac{6.09}{10.5}$$

$$\angle F = 55^\circ$$

Which law to use? SAS, SSS: cosine law SSA, AAS: Sine law

Similar triangles:



1. Corresponding Angles are equal
2. Ratios of Corresponding sides are equal

$$\triangle ABC \sim \triangle DEF$$

$$\frac{AB}{DE} = \frac{AC}{DF} = \frac{BC}{EF}$$

$$\angle A = \angle D$$

$$\angle B = \angle E$$

$$\angle C = \angle F$$

DISTANCE BETWEEN 2 POINTS:

Distance between Two points (x_1, y_1) and (x_2, y_2) is: $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

- a) Find the distance between $P(2,5)$ and $Q(3,-1)$.

$$\begin{aligned} d &= \sqrt{(3-2)^2 + (-1-5)^2} \\ &= \sqrt{1^2 + (-6)^2} \\ &= \sqrt{37} \rightarrow \text{exact answer.} \end{aligned}$$

- b) Find the distance between $A(1, 2, 3)$ and $B(9, 8, 7)$

$$\begin{aligned} d &= \sqrt{(9-1)^2 + (8-2)^2 + (7-3)^2} \\ &= \sqrt{8^2 + 6^2 + 4^2} \\ &= \sqrt{64+36+16} = \sqrt{116} = \sqrt{4 \cdot 29} \\ &= 2\sqrt{29} \end{aligned}$$