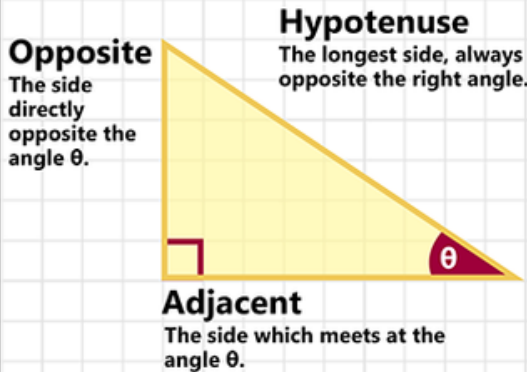


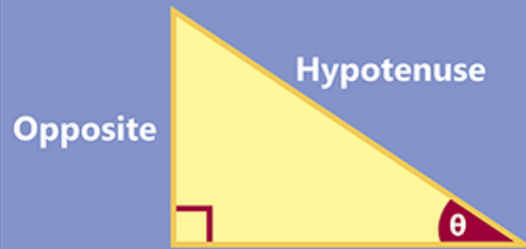
TRIGONOMETRY

The branch of mathematics dealing with the relations of the sides and angles of triangles and with the relevant functions of any angles.

For the angle labelled θ , each side of the triangle is given the labels below:

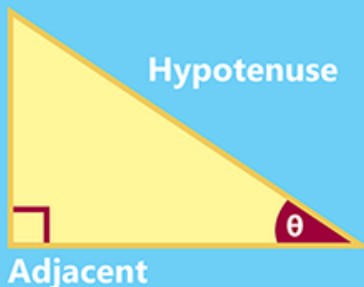


SINE (Sin)



$$\text{Sin}(\theta) = \frac{\text{OPPOSITE}}{\text{HYPOTENUSE}}$$

COSINE (Cos)



$$\text{Cos}(\theta) = \frac{\text{ADJACENT}}{\text{HYPOTENUSE}}$$

TANGENT (Tan)

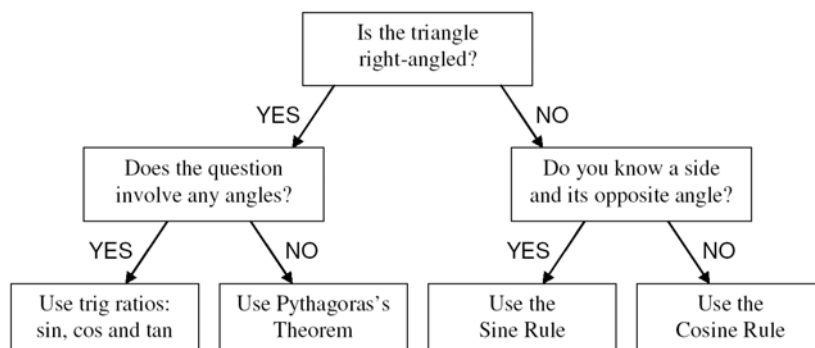


$$\text{Tan}(\theta) = \frac{\text{OPPOSITE}}{\text{ADJACENT}}$$

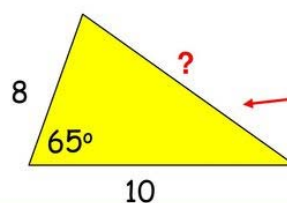
The best way of remember the rules is by using the phrase:

SOH-CAH-TOA

SINE OPPOSITE HYPOTENUSE COSINE ADJACENT HYPOTENUSE TANGENT OPPOSITE ADJACENT



A Nice Little Summary

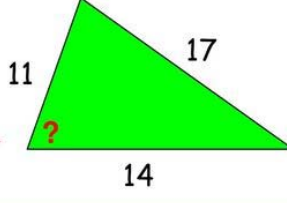


8
65°
10

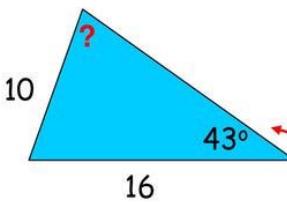
Cosine Rule

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

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



11
?
14
17

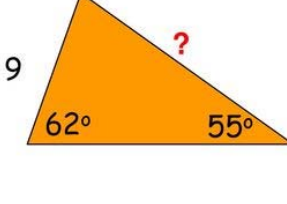


10
?
16
43°

Sine Rule

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

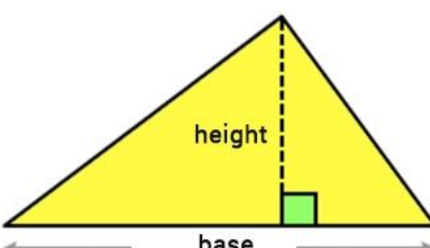
$$\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$$



9
62°
?
55°

	Finding Sides	Finding Angles
Cosine Rule	Need 2 sides and included angle	Need all 3 sides
Sine Rule	Need 2 angles and any side	Need 2 sides and an angle <u>not</u> included

Area Of A Triangle



height

base

$$\text{Area} = \frac{1}{2} \times \text{base} \times \text{perpendicular height}$$

Your Turn: Calculate the area of the triangle shown.

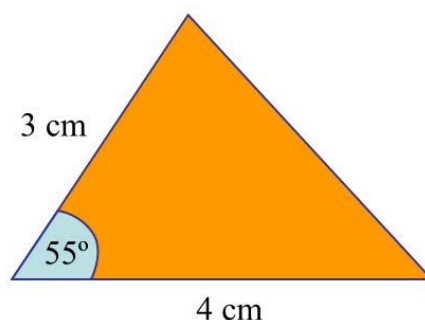
Give your answer correct to one decimal place.

$$\text{Area of triangle} = \frac{1}{2} ab \sin C$$

$$\text{Area} = \frac{1}{2} (3)(4) \sin 55^\circ$$

$$= 4.9149\dots$$

$$= 4.9 \text{ cm}^2$$



C must be the included angle