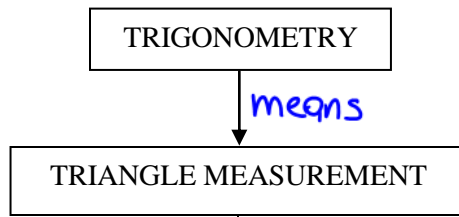


CORRECTION
 p2 #4 erase 32ft.



TRIG RATIOS
 $\sin\theta, \cos\theta, \tan\theta$

SOH CAH TOA

can be used to

calculate the:
 • lengths of sides and
 • measures of angles
 of RIGHT triangles

ROUNDING
 Sides = 1 d.p. (5.1cm)
 Angles = nearest degree (30°)

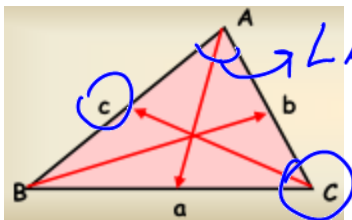
SINE LAW COSINE LAW

can be used to

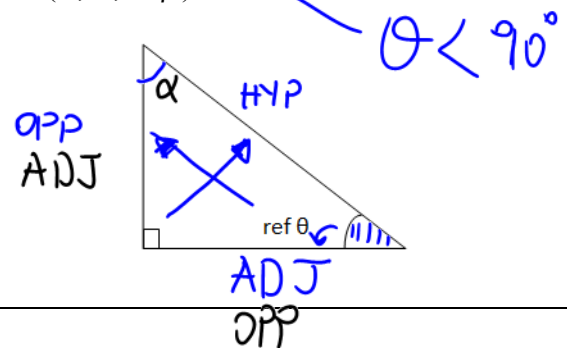
calculate the:
 • lengths of sides and
 • measures of angles
 in ANY TRIANGLE

LABELLING TRIANGLES

- To label any triangle, use:
 1. **CAPITAL** letters for the VERTICES (angle).
 2. Corresponding small letter for the sides opposite the corresponding angles.



Reference Angle is an acute angle used to label a right triangle. It can be represented by a **CAPITAL** letter or by a **SYMBOL** (A, θ , or β).



THE THREE PRIMARY TRIG RATIOS

The three primary trigonometric ratios are:

$\sin\theta = \frac{\text{Opposite}}{\text{Hypotenuse}}$

$\cos\theta = \frac{\text{Adjacent}}{\text{Hypotenuse}}$

$\tan\theta = \frac{\text{Opposite}}{\text{Adjacent}}$

θ = is the reference angles (acute angles)

Hint: Take the first letter of each word.

S=OH

C=AH

T=OA

cosecant

$\csc\theta = \frac{1}{\sin\theta}$

THREE PRIMARY RECIPROCAL TRIG RATIOS

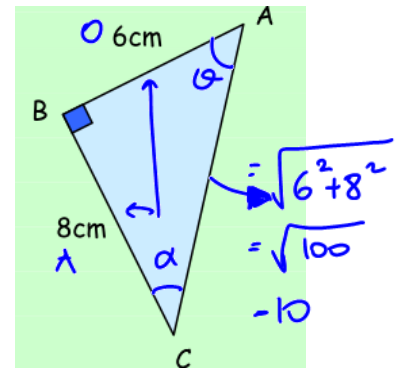
secant
 $\sec\theta = \frac{1}{\cos\theta}$

cotangent
 $\cot\theta = \frac{1}{\tan\theta}$

1. Determine the following ratios for the given right triangle.

a. $\cos A = \frac{A}{H}$
 $= \frac{6}{10}$
 $= \frac{3}{5}$

b. $\tan C = \frac{O}{A}$
 $= \frac{6}{8}$
 $= \frac{3}{4}$



2. Using your calculator, determine each trigonometric ratio to **FOUR decimal places**.

a. $\cos 32^\circ \doteq \underline{\underline{0.8480}}$

b. $\tan 75^\circ \doteq 3.7321$

c. $\sin 25^\circ \doteq 0.4226$

3. Determine the length of x in each triangle.

<p>Handwritten: $\cos 49 = \frac{x}{21.2} \cdot 21.2$ $13.9 = x$ $\therefore x \text{ is } 13.9 \text{ cm.}$</p>	<p>Handwritten: $\frac{\sin 37}{1} = \frac{15}{x}$ flip both sides $15 \cdot \frac{1}{\sin 37} = \frac{x}{15} \cdot 15$ $x = 24.9 \text{ cm}$ $\therefore x \text{ is } 24.9 \text{ cm.}$</p>
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4. Solve the triangle. (Solve in this context means to find out every unknown: sides and angles.)

	<p>Solving for q $\frac{\sin 57}{1} = \frac{35}{q}$ flip each side $35 \cdot \frac{1}{\sin 57} = \frac{q}{35} \cdot 35$ $41.7 = q$</p>	<p>Solving for p $p^2 = (41.7)^2 - (35)^2$ $\sqrt{p^2} = \sqrt{513.89}$ $p = 22.7$</p>
<p>Solving for α $\alpha = 180 - 90 - 57$ $\alpha = 33^\circ$</p>		<p>$\therefore q$ is 41.7 ft p is 22.7 ft and α is 33°</p>

Angle of Elevation & Depression



Terminology:

	Angle of Elevation	Angle of Depression
Definition	Angle of Elevation is the angle from the horizontal looking up to some object.	Angle of Depression is the angle from the horizontal looking down to some object.
Diagram		
	Angle of Elevation = Angle of Depression	

Ex1. A plane is coming down for a landing at YYZ. The angle of depression is 22° . The plane is 350 m from the ground. Determine the distance from the plane to the airport.

$$\tan 22 = \frac{350}{d}$$

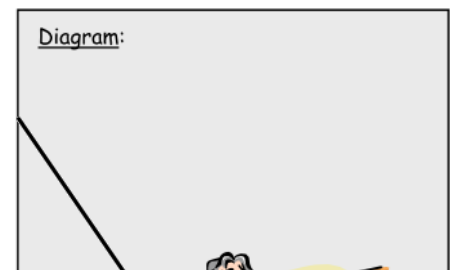
$$350 \cdot \frac{1}{\tan 22} = \frac{d}{350} \cdot 350$$

$$d = 866.3$$

\therefore It's 866.3m away.

Ex2. A carpenter leans a ladder against a wall at an angle of 68° . The distance from the foot of the ladder to the wall is 36 inches. Draw a diagram with the given information.

- How long is the ladder?
- How high up is the ladder?

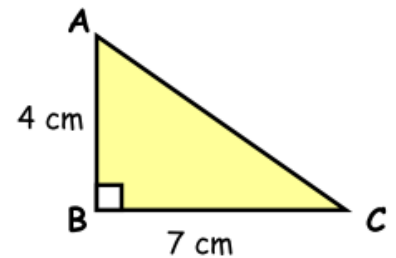


DETERMINING ANGLES USING TRIG RATIOS

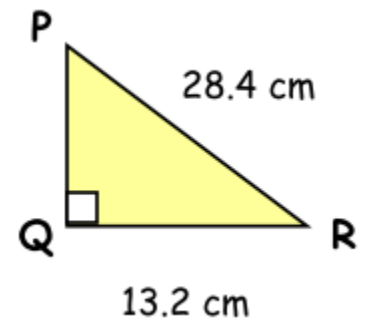
1. Determine the measure of each angle to the nearest degree.

a) $\sin A = 0.350$ $\angle A =$ _____	b) $\cos M = 0.8721$ $\angle M =$ _____	c) $\tan B = 3/4$ $\angle B =$ _____	d) $\sin X = 1/2$ $\angle X =$ _____
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2. Calculate the measure of $\angle A$ to the nearest degree.



3. Solve the triangle. (ROUNDING: Angles nearest degree, Sides one decimal place)



4. Suppose a tree 50 feet in height casts a shadow of length 60 feet. What is the **angle of elevation** from the end of the shadow to the top of the tree with respect to the ground?