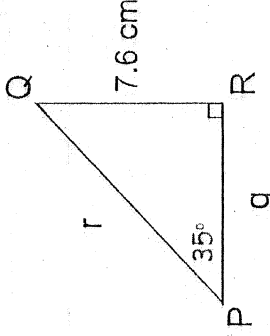
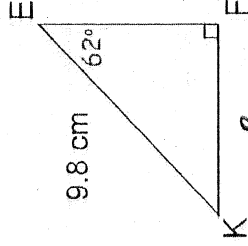


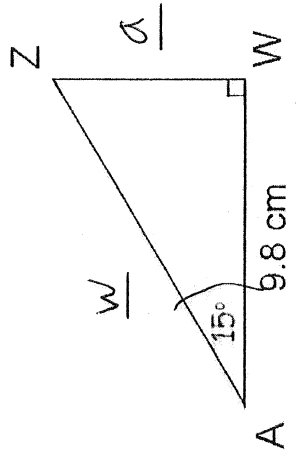
# Trigonometry – Day 2 – Solving for Sides in Right Triangles

sine	cosine	tangent
$\sin(\text{angle}) = \left(\frac{\text{opposite}}{\text{hypotenuse}}\right)$	$\cos(\text{angle}) = \left(\frac{\text{adjacent}}{\text{hypotenuse}}\right)$	$\tan(\text{angle}) = \left(\frac{\text{opposite}}{\text{adjacent}}\right)$

1. For each triangle below, determine the lengths of the missing sides and fill in the blanks.

 <p>Reference Angle: <math>P = 35^\circ</math></p> <p>opposite: 7.6    adjacent: q    hypotenuse: r</p> <p><u>Solve for side q.</u></p> $\tan(35) = \frac{7.6}{q}$ $0.7002 \leftarrow q$ $0.7002q = 7.6$ $\frac{0.7002q}{0.7002} = \frac{7.6}{0.7002}$ $q = 10.9 \text{ cm}$	 <p>Reference Angle: <math>E = 62^\circ</math></p> <p>opposite: e    adjacent: k    hypotenuse: f</p> <p><u>Solve for side k.</u></p> $\cos(62) = \frac{k}{9.8}$ $0.4695 \leftarrow k$ $0.4695(9.8) = k$ $4.6011 = k$ $k = 4.6 \text{ cm}$
<p><u>Solve for side r.</u></p> $\sin(35) = \frac{7.6}{r}$ $0.5736 \leftarrow r$ $0.5736r = 7.6$ $\frac{0.5736r}{0.5736} = \frac{7.6}{0.5736}$ $r = 13.2 \text{ cm}$	<p><u>Solve for side e.</u></p> $\sin 62^\circ = \frac{e}{9.8}$ $0.8829 = \frac{e}{9.8}$ $e = 8.7$

2. For the triangle given, determine the lengths of the missing sides. Show your work!



Solve for a

~~$$\sin 15^\circ = \frac{a}{9.8}$$~~

$$\tan 15^\circ = \frac{a}{9.8}$$

$$0.2679 = \frac{a}{9.8}$$

$$a = 2.6 \text{ cm}$$

Solve for w

$$\cos 15^\circ = \frac{9.8}{w}$$

$$0.9659 = \frac{9.8}{w}$$

$$\frac{0.9659w}{0.9659} = \frac{9.8}{0.9659}$$

$$w = 10.1 \text{ cm}$$

3. For the triangles given below, determine the lengths of the missing sides. Show your work.

Solve for side g

$$\tan 72^\circ = \frac{112.4}{g}$$

$$\sin 72^\circ = \frac{112.4}{V}$$

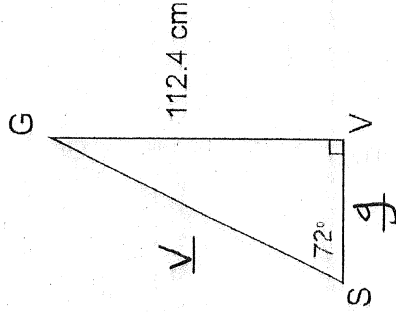
g

$$3.0777g = 112.4$$

$$0.9511 = \frac{112.4}{V}$$

$$\frac{0.9511V = 112.4}{0.9511} = \frac{112.4}{0.9511}$$

$$V = 118.2 \text{ cm}$$



Solve for side m

$$\cos 45^\circ = \frac{m}{38.5}$$

$$0.7071 = \frac{m}{38.5}$$

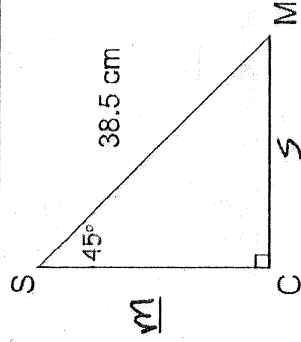
$$m = 27.2 \text{ cm}$$

Solve for side s

$$\sin 45^\circ = \frac{s}{38.5}$$

$$0.7071 = \frac{s}{38.5}$$

$$s = 27.2 \text{ cm}$$



Solve for side a

$$\tan 81^\circ = \frac{a}{2.7}$$

$$6.3138 = \frac{a}{2.7}$$

$$a = 17.0 \text{ cm}$$

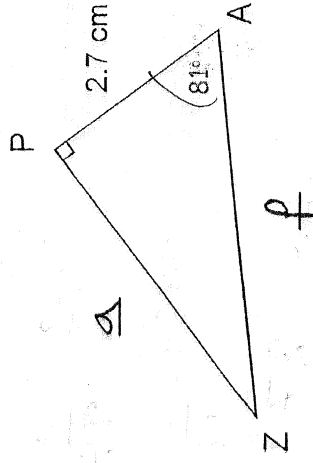
Solve for side p

$$\cos 81^\circ = \frac{2.7}{p}$$

$$0.1564 = \frac{2.7}{p}$$

$$\frac{0.1564p = 2.7}{0.1564} = \frac{2.7}{0.1564}$$

$$p = 17.3 \text{ cm}$$



4. In triangle PBJ, angle J = 90°, angle P = 22° and side j = 37 m.

Sketch a diagram of this triangle and determine the lengths of sides p and b.

Solve for side b

$$\cos 22^\circ = \frac{b}{37}$$

$$0.9272 = \frac{b}{37}$$

$$b = 34.3 \text{ m}$$

Solve for side p

$$\sin 22^\circ = \frac{p}{37}$$

$$0.3746 = \frac{p}{37}$$

$$p = 13.9 \text{ m}$$

