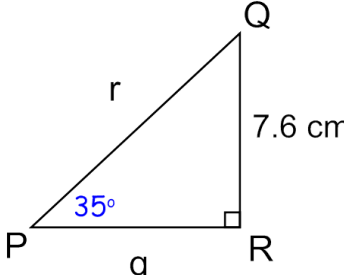
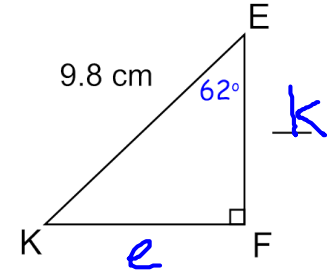


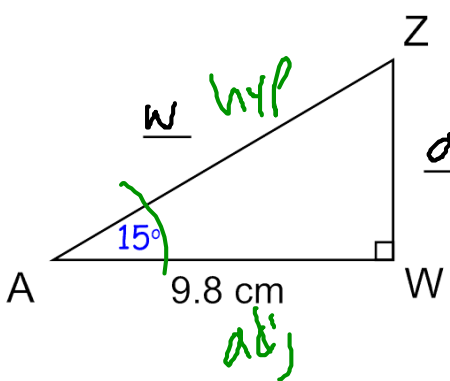
Trigonometry – Solving for Sides in Right Triangles

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.

<div style="text-align: center;">  </div> <p style="text-align: center;">Reference Angle: P = 35°</p> <p>opposite: 7.6 adjacent: q hypotenuse: r</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 5px;"> <p style="text-align: center;"><u>Solve for side q.</u></p> $\tan(35) = \frac{7.6}{q}$ $0.7002 = \frac{7.6}{q}$ $0.7002q = 7.6$ $\frac{0.7002q}{0.7002} = \frac{7.6}{0.7002}$ $q = 10.9 \text{ cm}$ </td> <td style="width: 50%; padding: 5px;"> <p style="text-align: center;"><u>Solve for side r.</u></p> $\sin(35) = \frac{7.6}{r}$ $0.5736 = \frac{7.6}{r}$ $0.5736r = 7.6$ $\frac{0.5736r}{0.5736} = \frac{7.6}{0.5736}$ $r = 13.2 \text{ cm}$ </td> </tr> </table>	<p style="text-align: center;"><u>Solve for side q.</u></p> $\tan(35) = \frac{7.6}{q}$ $0.7002 = \frac{7.6}{q}$ $0.7002q = 7.6$ $\frac{0.7002q}{0.7002} = \frac{7.6}{0.7002}$ $q = 10.9 \text{ cm}$	<p style="text-align: center;"><u>Solve for side r.</u></p> $\sin(35) = \frac{7.6}{r}$ $0.5736 = \frac{7.6}{r}$ $0.5736r = 7.6$ $\frac{0.5736r}{0.5736} = \frac{7.6}{0.5736}$ $r = 13.2 \text{ cm}$	<div style="text-align: center;">  </div> <p style="text-align: center;">Reference Angle: 62°</p> <p>opposite: <u>e</u> adjacent: <u>k</u> hypotenuse: <u>9.8</u></p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 5px;"> <p style="text-align: center;"><u>Solve for side k.</u></p> $\cos(62) = \frac{k}{9.8}$ $0.4695 = \frac{k}{9.8}$ $0.4695(9.8) = k$ $4.6011 = k$ $k = 4.6 \text{ cm}$ </td> <td style="width: 50%; padding: 5px;"> <p style="text-align: center;"><u>Solve for side e.</u></p> $\sin 62^\circ = \frac{e}{9.8}$ $e = 9.8 \times \sin 62^\circ$ $e = 8.7 \text{ cm}$ </td> </tr> </table>	<p style="text-align: center;"><u>Solve for side k.</u></p> $\cos(62) = \frac{k}{9.8}$ $0.4695 = \frac{k}{9.8}$ $0.4695(9.8) = k$ $4.6011 = k$ $k = 4.6 \text{ cm}$	<p style="text-align: center;"><u>Solve for side e.</u></p> $\sin 62^\circ = \frac{e}{9.8}$ $e = 9.8 \times \sin 62^\circ$ $e = 8.7 \text{ cm}$
<p style="text-align: center;"><u>Solve for side q.</u></p> $\tan(35) = \frac{7.6}{q}$ $0.7002 = \frac{7.6}{q}$ $0.7002q = 7.6$ $\frac{0.7002q}{0.7002} = \frac{7.6}{0.7002}$ $q = 10.9 \text{ cm}$	<p style="text-align: center;"><u>Solve for side r.</u></p> $\sin(35) = \frac{7.6}{r}$ $0.5736 = \frac{7.6}{r}$ $0.5736r = 7.6$ $\frac{0.5736r}{0.5736} = \frac{7.6}{0.5736}$ $r = 13.2 \text{ cm}$				
<p style="text-align: center;"><u>Solve for side k.</u></p> $\cos(62) = \frac{k}{9.8}$ $0.4695 = \frac{k}{9.8}$ $0.4695(9.8) = k$ $4.6011 = k$ $k = 4.6 \text{ cm}$	<p style="text-align: center;"><u>Solve for side e.</u></p> $\sin 62^\circ = \frac{e}{9.8}$ $e = 9.8 \times \sin 62^\circ$ $e = 8.7 \text{ cm}$				

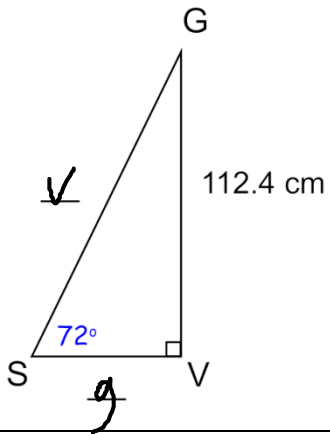
2. For the triangle given, determine the lengths of the missing sides. **Show your work!**



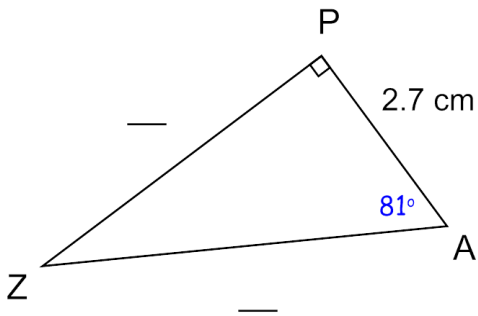
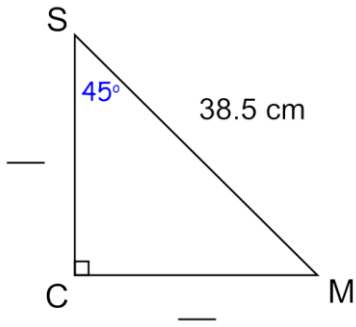
$\cos 15^\circ = \frac{9.8}{w}$
 $0.9659 = \frac{9.8}{w}$
 $w = \frac{9.8}{0.9659} = 10.1 \text{ cm}$

$\tan 15^\circ = \frac{a}{9.8}$
 $a = 9.8 \times \tan 15^\circ$
 $a = 2.6 \text{ cm}$

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



✓ | g



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.