

1.4 Primary Trig Ratios - Solving for a Missing Side

1) Solve the following equations.

a) $\frac{x}{4} = 20$

$$x = 4(20)$$

$$= 80$$

b) $\frac{12}{x} = 3$

$$12 = 3x$$

$$\frac{12}{3} = x$$

$$x = 4$$

c) $0.9848 = \frac{x}{5}$

$$5(0.9848) = x$$

$$x = 4.9$$

2) Evaluate each of the following trig ratios, to four decimal places.

a) $\tan 45^\circ = 1$

b) $\cos 44^\circ = 0.72$

c) $\sin 80^\circ = 0.9848$

3) Determine the side measure, to 1 decimal place, for the following trig ratios.

a) $\tan 52 = \frac{x}{4}$

$$1.2799 = \frac{x}{4}$$

$$4(1.2799) = x$$

$$x = 5.1196$$

$$\approx 5.1$$

$$4 \cdot \tan 52^\circ = x$$

$$x \approx 5.1$$

b) $\cos 78 = \frac{8}{x}$

$$0.2079 = \frac{8}{x}$$

$$x(0.2079) = 8$$

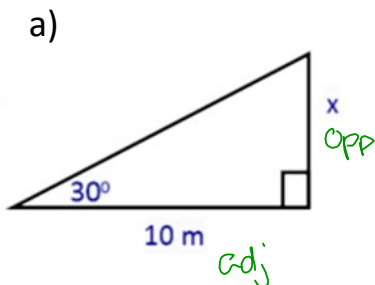
$$x = \frac{8}{0.2079}$$

$$x \approx 38.5$$

$$x = \frac{8}{\cos 78^\circ}$$

$$\approx 38.5$$

4) Determine the unknown side lengths.



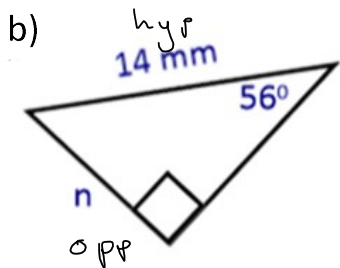
$$\tan \theta = \frac{\text{opp}}{\text{adj}}$$

$$\tan 30^\circ = \frac{x}{10}$$

$$10 \tan 30^\circ = x$$

$$x \approx 5.7735$$

$$\approx 5.8$$



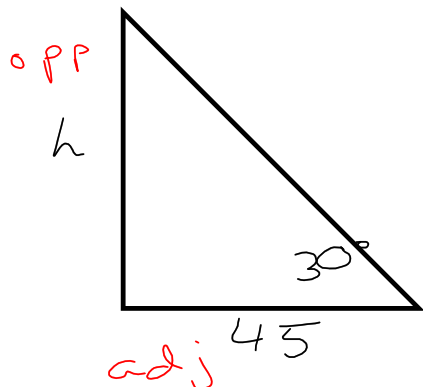
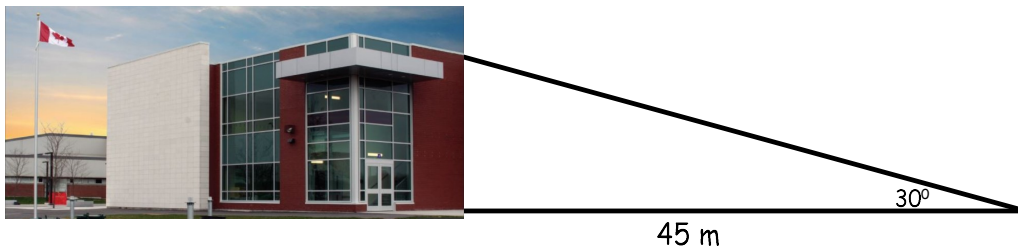
$$\sin \theta = \frac{\text{opp}}{\text{hyp}}$$

$$\sin 56^\circ = \frac{n}{14}$$

$$n = 14 (\sin 56^\circ)$$

$$\approx 11.6$$

5) From a point 45 m from the base of WCSS the angle of elevation to the top of the school is 30° . What is the height of the school to the nearest metre?



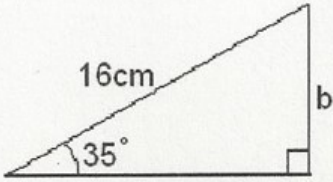
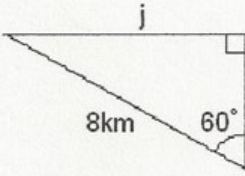
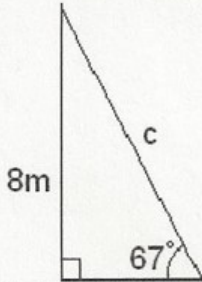

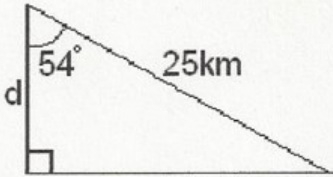
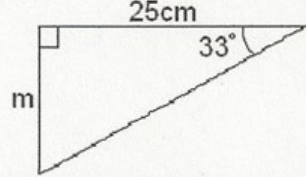
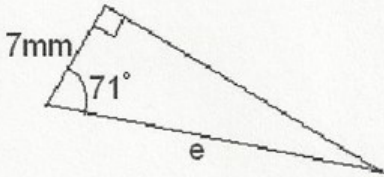
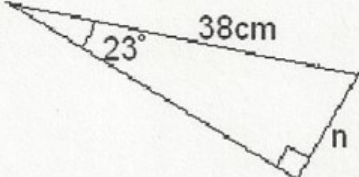
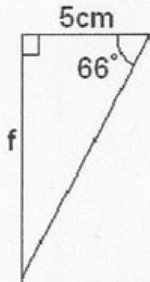
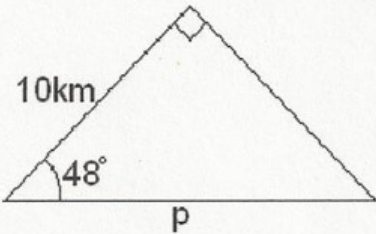
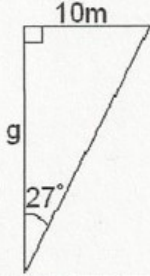
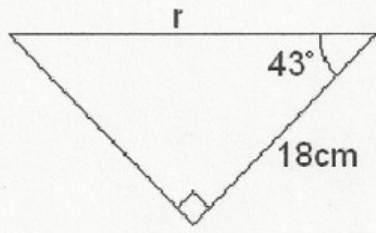
$$\tan \theta = \frac{\text{opp}}{\text{adj}}$$

$$\tan 30^\circ = \frac{h}{45}$$

$$h = (\tan 30^\circ) 45$$

$$\approx 25.9$$

1.4 Primary Trig Ratios -Solving for an Unknown Side Student.notebook September 15, 2022

<p>1.</p> 	<p>7.</p> 
<p>2.</p> 	<p>8.</p> 
<p>3.</p> 	<p>9.</p> 
<p>4.</p> 	<p>10.</p> 
<p>5.</p> 	<p>11.</p> 
<p>6.</p> 	<p>12.</p> 

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1. $\sin 35^\circ = \frac{b}{16}$
 $16 \sin 35^\circ = b$
 $b \approx 9.2 \text{ cm}$

7. $\sin 60^\circ = \frac{j}{8}$
 $8 \sin 60^\circ = j$
 $j \approx 6.9 \text{ km}$

*2. $\sin 67^\circ = \frac{8}{c}$
 $c = \frac{8}{\sin 67^\circ}$
 $c \approx 8.7 \text{ m}$

8. $\cos 79^\circ = \frac{k}{15}$
 $15 \cos 79^\circ = k$
 $2.9 \text{ mm} \approx k$

3. $\cos 54^\circ = \frac{d}{25}$
 $25 \cos 54^\circ = d$
 $d \approx 14.7 \text{ km}$

9. $\tan 33^\circ = \frac{m}{25}$
 $25 \tan 33^\circ = m$
 $m \approx 16.2 \text{ cm}$

*4. $\cos 71^\circ = \frac{7}{e}$
 $e = \frac{7}{\cos 71^\circ}$
 $e \approx 21.5 \text{ mm}$

10. $\sin 23^\circ = \frac{n}{38}$
 $38 \sin 23^\circ = n$
 $14.8 \text{ cm} \approx n$

5. $\tan 66^\circ = \frac{f}{5}$
 $5 \tan 66^\circ = f$
 $f \approx 11.2 \text{ cm}$

11.* $\cos 48^\circ = \frac{10}{p}$
 $p = \frac{10}{\cos 48^\circ}$
 $14.9 \text{ km} \approx p$

*6. $\tan 27^\circ = \frac{10}{g}$
 $g = \frac{10}{\tan 27^\circ}$
 $g \approx 19.6 \text{ m}$

12.* $\cos 43^\circ = \frac{18}{r}$
 $r = \frac{18}{\cos 43^\circ}$
 $r \approx 24.6 \text{ cm}$

Homework

Set 1: p. 362 #3ce,7cd,13

p. 372 #3fg, 4fg,6e,7k,10ab,11cf,15

Set 2: p. 362#3c,7c,13,16

p. 372 #3f,4f,6e,7k,10ab,11cf,21