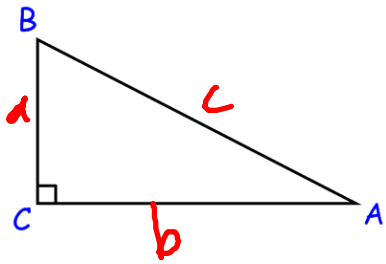
Name: _____

MAP4C – Trigonometry Review Part 1

1. Fill in the blanks. SOH CAH TOA

   Use the word bank below to fill in the blanks. Some words will be used more than once.

sin (angle) = $\frac{\text{opposite}}{\text{hypotenuse}}$		If the reference angle is A a is the _____ b is the _____ c is the _____
cos (angle) = $\frac{\text{adjacent}}{\text{hypotenuse}}$		
tan (angle) = $\frac{\text{opposite}}{\text{adjacent}}$		
Word Bank: opposite, adjacent, hypotenuse		

2. Evaluate on a calculator. **Round to 4 decimal places.**

   Note: ensure your calculator is set to **degrees** by evaluations sin 45 → answer should be 0.7071

sin 30° = 0.5	cos 25° = 0.9063	tan 60° = 1.7321
sin 72° = 0.9511	cos 47° = 0.6820	tan 15° = 0.2679

3. Use your calculator to solve for the indicated angle. **Round to the nearest whole degree.**

   Remember: When you are solving for an angle use the $\sin^{-1}$, $\cos^{-1}$ and $\tan^{-1}$ buttons!

sin A = 0.9063 $A = \sin^{-1}(0.9063)$ $A = 65°$	cos B = 0.3746 $B = \cos^{-1}(0.3746)$ $B = 68°$	tan C = 2.7286 $C = \tan^{-1}(2.7286)$ $C = 70°$
sin D = 0.6231 $D = \sin^{-1}(0.6231)$ $D = 39°$	cos E = 0.8524 $E = \cos^{-1}(0.8524)$ $E = 32°$	tan F = 1.0000 $F = \tan^{-1}(1.0000)$

4. Solve for the indicated angle. Show your intermediate step.

Round your final answer to the nearest whole degree.

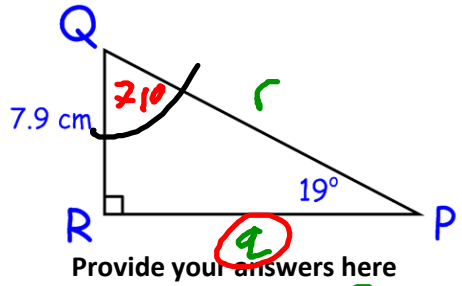
$\sin G = \frac{4.6}{8.3}$ $\sin G = 0.5542$ $G = \sin^{-1}(0.5542)$ $G = 34°$	$\cos H = \frac{19.5}{39.2}$ $H = 60°$	$\tan I = \frac{65.5}{22.8}$ $I = 71°$

Name: _____

5. Solve for the indicated side. Show your work!
Round your final answer to one decimal place.

$\sin 67° = \frac{j}{19.4}$ $19.4 \times 0.9205 = \frac{j}{19.4} \times 19.4$ $j = 17.9$	$42.6 \times \cos 32° = \frac{k}{42.6} \times 42.6$ $k = 36.1$	$96.2 \times \tan 17° = \frac{l}{96.2}$ $l = 29.4$
$\sin 14° = \frac{4.6}{m}$ $m \times 0.2419 = \frac{4.6}{m} \times m$ $\frac{m \times 0.2419}{0.2419} = \frac{4.6}{0.2419}$ $m = 19.0$	$\cos 72° = \frac{20.1}{n}$ $\frac{20.1 \times 1}{\cos 72°} = \frac{n}{20.1} \times 20.1$ $n = 65.0$	$\tan 82° = \frac{8.9}{o}$ $o = \frac{8.9}{\tan 82°}$ $o = 1.3$

6. "Solve" each triangle: find the measures of all sides and angles!
Round side lengths to one decimal place and angles to the nearest whole degree.
Show all of your work!



Provide your answers here

P = 19° p = 7.9

Q = 71° q = 22.9

R = 90° r = 24.2

Oa

Show your work here

$\tan 71° = \frac{q}{7.9}$

$q = 7.9 \times \tan 71°$

$q = 22.9 \text{ cm}$

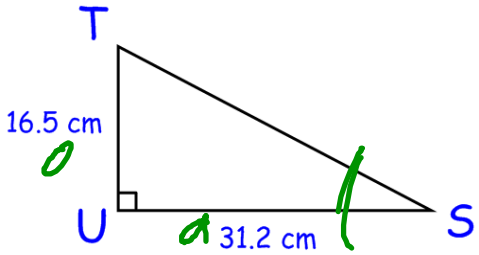
$r^2 = 7.9^2 + 22.9^2$

$r^2 = 586.62$

$r = 24.2 \text{ cm}$

Name: _____

Show your work here



Provide your answers here

S = 28° s = 16.5cm

T = 62° t = 31.2 cm

U = 90° u = 35.3cm

$\tan S = \frac{16.5}{31.2}$

$\tan S = 0.5288$

$S = \tan^{-1}(0.5288)$

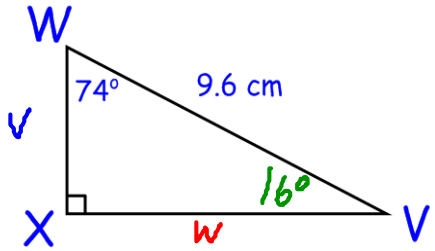
$S = 28°$

$u^2 = 16.5^2 + 31.2^2$

$\sqrt{u^2} = \sqrt{1245.7}$

$u = 35.3$

Show your work here



Provide your answers here

V = 16° v = 2.6cm

W = 74° w = 9.2cm

X = 90° x = 9.6cm

$\sin 74° = \frac{w}{9.6}$

$w = 9.6 \times \sin 74°$

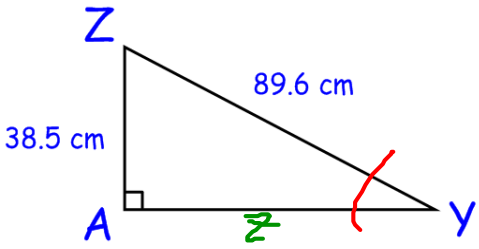
$w = 9.2$ cm

$\cos 74° = \frac{v}{9.6}$

$v = 9.6 \times \cos 74°$

$v = 2.6$cm

Show your work here



Provide your answers here

Y = 25° y = 38.5cm

Z = 65° z = 81.2cm

A = 90° a = 89.6cm

$\sin Y = \frac{38.5}{89.6}$

$\sin Y = 0.4297$

$Y = \sin^{-1}(0.4297)$

$Y = 25°$

$\cos 25° = \frac{Z}{89.6}$

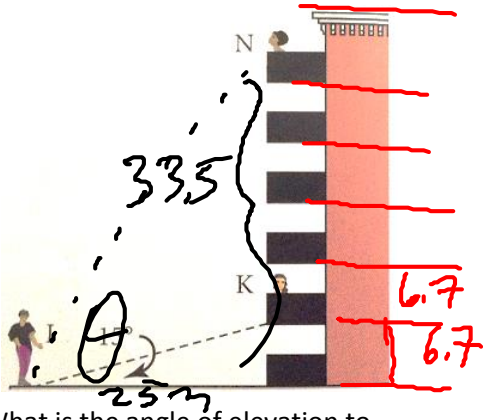
$Z = 89.6 \times \cos 25°$

$Z = 81.2$

Name: _____

7. Isaac is on the ground, waving to his friend Kayla, who is on the second floor balcony of a 6-storey apartment building.

   Isaac is 25 m from the base of Kayla's apartment building. He estimates that the angle of elevation from the round to the bottom of Kayla's balcony is 15 degrees.



   a. Approximately how high is Kayla's balcony above the ground?
   b. How tall is the apartment building?
   c. Natalie lives on the top floor. Her apartment is directly above Kayla's. Suppose Natalie comes to the balcony to wave to Isaac. What is the angle of elevation to the bottom of Natalie's balcony?

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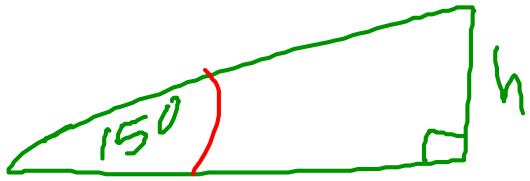


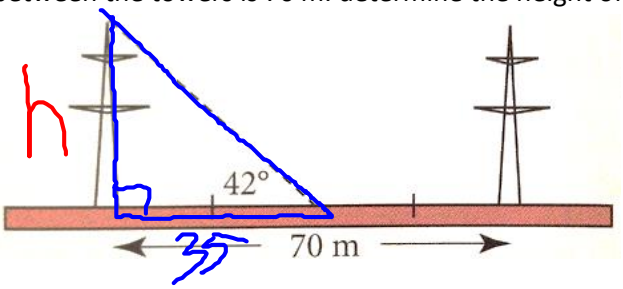
$25 \times \tan 15° = \frac{h}{25} \times 25$

$h = 6.7m$

b. $6 \times 6.7 = 40.2m$

c. $\tan\theta = \frac{33.5}{25}$ $\theta = 53°$

8. To determine the height of identical power distribution towers, Joanne stands exactly halfway between the two towers and measures the angle of inclination to one of the towers. The horizontal distance between the towers is 70 m. determine the height of the towers.



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$\tan 42° = \frac{h}{35}$

$h = 35 \times \tan 42°$

$h = 31.5m$