

Name: Key

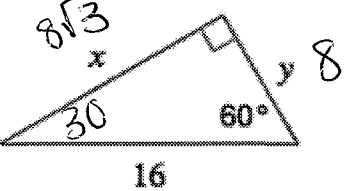
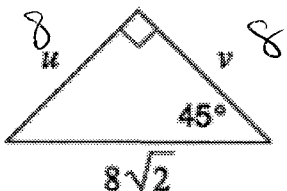
Date: 2/8/18

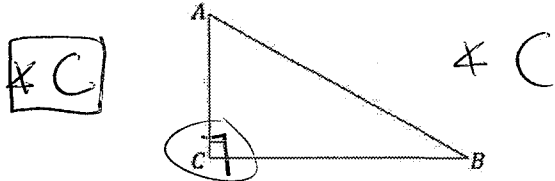
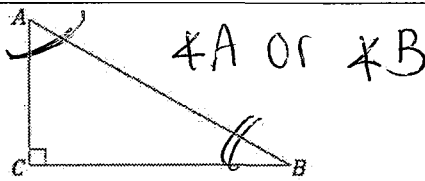
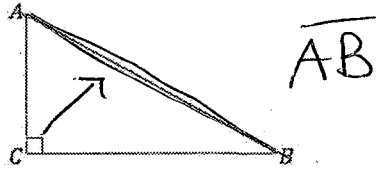
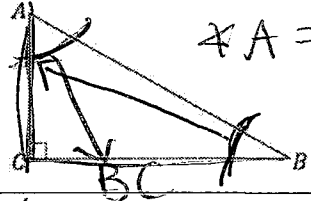
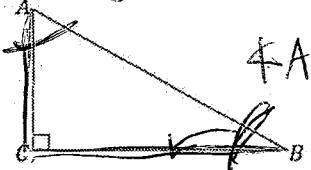
CC GEOMETRY

TROICI

LESSON #7: SOHCAHTOA

Do Now: Find the missing sides of the following special right triangles

 <p style="margin-left: 20px;"><math>x = 8\sqrt{3}</math> <math>y = 8</math></p> <table border="1" style="margin-left: 20px; border-collapse: collapse; text-align: center;"> <tr><td>30</td><td>60</td><td>90</td></tr> <tr><td>x</td><td><math>x\sqrt{3}</math></td><td>2x</td></tr> <tr><td>8</td><td><math>8\sqrt{3}</math></td><td><math>\frac{2x=16}{2}</math> <math>x=8</math></td></tr> </table>	30	60	90	x	$x\sqrt{3}$	2x	8	$8\sqrt{3}$	$\frac{2x=16}{2}$ $x=8$	 <div style="border: 1px solid black; padding: 5px; width: fit-content; margin-left: 20px;"> <math>u=8</math> <math>v=8</math> </div> <table border="1" style="margin-left: 20px; border-collapse: collapse; text-align: center;"> <tr><td>45</td><td>45</td><td>90</td></tr> <tr><td>x</td><td>x</td><td><math>x\sqrt{2}</math></td></tr> <tr><td>8</td><td>8</td><td><math>\frac{x\sqrt{2}=8\sqrt{2}}{\sqrt{2}}</math> <math>x=8</math></td></tr> </table>	45	45	90	x	x	$x\sqrt{2}$	8	8	$\frac{x\sqrt{2}=8\sqrt{2}}{\sqrt{2}}$ $x=8$
30	60	90																	
x	$x\sqrt{3}$	2x																	
8	$8\sqrt{3}$	$\frac{2x=16}{2}$ $x=8$																	
45	45	90																	
x	x	$x\sqrt{2}$																	
8	8	$\frac{x\sqrt{2}=8\sqrt{2}}{\sqrt{2}}$ $x=8$																	

WORD	DEFINITION	DIAGRAM
Right Angle	an angle that measures $90^\circ$	
Reference Angle	The $\angle$ 's in a right $\Delta$ that are NOT the right $\angle$	
Hypotenuse	The longest side of a right $\Delta$ , across from the right $\angle$	
Opposite Side	Depending on ref. $\angle$ the side directly across from $\angle$	$\angle B \rightarrow \overline{AC}$  $\angle A = \overline{BC}$
Adjacent Side	Depending on ref. $\angle$ the side directly next to the $\angle$	$\angle B = \overline{BC}$  $\angle A = \overline{AC}$

IF THE REFERENCE ANGLE IS <u>A</u>	IF THE REFERENCE ANGLE IS <u>B</u>

# SOHCAHTOA

**SOH**

**CAH**

**TOA**

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

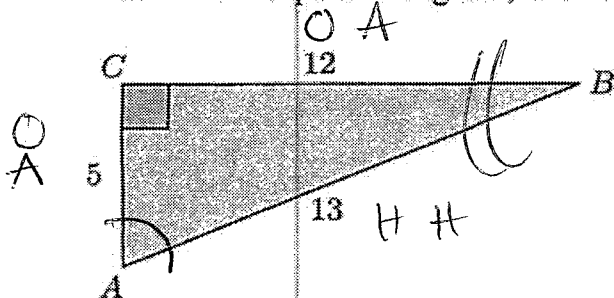
$$\cos \theta = \frac{\text{adjacent}}{\text{hyp}}$$

$$\tan \theta = \frac{\text{opposite}}{\text{hyp.}}$$

★ CAN ONLY BE USED IN RIGHT Δ'S ★

Example:

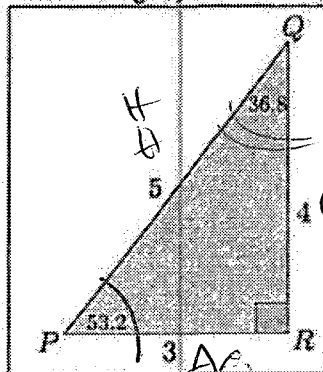
- With respect to angle B, label the sides as opposite, adjacent, and hypotenuse.



Find the value of

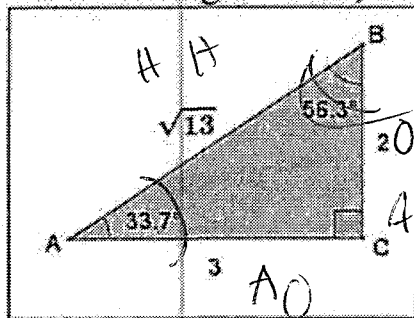
a) $\sin A$ $\frac{O}{H}$ $\frac{12}{13}$	b) $\cos A$ $\frac{A}{H}$ $\frac{5}{13}$	c) $\tan A$ $\frac{O}{A} = \frac{12}{5}$
d) $\sin B$ $\frac{O}{H}$ $\frac{5}{13}$	e) $\cos B$ $\frac{A}{H}$ $\frac{12}{13}$	f) $\tan B$ $\frac{O}{A}$ $\frac{5}{12}$

2. In  $\triangle PQR$ ,  $m\angle P=53.2^\circ$  and  $m\angle Q=36.8^\circ$ . Complete the following table.



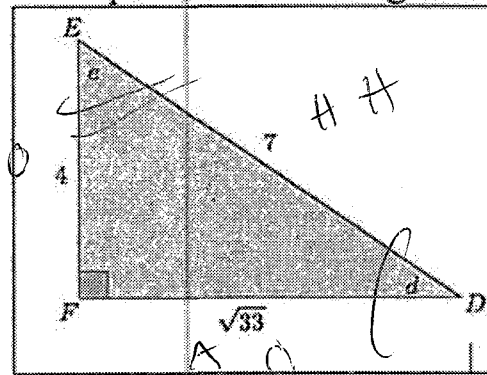
Measure of Angle	Sine ( $\frac{opp}{hyp}$ )	Cosine ( $\frac{adj}{hyp}$ )	Tangent ( $\frac{opp}{adj}$ )
53.2	$\frac{4}{5}$	$\frac{3}{5}$	$\frac{4}{3}$
36.8	$\frac{3}{5}$	$\frac{4}{5}$	$\frac{3}{4}$

3. In the triangle below,  $m\angle A=33.7^\circ$  and  $m\angle B=56.3^\circ$ . Complete the following table.



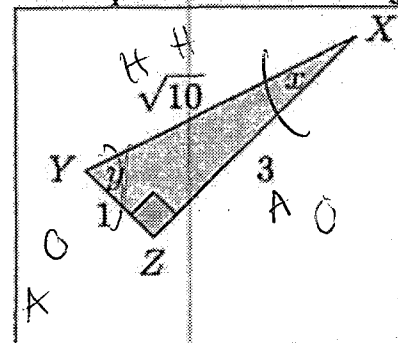
Measure of Angle	Sine	Cosine	Tangent
33.7	$\frac{2}{\sqrt{13}}$	$\frac{3}{\sqrt{13}}$	$\frac{2}{3}$
56.3	$\frac{3}{\sqrt{13}}$	$\frac{2}{\sqrt{13}}$	$\frac{3}{2}$

4. In the triangle below, let  $e$  be the measure of  $\angle E$  and  $d$  be the measure of  $\angle D$ . Complete the following table.



Measure of Angle	Sine	Cosine	Tangent
$d$	$\frac{4}{7}$	$\frac{\sqrt{33}}{7}$	$\frac{4}{\sqrt{33}}$
$e$	$\frac{\sqrt{33}}{7}$	$\frac{4}{7}$	$\frac{\sqrt{33}}{4}$

5. In the triangle below, let  $x$  be the measure of  $\angle X$  and  $y$  be the measure of  $\angle Y$ . Complete the following table.



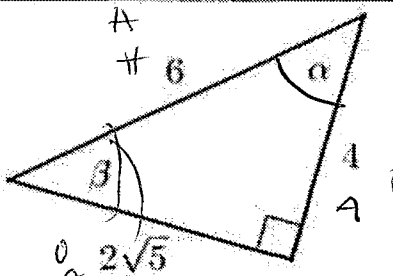
Measure of Angle	Sine	Cosine	Tangent
$x$	$\frac{1}{\sqrt{10}}$	$\frac{3}{\sqrt{10}}$	$\frac{1}{3}$
$y$	$\frac{3}{\sqrt{10}}$	$\frac{1}{\sqrt{10}}$	$\frac{3}{1}$

6. Tamer did not finish completing the table below for a diagram similar to the previous problems that the teacher had on the board where  $p$  was the measure of  $\angle P$  and  $q$  was the measure of  $\angle Q$ . Complete the table for Tamer.

Measure of Angle	Sine	Cosine	Tangent
$p$	$\sin p = \frac{11}{\sqrt{157}}$	$\cos p = \frac{6}{\sqrt{157}}$	$\tan p = \frac{11}{6}$
$q$	$\frac{6}{\sqrt{157}}$	$\frac{11}{\sqrt{157}}$	$\frac{6}{11}$

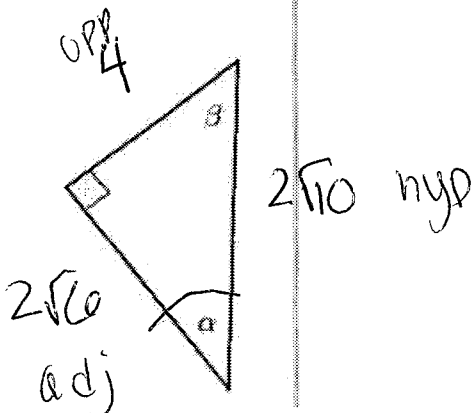
7. Given the triangle in the diagram, complete the following table.

Angle Measure	sin	cos	tan
$\alpha$	$\frac{2\sqrt{5}}{6}$	$\frac{4}{6} = \frac{2}{3}$	$\frac{2\sqrt{5}}{4}$
$\beta$	$\frac{4}{6} = \frac{2}{3}$	$\frac{2\sqrt{5}}{6}$	$\frac{4}{2\sqrt{5}}$



8. Given the table of values below (not in simplest radical form), label the sides and angles in the right triangle.

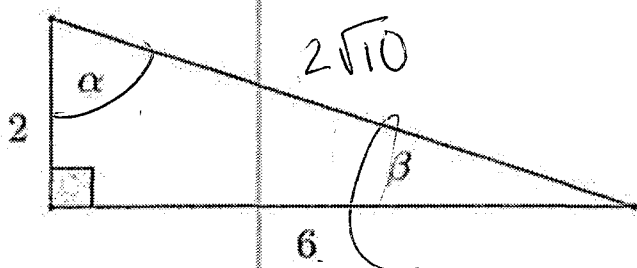
Angle Measure	sin	cos	tan
$\alpha$	$\frac{4}{2\sqrt{10}}$	$\frac{2\sqrt{6}}{2\sqrt{10}}$	$\frac{4}{2\sqrt{6}}$
$\beta$	$\frac{2\sqrt{6}}{2\sqrt{10}}$	$\frac{4}{2\sqrt{10}}$	$\frac{2\sqrt{6}}{4}$



9. Given  $\sin \alpha$  and  $\sin \beta$ , complete the missing values in the table. You may draw a diagram to help you.

Angle Measure	sin	cos	tan
$\alpha$	$\frac{\sqrt{2}}{3\sqrt{3}}$	$\frac{5}{3\sqrt{3}}$	$\frac{\sqrt{2}}{5}$
$\beta$	$\frac{5}{3\sqrt{3}}$	$\frac{\sqrt{2}}{3\sqrt{3}}$	$\frac{5}{\sqrt{2}}$

10. Given the triangle shown to the right, fill in the missing values in the table.



$$2^2 + 6^2 = x^2$$

$$4 + 36 = x^2$$

$$\sqrt{40} = \sqrt{x^2}$$

$$x = 2\sqrt{10}$$

Angle Measure	sin	cos	tan
$\alpha$	$\frac{6}{2\sqrt{10}} = \frac{3}{\sqrt{10}}$	$\frac{2}{2\sqrt{10}} = \frac{1}{\sqrt{10}}$	$\frac{3}{1} = 3$
$\beta$	$\frac{2}{2\sqrt{10}} = \frac{1}{\sqrt{10}}$	$\frac{6}{2\sqrt{10}} = \frac{3}{\sqrt{10}}$	$\frac{2}{3} = \frac{1}{3}$

