| Geometry Regents Lomac 2015-2016 | Date 2/11 | due 2/12 | Similarity: Sine Cosine Tangent | 7.4R |

Name _____ **Per**_____

LO: I can write sine, cosine and tangent ratios for right triangles.

☐ **DO NOW**   On the back of this packet

☐ **(1)** **Similar Right Triangles: Changing Reference Angle**

1. Identify the $\frac{opp}{hyp}$ ratios for ∠A _____

and for ∠B _____

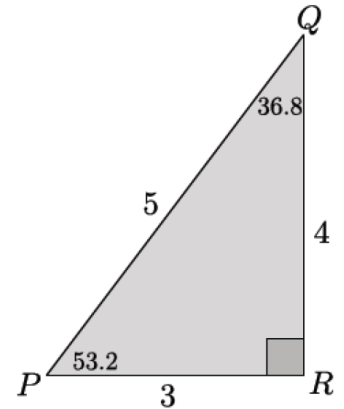2. Identify the $\frac{adj}{hyp}$ ratios for ∠A _____

and for ∠B _____
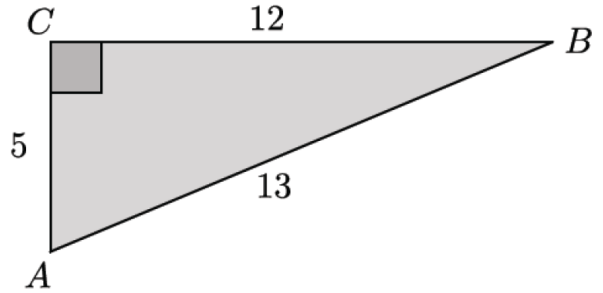
3. Describe the relationship between the ratios for ∠A and ∠B

(triangle with right angle at C, side C to B = 12, side C to A = 5, side A to B = 13)

☐ **(2)** **Similar Right Triangles: sine, cosine, and tangent**

☐ (a) In △PQR, m∠P = 53.2° and m∠Q = 36.8°. Complete the following table.

Measure of Angle	$sin\theta = \frac{opp}{hyp}$	$cos\theta = \frac{adj}{hyp}$	$tan\theta = \frac{opp}{adj}$
53.2°			
36.8°			

(triangle PQR with right angle at R; angle Q = 36.8, PQ = 5, QR = 4, angle P = 53.2, PR = 3)

☐ (b) In the triangle at right, m∠A = 33.7° and m∠Q = 56.3°. Complete the following table.

Measure of Angle	sine	cosine	tangent
33.7°			
56.3°			

(triangle ABC with right angle at C; angle B = 56.3°, AB = √13, BC = 2, angle A = 33.7°, AC = 3)
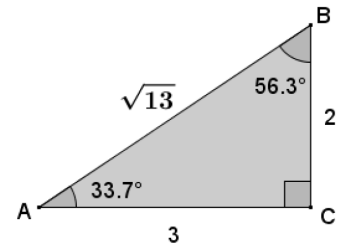
☐ (3) **Similar Right Triangles: sine, cosine, and tangent**

calculator

☐ (c) In the triangle at right, let m∠A = e and m∠D = d. Complete the following

Measure of Angle	sine	cosine	tangent
d			
e			
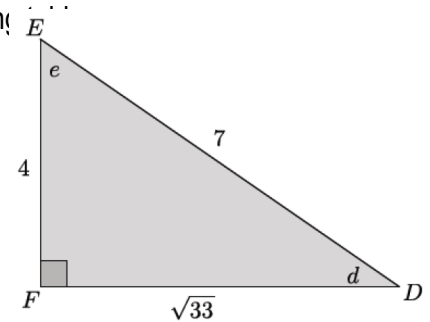
☐ (d) In the triangle at right, let m∠X = x and m∠Y = y. Complete the following table.

Measure of Angle	sine	cosine	tangent
x			
y			
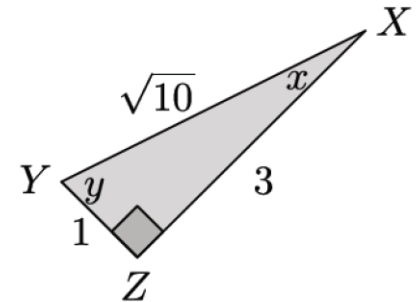
☐ (e) Tamar did not finish completing the table below for a diagram similar to the previous problems that the teacher had on the board wherer p was the measure of ∠P and q was the measure of ∠Q. Use any patterns you notice from parts (a) through (d) to complete the table for Tamar AND draw a diagram of triangle PQR.

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			

☐ (f) Explain how you were able to determine the sine, cosine, and tangent of ∠Q in part (e).
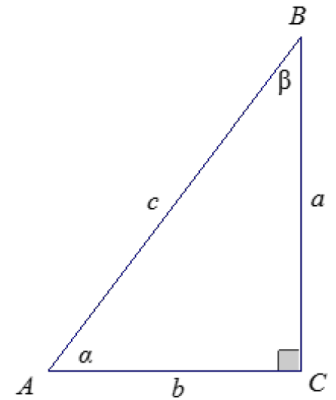
☐ (4) **Similar Right Triangles: switching the reference angle**

calculator

☐ (a) If α and β are the measurements of complementary angles, tehn we are going to show that $\sin\alpha = \cos\beta$.

In right triangle ABC, the measurement of acute angle $\angle A$ is denoted by α, and the measurement of acute angle $\angle B$ is denoted by β.

Determine the following values in the table.

$\sin \alpha$	$\sin \beta$	$\cos \alpha$	$\cos \beta$

What can you conclude from the results?

☐ (b)

Find values for θ that make each statement true.

a. $\sin \theta = \cos (25)$

b. $\sin 80 = \cos \theta$

c. $\sin \theta = \cos (\theta + 10)$

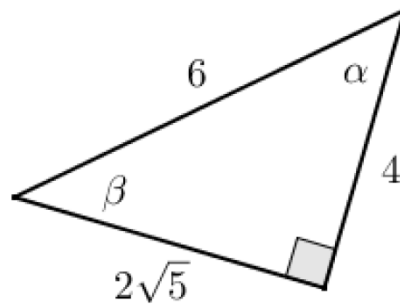d. $\sin (\theta - 45) = \cos (\theta)$

☐ (5)   **Exit Ticket**

calculator

ON THE LAST PAGE

☐ (6)   **Homework**

compass
and
straightedg
e

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

Angle Measure	sin	cos	tan
α			
β			

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
α	$\dfrac{4}{2\sqrt{10}}$	$\dfrac{2\sqrt{6}}{2\sqrt{10}}$	$\dfrac{4}{2\sqrt{6}}$
β	$\dfrac{2\sqrt{6}}{2\sqrt{10}}$	$\dfrac{4}{2\sqrt{10}}$	$\dfrac{2\sqrt{6}}{4}$
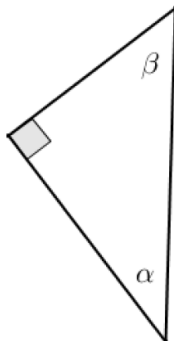
(8) **Homework**
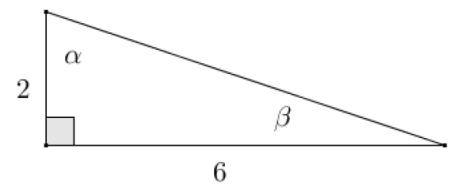
calculator

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
α	$\dfrac{\sqrt{2}}{3\sqrt{3}}$	$\dfrac{5}{3\sqrt{3}}$	
β			

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

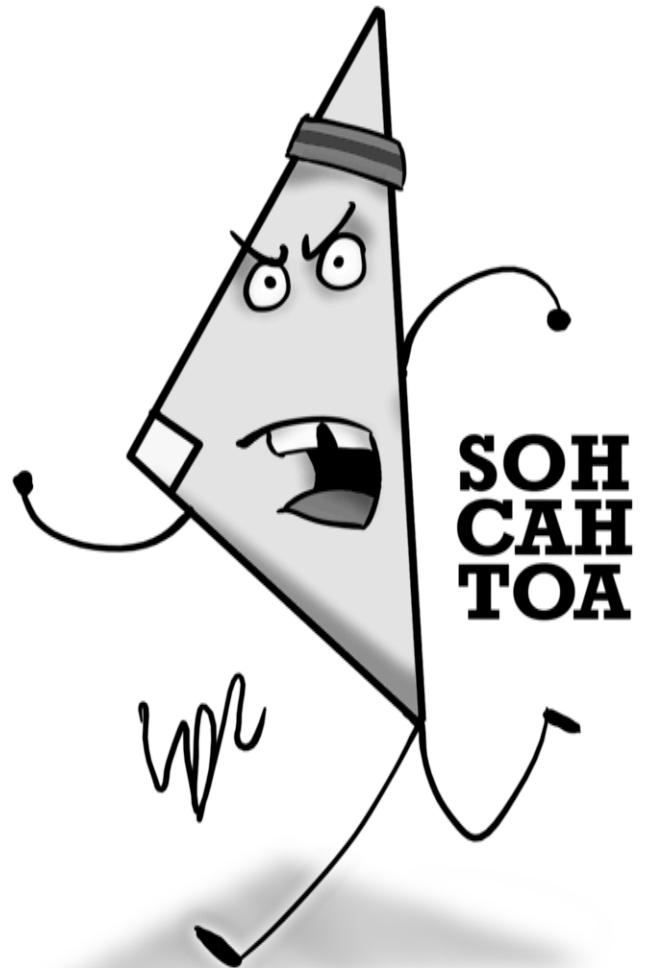| Angle Measure	sin	cos	tan
α			
β			

.

Jules thinks that if α and β are two different acute angle measures, then $\sin \alpha \neq \sin \beta$. Do you agree or disagree? Explain.

Given the triangle in the diagram, complete the following table.
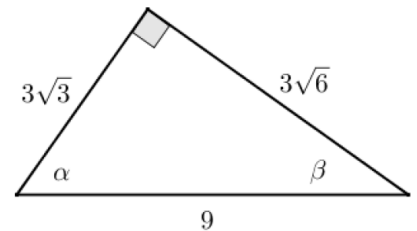
Angle Measure	sin	cos	tan
α			
β			

$$S\frac{o}{h} \quad C\frac{a}{h} \quad T\frac{o}{a}$$
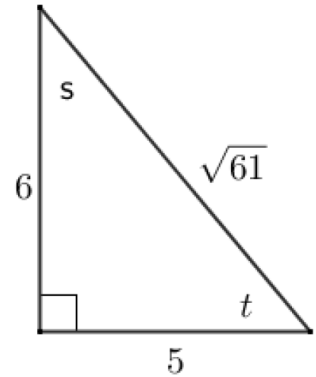
SOH
CAH
TOA

Exit Ticket **Name**_____ **Date** _____ **Per**_____ **7.4R**

(1) The LO (Learning Outcomes) are written below your name on the front of this packet. Demonstrate your achievement of these outcomes by doing the following:
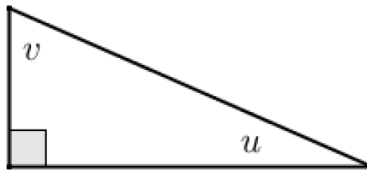
1. Given the diagram of the triangle, complete the following table.

Angle Measure	$\sin \theta$	$\cos \theta$	$\tan \theta$
s			
t			

a. Which values are equal?

b. How are $\tan s$ and $\tan t$ related?

2. If u and v are the measures of complementary angles such that $\sin u = \frac{2}{5}$ and $\tan v = \frac{\sqrt{21}}{2}$, label the sides and angles of the right triangle in the diagram below with possible side lengths.

DO NOW   Name_____ Date _____ Per_____   7.4R

(2) Draw a diagram to represent right triangle MLB with

Right angle L

Reference angle M

$$\frac{opposite}{hypotenuse} = \frac{5}{13}$$

$$\frac{opposite}{adjacent} = \frac{5}{12}$$

(2) What is meant to be humorous about the cartoon below?