Name: _____ Class: _____

The word *trigonometry* is derived from the ancient Greek language and means triangle measurement. A trigonometric ratio is a ratio of the lengths of two sides of a triangle. There are three basic trigonometric ratios; sine, cosine, and tangent.

The heights of trees and buildings can be calculated using an angle of elevation and a trigonometric ratio. The steepness of walking trails (percent of grade) can be calculated using a trigonometric ratio. You will discover what these three trigonometric ratios are all about. Open the **"Sine, Cosine and Tangent"** gizmo at www.explorelearning.com

The Sine Ratio

Choose the *sine tab* at the top of the Gizmo. Click on "show side lengths" and "show sine computation". Drag the bullet until the $m\angle A = 32^o$. (To quickly set a value, type a number in the box to the right of the slider and press Enter).

(1) Underneath "show sine computation", what words describe the ratio (fraction) listed for sin32?

_____

(2) What is the actual decimal approximation for sin32? _____

(3) Click on vertex C on the triangle and slide vertex C left or right to change the lengths of the sides of the triangle. Complete the chart below for three different triangles. **NOTE: The $m\angle A$ should remain 32 degrees.**

Triangle	Length of opp.side/Length of hypotenuse	Decimal
1		
2		
3		

(4) What have you discovered about the Sine Ratio?

The Cosine Ratio

Choose the *cosine tab* at the top of the Gizmo. Click on "show side lengths" and "show cosine computation". Drag the bullet until the $m\angle A = 32^o$. (To quickly set a value, type a number in the box to the right of the slider and press Enter).

(1) Underneath "show cosine computation", what words describe the ratio(fraction) listed for cos32?

_____

(2) What is the actual decimal approximation for cos32? _____

(3) Click on vertex C on the triangle and slide vertex C left or right to change the lengths of the sides of the triangle. Complete the chart below for three different triangles. **NOTE: The $m\angle A$ should remain 32 degrees.**

Triangle	Length of adj.side/Length of hypotenuse	Decimal
1		
2		
3		

(4) What have you discovered about the Cosine Ratio?

The Tangent Ratio

Choose the *tangent tab* at the top of the Gizmo. Click on "show side lengths" and "show tangent computation". Drag the bullet until the $m\angle A = 32^o$.

(1) Underneath "show tangent computation", what words describe the ratio(fraction) listed for tan32?

_____

(2) What is the actual decimal approximation for tan32? _____

Click on vertex C on the triangle and slide vertex C left or right to change the lengths of the sides of the triangle. Complete the chart below for three different triangles. **NOTE: The $m\angle A$ should remain 32 degrees.**

Triangle	Length of opp.side/Length of adj. side	Decimal
1		
2		
3		

(4) What have you discovered about the Tangent Ratio?

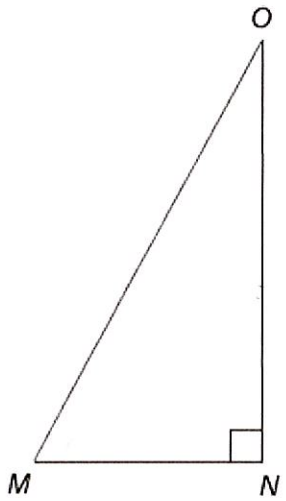
4. In right ΔMNO, what would be equal to sin M?

A. sin O

B. cos M

C. tan M

D. cos O



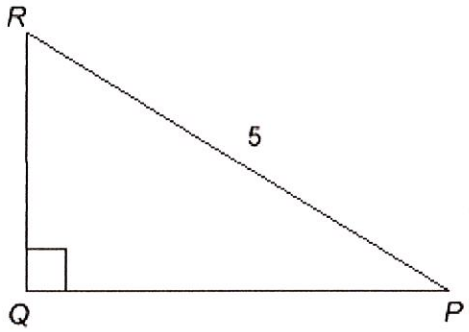
5. In right ΔPQR, sin $P = \frac{3}{5}$, and cos $P = \frac{4}{5}$. What is tan P?

A. $\frac{5}{3}$

B. $\frac{5}{4}$

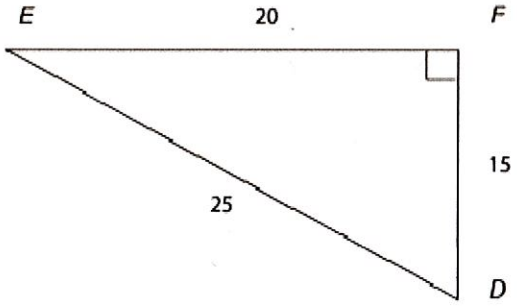
C. $\frac{3}{4}$

D. $\frac{4}{3}$



Assessment Questions:

1. In ΔDEF, what is sin D, in simplified form?



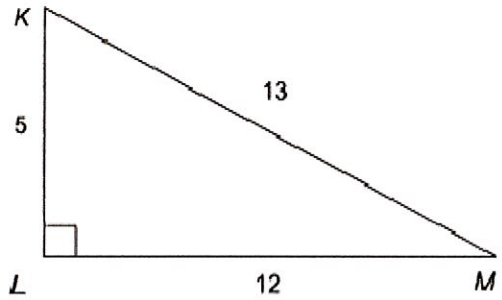
A. $\frac{3}{4}$

B. $\frac{4}{5}$

C. $\frac{5}{4}$

D. $\frac{3}{5}$

2. What is cos K?



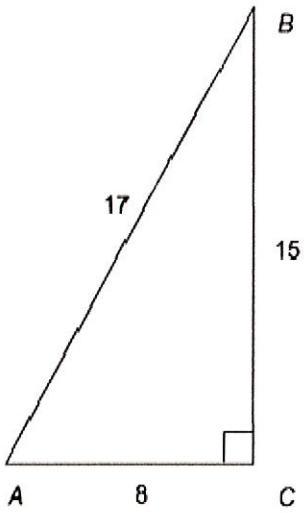
A. $\frac{13}{5}$

B. $\frac{5}{12}$

C. $\frac{12}{13}$

D. $\frac{5}{13}$

3. Find tan B.



A. $\frac{8}{15}$

B. $\frac{15}{8}$

C. $\frac{8}{17}$

D. $\frac{15}{17}$