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Grade Level/Subject: Trigonometry

Topic: Unit Circle, Trigonometric Functions

Objectives (P.A.S.S.):

Introduction: This game is great for reviewing the unit circle and the basic aspects of the trigonometric functions. This game can be played similar to "Go Fish" with several players. Or the cards could be set out on the desk face down and students can play the memory game. There are several variations that can be played using these cards. Use your imagination!

Instructional process: Students should already have a good grasp of the concepts of the unit circle. Divide students into groups or play as a class project.

Closure: In closing, be sure students understand the questions they missed and review those concepts again using the unit circle.

Assessment: Assessment can occur by giving a participation grade or for the amount of correct answers.

Modifications/Accommodations: Modify the type of game you play (Go Fish VS Matching) or make it a jeopardy type game. It will depend on the knowledge level of your students.

Reflection: On reflection, I would divide cards out into different "topics" and do it in sections rather than all at once. It would all depend on the size of the class and their knowledge of the topic.

The Trig Functions Matching Game

This game can be played similar to “Go Fish” with several players. Or the cards could be set out on the desk face down and students can play the memory game. There are several variations that can be played using these cards. Use your imagination!

When making your cards, I suggest copying the questions on one color and the answers on a different color of sturdy paper.

What is the
cotangent of all
 $\frac{\pi}{3}$

$$\frac{\sqrt{3}}{3}$$

What is the
cotangent of all
 $\frac{\pi}{6}$

$$\sqrt{3}$$

What is the
cotangent of all
 $\frac{\pi}{4}$

$$1$$

What is the secant
of all
 $\frac{\pi}{3}$

$$2$$

What is the secant
of all
 $\frac{\pi}{6}$

$$\frac{2\sqrt{3}}{3}$$

What is the secant
of all
 $\frac{\pi}{4}$

$$\sqrt{2}$$

What is the cosecant
of all
 $\frac{\pi}{3}$

$$\frac{2\sqrt{3}}{3}$$

What is the cosecant
of all
 $\frac{\pi}{4}$

$$\sqrt{2}$$

What is the cosecant
of all
 $\frac{\pi}{6}$

2

What is the
cotangent of all
 $\frac{\pi}{2}$

0

What is the cosecant
of all
 $\frac{\pi}{2}$

1

What is the secant
of all
 $\frac{\pi}{2}$

undefined

What is the
cotangent of all
 $\underline{\Pi}$

undefined

What is the secant
of all
 $\underline{\Pi}$

1

What is the cosecant
of all
 $\underline{\Pi}$

undefined

List the cotangent value of all of the quadrants.

+ in I, III
- in II, IV

List the tangent value of all of the quadrants.

+ in I, III
- in II, IV

What is the relationship of csc to one of the other trig functions?

$$\frac{1}{\sin \theta}$$

Which quadrants have a positive tangent & cotangent?

Quadrants I, II

Give the point that would represent 0 and give the $\cos 0$ and $\sin 0$.

$$(1,0)$$
$$\cos 0 = 1$$
$$\sin 0 = 0$$

Give the point that would represent Π and give the $\cos \Pi$ and $\sin \Pi$.

$$(-1,0)$$
$$\cos \Pi = -1$$
$$\sin \Pi = 0$$

From the origin, which direction must you go to have a negative sine?

Down

List the secant value of all of the quadrants.

+ in I, IV
- in II, III

Give the point that would represent $3\pi/2$ and give the $\cos 3\pi/2$ and $\sin 3\pi/2$.

$$(0, -1)$$
$$\cos 3\pi/2 = 0$$
$$\sin 3\pi/2 = -1$$

Give the point that would represent $\pi/2$ and give the $\cos \pi/2$ and $\sin \pi/2$.

$$(0, 1)$$
$$\cos \pi/2 = 0$$
$$\sin \pi/2 = 1$$

List the cosecant value of all of the quadrants.

+ in I, II
- in III, IV

What is the tangent
of all
 $\frac{\pi}{3}$

$$\sqrt{3}$$

What is the cosine
of all
 $\frac{\pi}{3}$

$$\frac{1}{2}$$

What is the sine of
all
 $\frac{\pi}{3}$

$$0$$

What is the
cotangent of all
 $\frac{\pi}{3}$

undefined

What is the cosine
of all
 $\frac{\pi}{3}$

-1

What is the sine of
all
 $\frac{\pi}{3}$

$\frac{\sqrt{3}}{2}$

What is the tangent
of all
 $\frac{\pi}{4}$

1

What is the cosine
of all
 $\frac{\pi}{4}$

$\frac{\sqrt{2}}{2}$

What is the sine of
all
 $\frac{\pi}{4}$

$$\frac{\sqrt{2}}{2}$$

What is the tangent
of all
 $\frac{\pi}{6}$

$$\frac{\sqrt{3}}{3}$$

What is the cosine
of all
 $\frac{\pi}{6}$

$$\frac{\sqrt{3}}{2}$$

What is the sine of
all
 $\frac{\pi}{6}$

$$\frac{1}{2}$$

What is the tangent
of all
 $\frac{\pi}{2}$

undefined

What is the cosine
of all
 $\frac{\pi}{2}$

0

What is the sine of
all
 $\frac{\pi}{2}$

1

What is the
reciprocal function
of cosine?

secant

What is the reciprocal function of sine?

cosecant

What is the reciprocal function of tangent?

cotangent

What is the relationship of sec to one of the other trig functions?

$$\frac{1}{\cos}$$

Cosine is associated with what value?

x -coordinate

Sine is associated
with what value?

y -coordinate

Where do you land
if you rotate around
the unit circle an
odd number Π ?

$$\frac{\Pi}{2}, \frac{3\Pi}{2}$$

What is the
relationship of cot
to one of the other
trig functions?

$$\frac{.}{\tan} \frac{.}{.}$$

From the origin,
which direction
must you go to have
a negative cosine?

left

From the origin,
which direction
must you go to have
a positive cosine?

right

From the origin,
which direction
must you go to have
a positive sine?

up

What happens when
you must find the
trig value of a
negative θ ?

down

Where do you land
if you rotate around
the unit circle an
even number Π ?

$\Pi, 2\Pi$