

Name: Key

Date _____

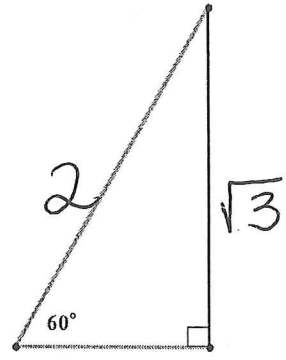
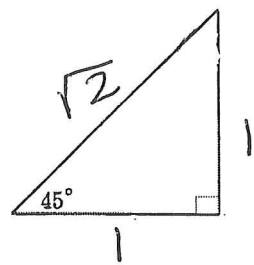
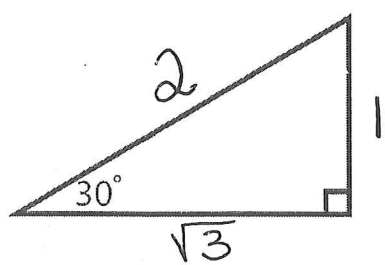
Exact Values for Sine, Cosine & Tangent in degrees

Method 1: Using Special Right Triangles to find exact values

- 1.) Sketch the angle
- 2.) Label the reference angle
- 3.) Draw a triangle to the x-axis and label its sides
- 4.) Find the trig value

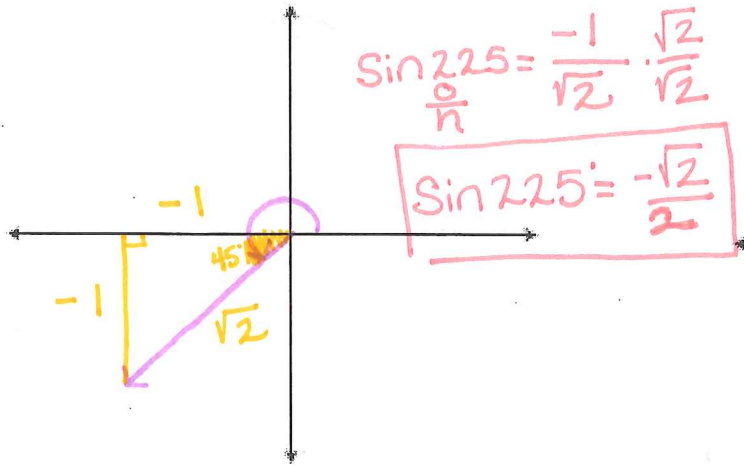
} Follow these steps

Recall special right triangles - look @ ref \angle 's below.

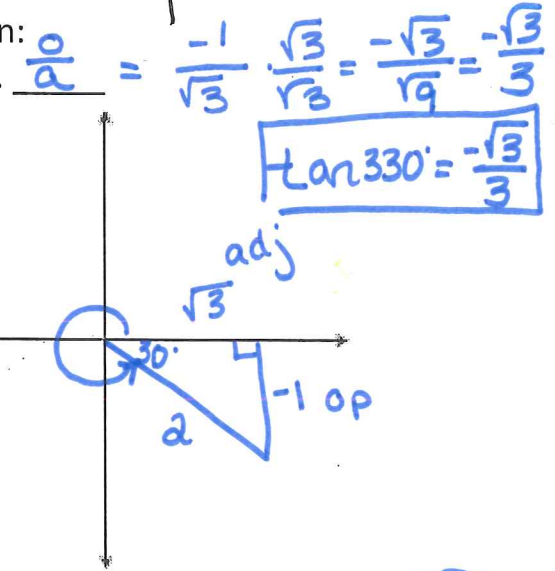


Directions: Find the exact values of each trigonometric function:

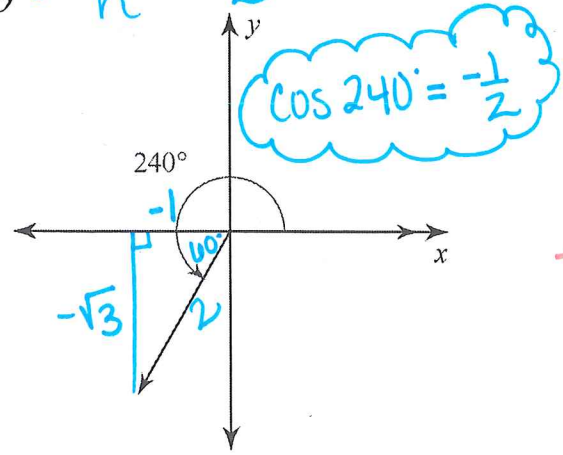
1. $\sin 225^\circ$



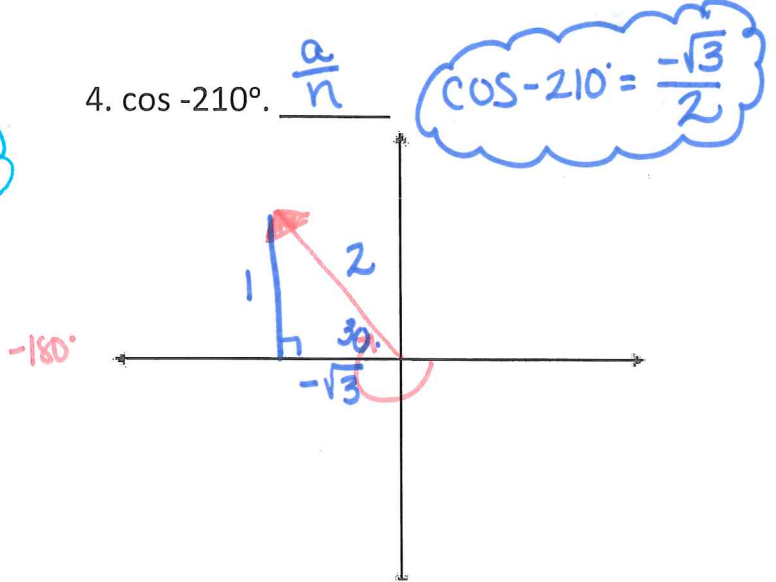
2. $\tan 330^\circ$



3. $\cos \theta = \frac{a}{n} = -\frac{1}{2}$



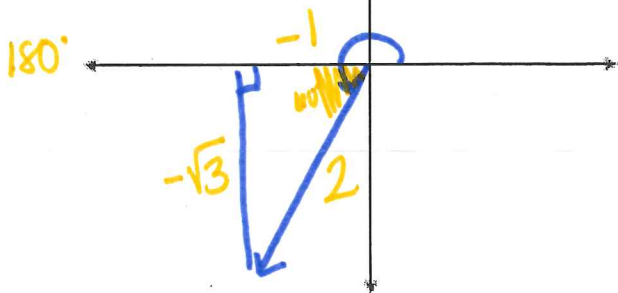
4. $\cos -210^\circ$



5. $\tan 240^\circ$.

$$\frac{o}{a} = \frac{-\sqrt{3}}{-1}$$

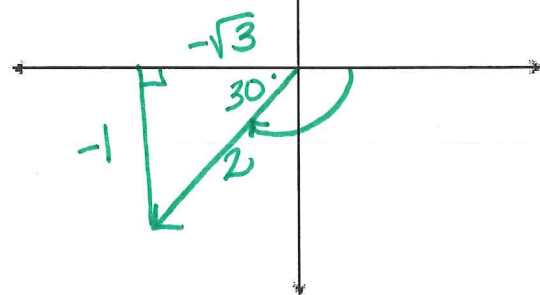
$$\tan 240^\circ = \sqrt{3}$$



6. $\sin -150^\circ$.

$$\frac{o}{h}$$

$$\sin -150^\circ = -\frac{1}{2}$$

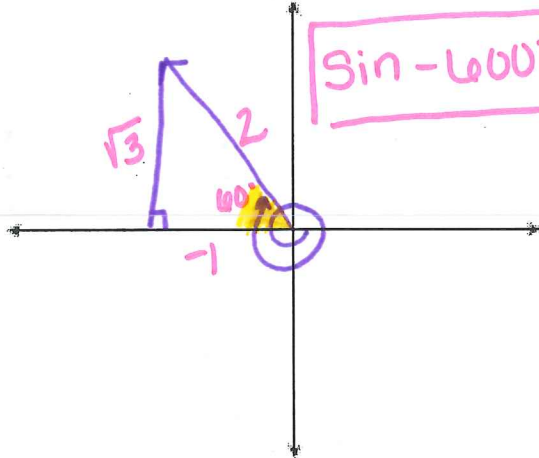


Practice with Coterminals!

Directions: Find the exact values of each trigonometric function:

1. Find the exact value of $\sin -600^\circ$.

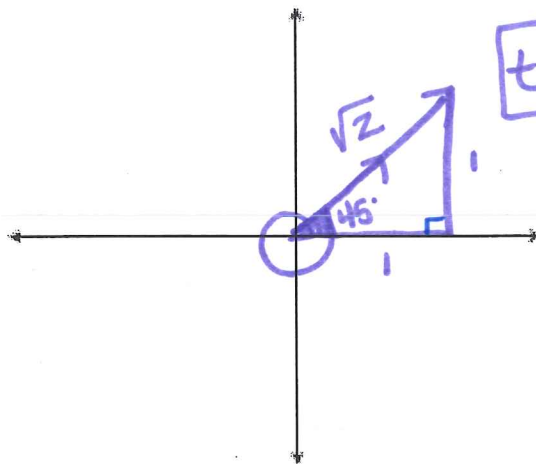
$$\sin -600^\circ = \frac{\sqrt{3}}{2}$$



2. Find the exact value of $\tan 405^\circ$.

$$\frac{o}{a} = \frac{1}{1}$$

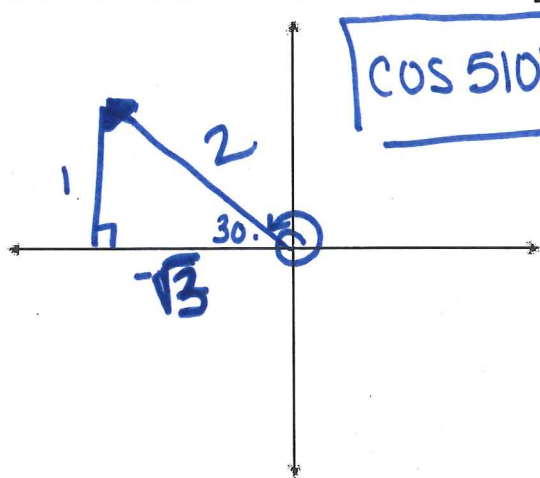
$$\tan 405^\circ = 1$$



3. Find the exact value of $\cos 510^\circ$.

$$\frac{a}{h}$$

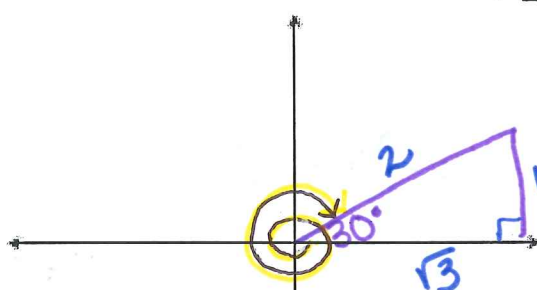
$$\cos 510^\circ = -\frac{\sqrt{3}}{2}$$



4. Find the exact value of $\cos -690^\circ$.

$$\frac{a}{h}$$

$$\cos -690^\circ = \frac{\sqrt{3}}{2}$$

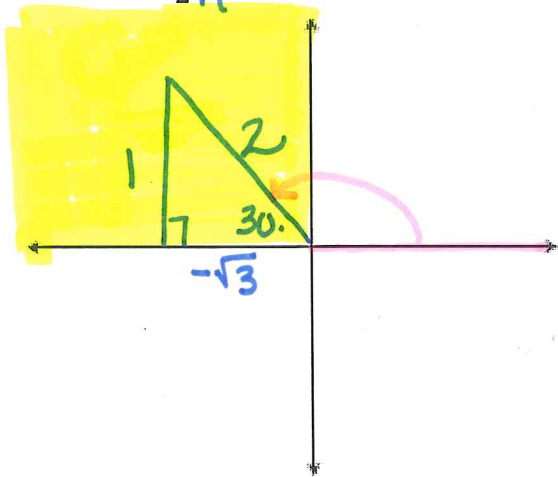


Independent Practice:

Finding a ratio given another ratio

- 1.) Construct the triangle on the coordinate plane.
- 2.) Label the reference angle in degrees.
- 3.) Find the length of the missing side. Be sure to watch out for negatives!
- 4.) Find the value of the other ratio.

7. If $\sin \theta = \frac{1}{2}$ and in quadrant II, find $\cos \theta$.



a) What is the value of the reference angle?

$$\theta' = 30^\circ$$

b) $\cos \theta = -\frac{\sqrt{3}}{2}$

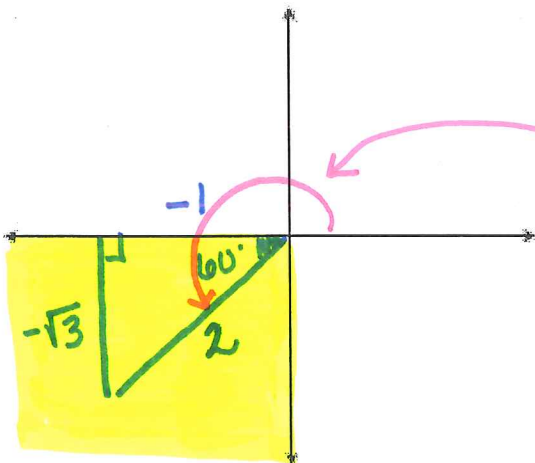
c) What is angle θ ?

(From positive x-axis)

$$180 - 30^\circ$$

$$\theta = 150^\circ$$

8. If $\cos \theta = -\frac{1}{2}$ and in quadrant III, find $\tan \theta$:



a) What is the value of the reference angle?

$$\theta' = 60^\circ$$

b) $\tan \theta = \frac{o}{a} = \frac{-\sqrt{3}}{-1}$

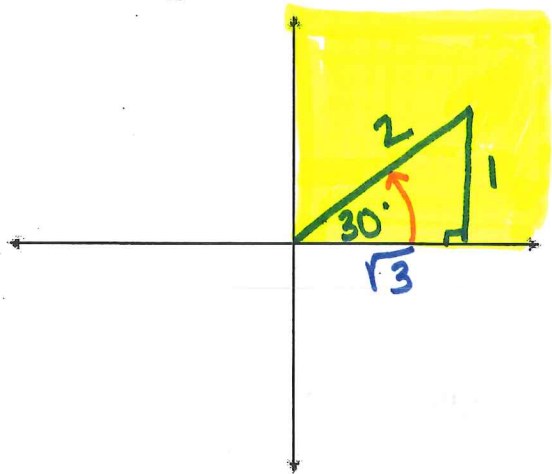
$$\tan \theta = \sqrt{3}$$

c) What is angle θ ?

$$\theta = 180 + 60^\circ$$

$$\theta = 240^\circ$$

9. If $\sin \theta = \frac{1}{2}$ and in **quadrant I**, find $\cos \theta$:



a) What is the value of the reference angle?

$$\theta' = 30^\circ$$

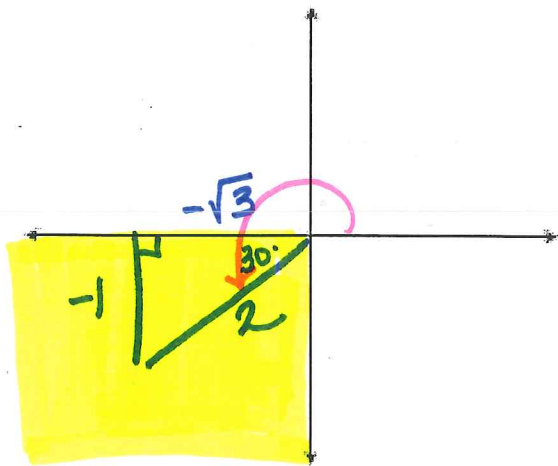
b) $\cos \theta = \frac{a}{h}$

$$\cos \theta = \frac{\sqrt{3}}{2}$$

c) What is angle θ ?

This is ALSO 30°
 Ref \angle can only be the
 same as original \angle IF
 in Quad I. $\theta = 30^\circ$

10. If $\cos \theta = -\frac{\sqrt{3}}{2}$ and in **quadrant III**, find $\tan \theta$:



a) What is the value of the reference angle?

$$\theta' = 30^\circ$$

b) $\tan \theta = \frac{o}{a} = \frac{-1}{-\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{\sqrt{3}}{\sqrt{3}}$

$$\tan \theta = \frac{\sqrt{3}}{3}$$

c) What is angle θ ?

$\theta = 180 + 30^\circ$
 $\theta = 210^\circ$