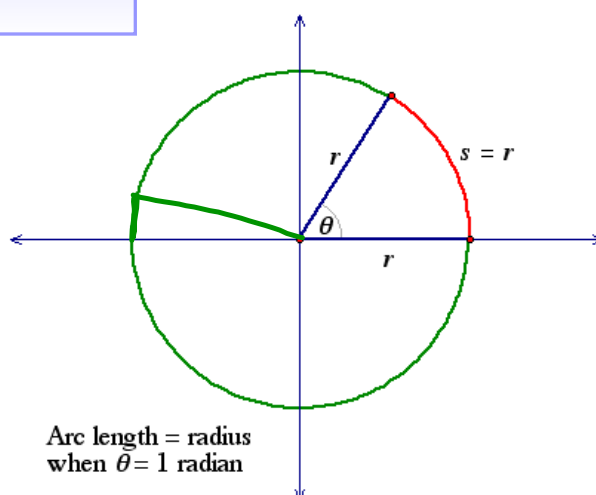
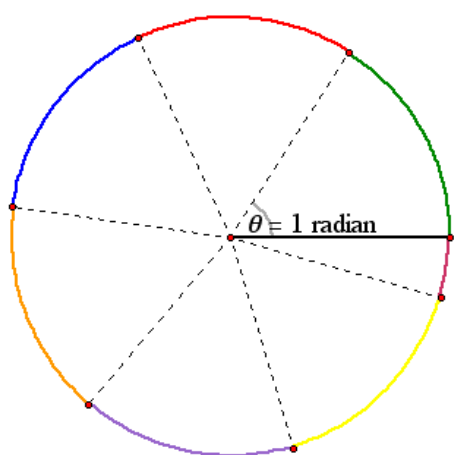


When a central angle intercepts an arc that has the same length as a radius of the circle, the measure of the angle is defined to be one **radian**.





## Converting Degrees to Radians

To convert degrees to radians multiply by:

$$\frac{\pi \text{ radians}}{180^\circ}$$

Rewrite each measure in radians Express the answer in terms of  $\pi$

1)  $45^\circ$

$$\frac{\pi \text{ Radians}}{180^\circ} \times \frac{X}{45^\circ}$$

$$\frac{45\pi}{180} = \frac{180X}{180}$$

$$X = \frac{45\pi}{180}$$

$$= \frac{5\pi}{20} = \frac{\pi}{4} \text{ Radians}$$

2)  $150^\circ$

$$\frac{\pi \text{ Radians}}{180^\circ} \times \frac{X}{150^\circ}$$

$$\frac{150\pi}{180} = \frac{180X}{180}$$

$$\frac{5\pi}{6} \text{ Radians}$$

3)  $270^\circ$

$$\frac{3\pi}{2} \text{ Radians}$$

## Converting Radians to Degrees

To convert radians to degrees multiply by:

$$\frac{180^\circ}{\pi \text{ radians}}$$

Rewrite each measure in degrees. Round to nearest degree.

$$4) \frac{2\pi}{3}$$

$$\frac{180^\circ}{\pi \text{ Radians}} \times \frac{X}{\frac{2\pi}{3}}$$

$$\frac{360\pi}{3} = \pi X$$

$$\frac{120\pi}{\pi} = \frac{\pi X}{\pi}$$

$$X = 120^\circ$$

$$5) \frac{11\pi}{10}$$

$$\frac{180^\circ}{\pi R} \times \frac{X}{\frac{11\pi}{10}}$$

$$\frac{1980\pi}{10} = \pi X$$

$$198\pi = \pi X$$

$$X = 198^\circ$$

$$6) \frac{-\pi}{6}$$

$$\frac{180^\circ}{\pi R} \times \frac{X}{-\frac{\pi}{6}}$$

$$\frac{-180\pi}{6} = \pi X$$

$$-30\pi = \pi X$$

$$X = -30^\circ$$

CONVERT FROM DEGREES TO RADIANs:

$$-112^\circ = \frac{-28\pi}{45}$$

$$100^\circ = \frac{5\pi}{9}$$

$$320^\circ = \frac{16\pi}{9}$$

$$15^\circ = \frac{\pi}{12}$$

CONVERT FROM RADIANs TO DEGREES:

$$\frac{3\pi}{10} = 54^\circ$$

$$\frac{3\pi}{5} = 108^\circ$$

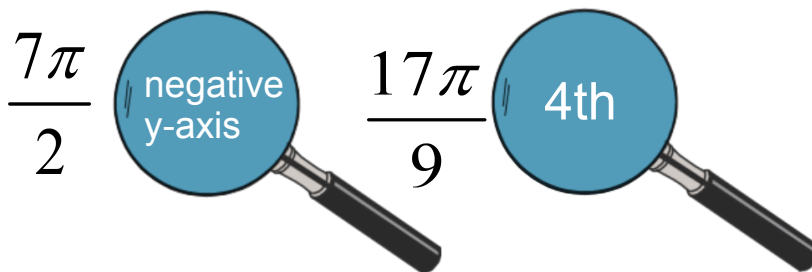
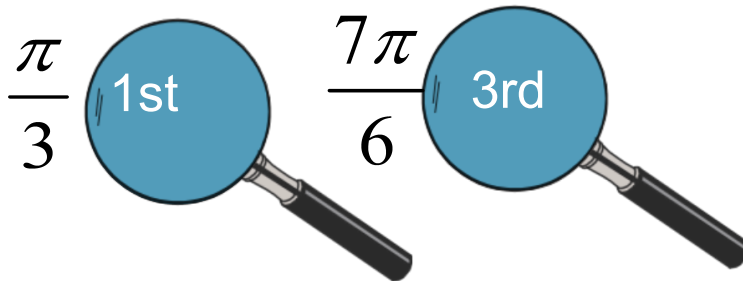
$$-6\pi = -1080^\circ$$

$$2 = 114.59^\circ$$

DRAG THESE ANSWERS TO THE CORRECT SPOT. NOT ALL ANSWERS WILL BE USED.

$$670^\circ$$
$$5\pi$$
$$\frac{\pi}{600}$$
$$\frac{5\pi}{6}$$
$$12^\circ$$

In which quadrant or on which axis does the terminal side of each angle lie? *Note: these angles are given in radians.*

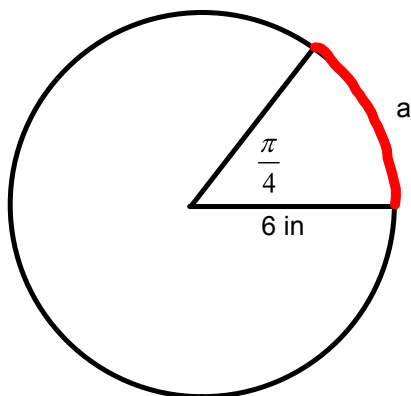


use the magnifying glass to reveal the answer next to each problem

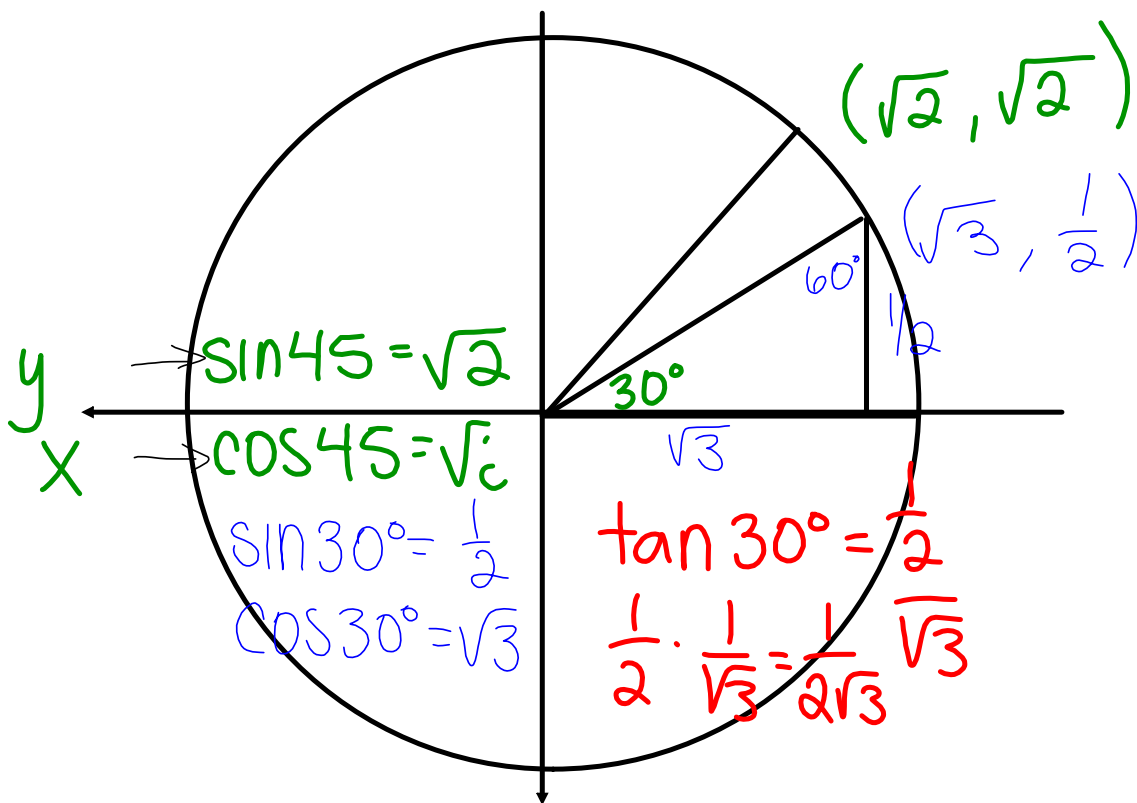


Use the circle to find the length of the indicated arc.  
Round your answer to the nearest tenth.

→ Arc Length = *Radians* • *Radius*



## FLASH CARDS



	30 °	60 °	45 °
sin	$\frac{1}{2}$	$\frac{\sqrt{3}}{2}$	$\frac{1}{\sqrt{2}}$
cos	$\frac{\sqrt{3}}{2}$	$\frac{1}{2}$	$\frac{1}{\sqrt{2}}$
tan	$\frac{1}{\sqrt{3}}$	$\sqrt{3}$	$1$

$\sin(30^\circ)$   
 $\frac{1}{2}$   
 $\downarrow$   
 $\sin\left(\frac{\pi}{6}\right)$   
 $\frac{1}{2}$

**MEMORIZE !!!**

HW 13.3  
DUE MONDAY

p. 729 #1-11 odd, 31-36 all,  
and  
WB pg 82 #1-25 odd

13.3 Radian Measure.gsp