

Lesson 1
1/5/16
Section 6.1
Angle and Radian Measures

Warm-up

1) Convert $\frac{2\pi}{3}$ to *degrees*

2) *Conver* 240° to *radians*

Example 1

To convert from radians to degrees, multiply by $\frac{180}{\pi}$.

$$\frac{2\pi}{3} \cdot \frac{180}{\pi} = \frac{360\pi}{3\pi} = 120^\circ$$

To convert from degrees to radians, multiply by $\frac{\pi}{180}$.

$$240^\circ \cdot \frac{\pi}{180} = \frac{240\pi}{180} = \frac{4\pi}{3}$$

I Try:

Evaluate $\cos \frac{4\pi}{3}$

Cos=x

Sin=y

Tan= $\frac{y}{x}$

Use Unit Circle	$\frac{4\pi}{3} = \left(-\frac{1}{2}, -\frac{\sqrt{3}}{2}\right)$
Cos=x	$-\frac{1}{2}$

We Try:

Evaluate $\tan -\frac{19\pi}{3}$

$\text{Cos}=x$

$\text{Sin}=y$

$\text{Tan}=\frac{y}{x}$

Use Unit Circle	
Tan=	

You Try SOLO on your whiteboards:

Evaluate $\sin \frac{7\pi}{6}$

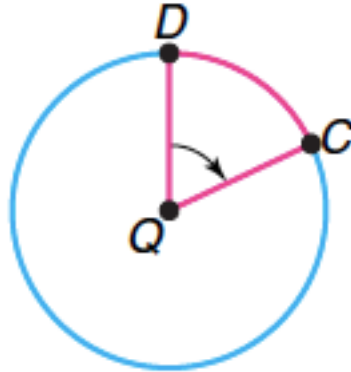
Use Unit Circle	
Tan=	

Where does a radian come from?

Radians can be used to find the length of a circular arc.

A circular arc is a part of the circle.

The arc is often defined by the **central angle**.



NOTE

The length of any circular arc s is equal to the product of the measure of the radius of the circle r , and the radian measure of the central angle θ that it subtends.

$$s = r\theta$$

I Try:

Given the measurement of a central angle of $\frac{\pi}{2}$, find the length of its intercepted arc in a circle of radius 5 cm. Round to the nearest tenth.

Plug into formula	$s = \frac{\pi}{2}(5)$
Simplify with calculator	$s = \frac{5\pi}{2}$ 7.9 cm

We Try:

Given the measurement of a central angle of 30° , find the radius if the length of its intercepted arc in a circle is 7 cm.

Round to the nearest tenth.

Plug into formula	
Simplify with calculator	

You Try with your partner on your whiteboards:
Left Talk, Right Write

Given the measurement of a central angle of 2π , find the length of its intercepted arc in a circle if the radius is 4 cm.

Round to the nearest tenth.

Plug into formula	
Simplify with calculator	

You Try Solo on whiteboards.

Given the measurement of a central angle of 60° , find the length of its intercepted arc in a circle if the radius is 2 cm.

Round to the nearest tenth.

Plug into formula	
Simplify with calculator	

Exit Slip

An arc is 14.2cm long and its intercepted by a central angle of 60° . What is the radius of the circle?