

Section 13 – Topic 5
More Conversions with Radians

What is another way to write $\frac{2}{3}\pi$ radians?

How can we write radians in decimal form?

If we are given radians in decimal form, how can we write them in terms of pi?

If we are given radians in decimal form, how can we convert to degrees?

Let's Practice!

1. Convert $\frac{1}{4}$ radians to degrees.
2. What is the radian equivalent (in decimal form) of 1° ?

Try It!

3. Convert 32° to radians in decimal form.
4. What is the degree equivalent of 1 radian?



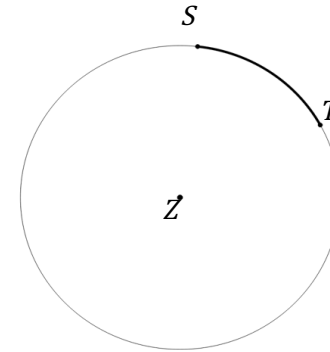
BEAT THE TEST!

1. Which of the following are equivalent or approximately equivalent to $-\frac{1}{2}$? Select all that apply.

- $\cos -60^\circ$
- $\sin 30^\circ$
- $\cos \frac{2\pi}{3}$
- $\sin \frac{5\pi}{6}$
- $\cos -1.047$
- $\sin 3.67$

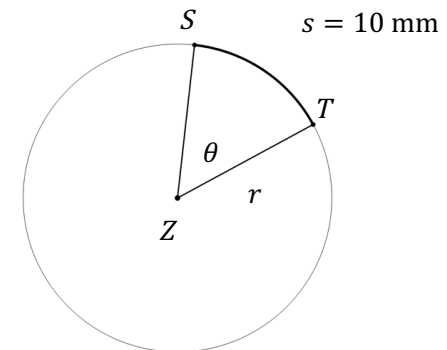
Section 13 – Topic 6 Arc Measure

An _____ of a circle is a portion of the circumference of the circle.



The length of an arc is the length of its _____ of the circumference. We usually use s to symbolize arc length.

Consider the diagram below, where $\theta = 45^\circ$ and the circumference of the circle is 80 millimeters.



In the diagram above, we say, "_____." This means that the arc is opposite θ .

To find the length of an intercepted arc, multiply the circumference of the circle by the _____ of the central angle's measure to 360° .



Complete the table below.

r	$C = 2\pi r$	Central Angle	Ratio of Central Angle to 360°	Length of Subtended Arc, s	$\frac{s}{r}$
1		$60^\circ = \frac{\pi}{3}$			
2		$90^\circ = \frac{\pi}{2}$			
3		$120^\circ = \frac{2\pi}{3}$			
4		$240^\circ = \frac{4\pi}{3}$			

What pattern do you notice in the table?

Write a formula that uses the radius and subtended arc length to find a central angle.

Let's Practice!

- Find the length of the arc subtended by a central angle of 315° in a circle whose radius is 20 in.

Try It!

- Find the measure of the central angle of a circle with radius 3 cm that subtends an arc whose length is 2π cm.



BEAT THE TEST!

1. Lisette and Ailani are running a relay race. The circular track on which they are running has a diameter of 60 meters. Ailani is positioned 89° from her teammate. How far will Lisette have to run before passing the baton to Ailani?



**Test Yourself!
Practice Tool**

Great job! You have reached the end of this section. Now it's time to try the "Test Yourself! Practice Tool," where you can practice all the skills and concepts you learned in this section. Log in to Math Nation and try out the "Test Yourself! Practice Tool" so you can see how well you know these topics!

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