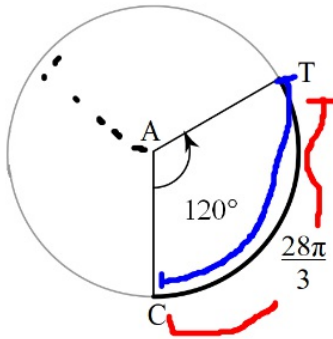


Good morning: attach warm up to notes; we'll do it together

1. Find the area of the circle with center A if \widehat{CT} has length $\frac{28\pi}{3}$
2. Find the area of sector ACT.



Reminders:

next assessment: 4/19

retakes in DS

$$\textcircled{1} \frac{120^\circ}{360^\circ} = \frac{x}{196\pi}$$

$$x = \frac{196\pi}{3}$$

$$\textcircled{1} \frac{120^\circ}{360^\circ} \times \frac{28\pi}{3} = 2\pi r$$

$$240\pi r = 3360\pi$$

$$240r = 3360$$

$$\underline{\underline{r = 14}}$$

$$A = \pi r^2$$

$$14^2 \pi$$

$$\boxed{196\pi}$$

Euclid's Pizza has two coupons available. Which one should you use?

Double the Sector Angle

Any slice!

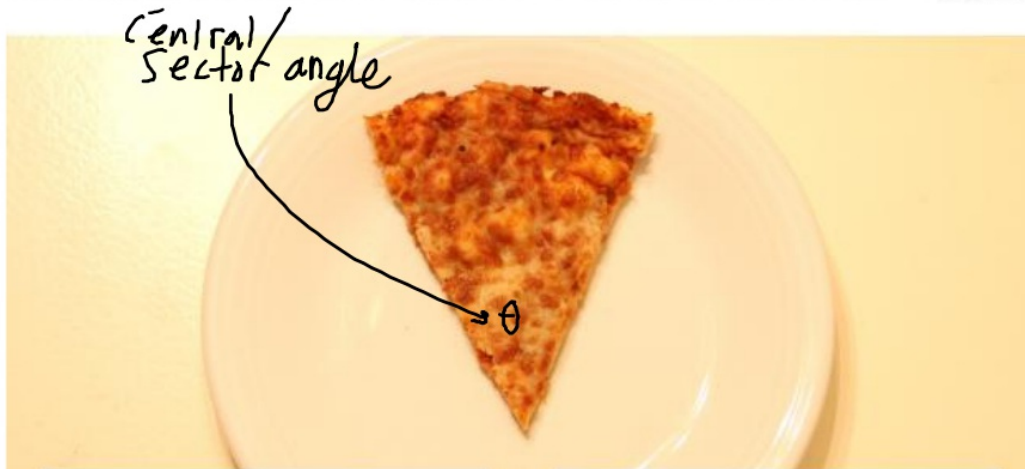
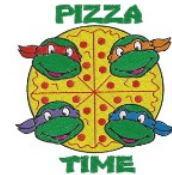
Cannot be combined with other offers.
More fine print no one reads but you should.



Double the Radius

Any slice!

Cannot be combined with other offers.
More fine print no one reads but you should.



Create Your Own Pizza

Create your own Masterpiece! Start by selecting one of our hand-made crusts rolled daily in our restaurants; next pick a sauce and choose from over 20 toppings including premium meats and freshly sliced veggies. All of our pizzas include generous amounts of toppings, and our three cheese blend of Aged Cheddar, Provolone and Whole Milk Mozzarella is never frozen.

Sizes

Personal	6.5" - 4 Slices
Small	9.5" - 6 Slices
Medium	12" - 8 Slices
Large	14" - 12 Slices
Extra Large*	16" - 16 Slices

Which coupon yields more pizza?

Double the Sector Angle

Any slice!

Cannot be combined with other offers.
More fine print no one reads but you should.

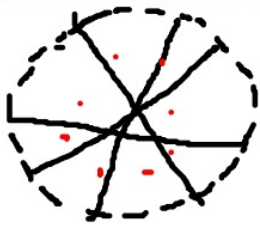


$$r = 6$$

$$A = 36\pi$$

Original Pizza diameter: 12 inches

Sliced into 8 slices.



$$\frac{36\pi}{4}$$

$$A_s = 9\pi$$

$$\frac{2\pi r^2}{8}$$

Double the Radius

Any slice!

Cannot be combined with other offers.
More fine print no one reads but you should.



$$D = 24$$

$$r = 12 \quad 2r$$

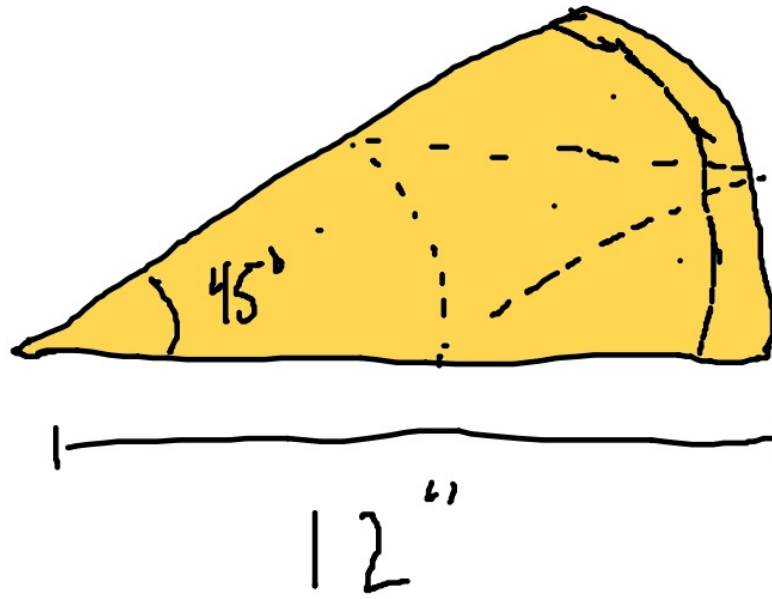
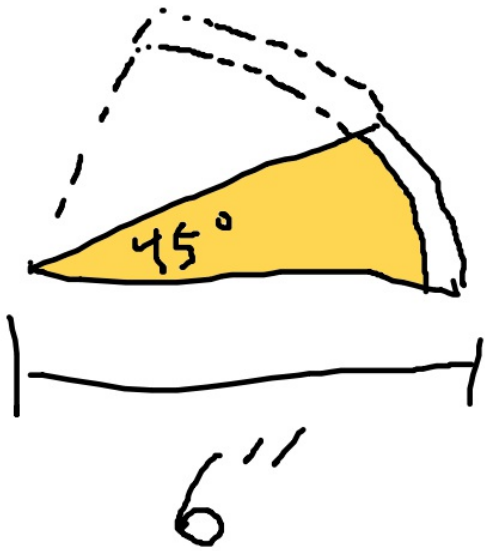
$$A = 144\pi$$

$$\frac{144\pi}{8}$$

$$\frac{4\pi r^2}{8}$$

$$A_s = 18\pi$$

$$\frac{45^\circ}{360^\circ} = \frac{\pi(6^2)}{2\pi(12^2)}$$



What questions first come to mind?



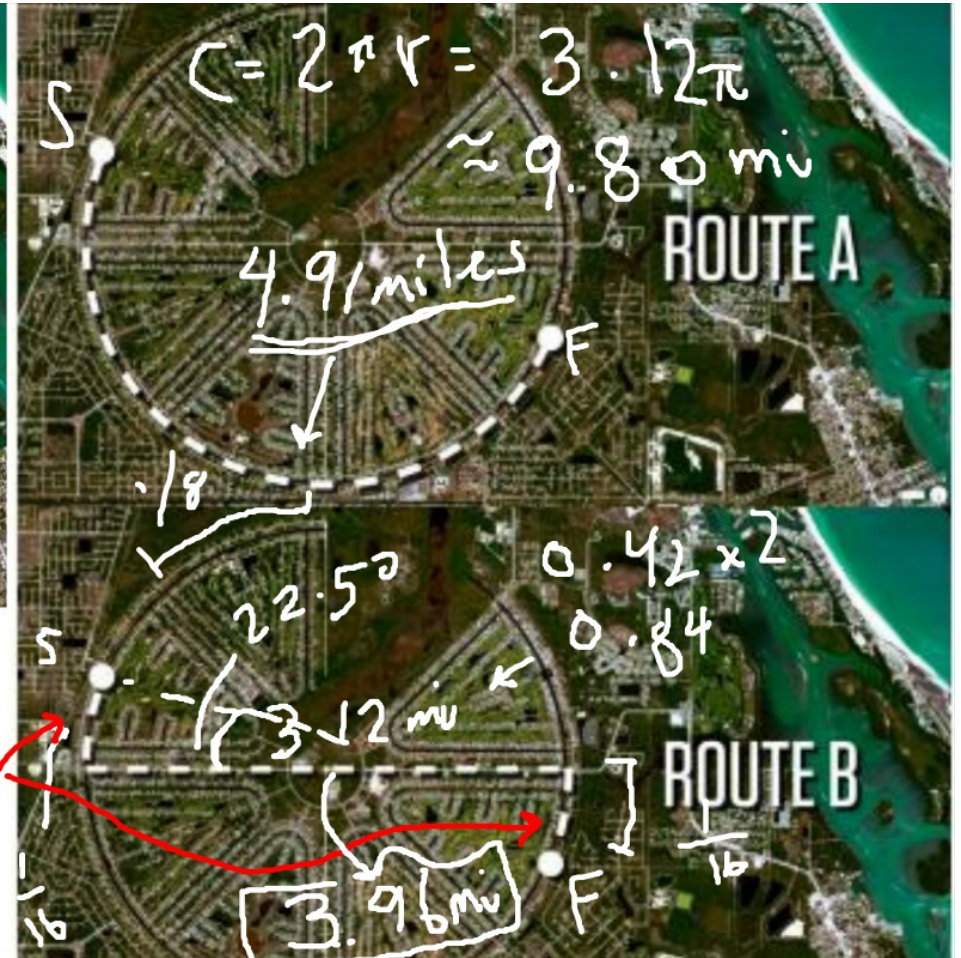
What questions first come to mind?



What questions first come to mind?

Which route is faster?
Write down your guess.

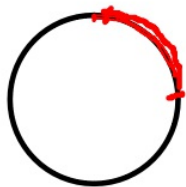
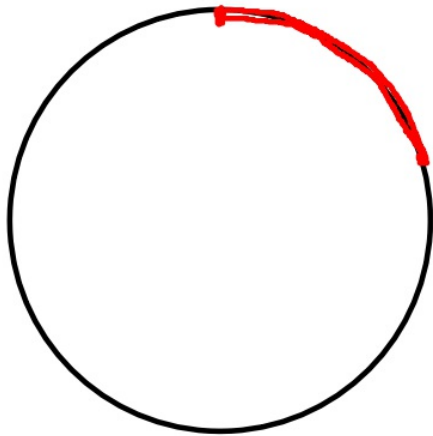




Which route is faster?

$$\frac{22.5}{360} = \frac{x}{2\pi(1.56)} \rightarrow x = 0.42$$

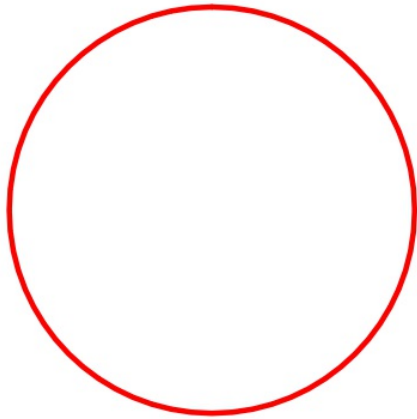
Arc MEASURE vs Arc LENGTH



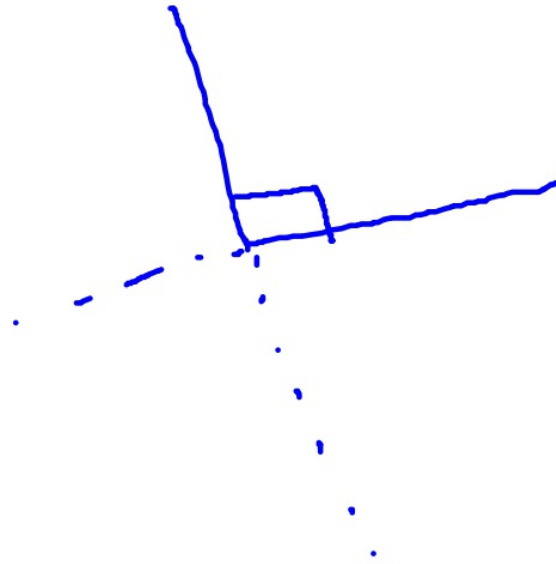
There are two ways of describing this arc
length: how long the curve is in inches/cm/ft/etc
measure: how many degrees of curvature

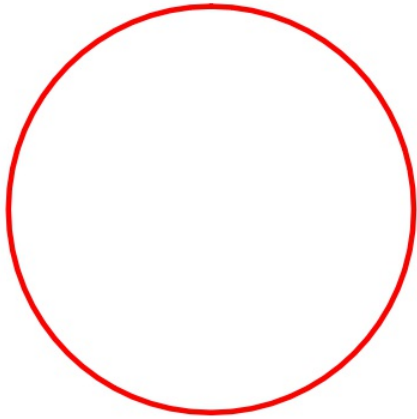


RADIANS



Why do we use 360° to describe a full rotation?



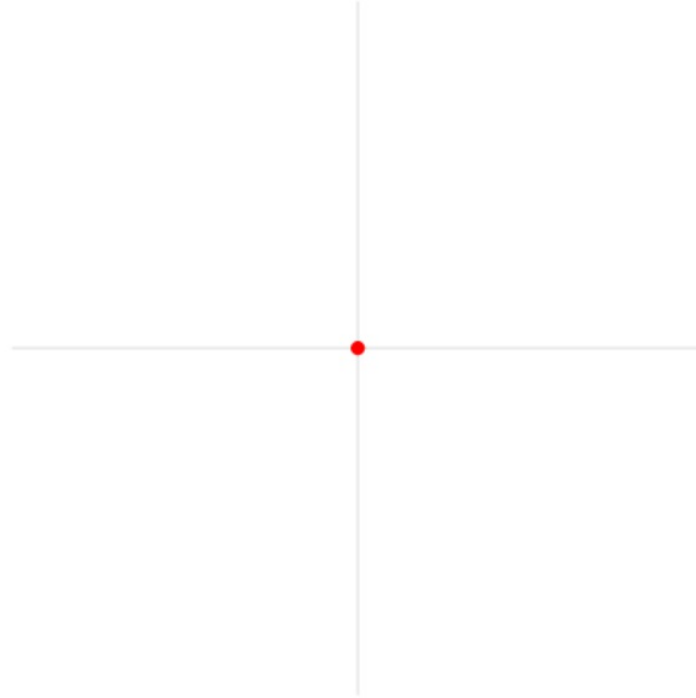
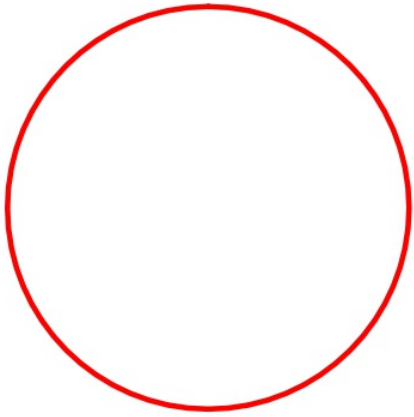


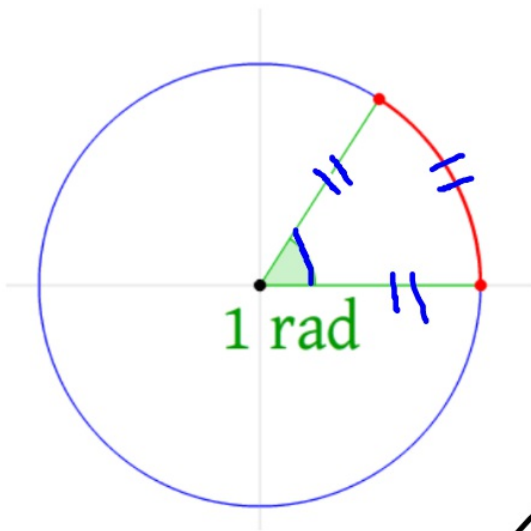
360° has no mathematical basis

There is just as much reason to use 180°
or 100°

There must be a better way....

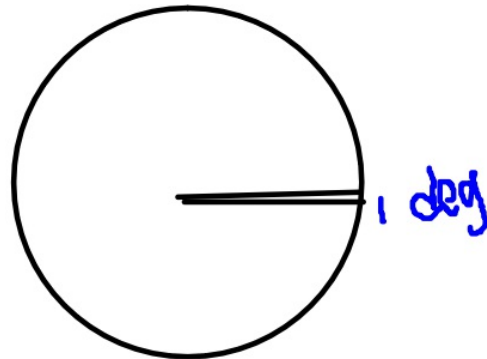
A more mathematical way





A radian is defined as the angle measure formed when an arc length is equal to the radius

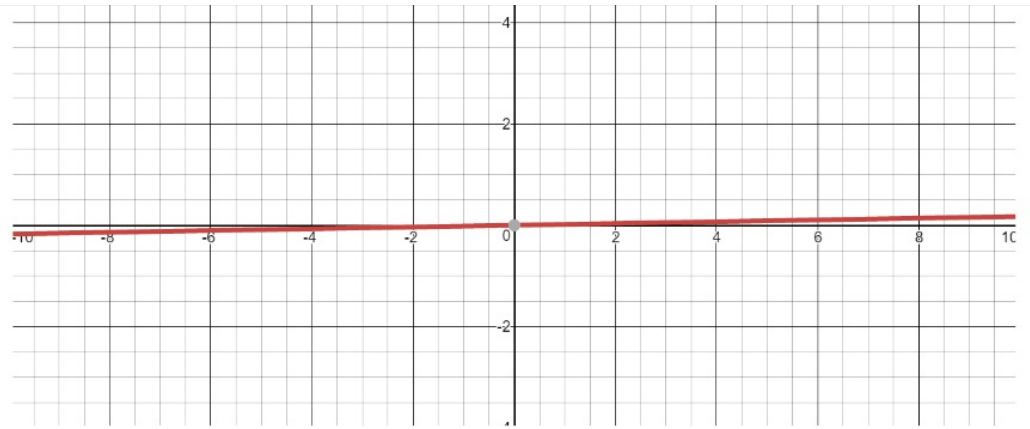
1 radian is about 57.3°



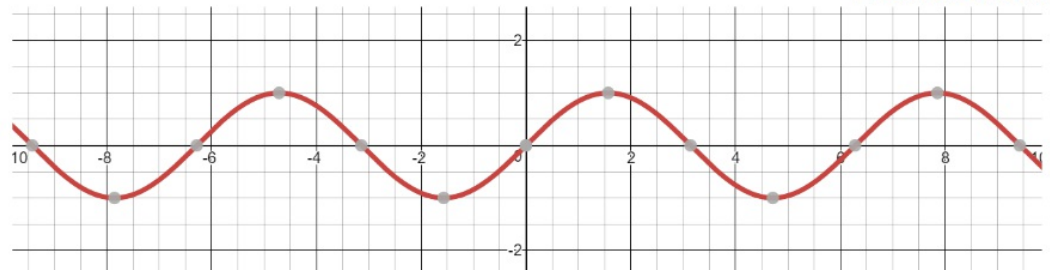
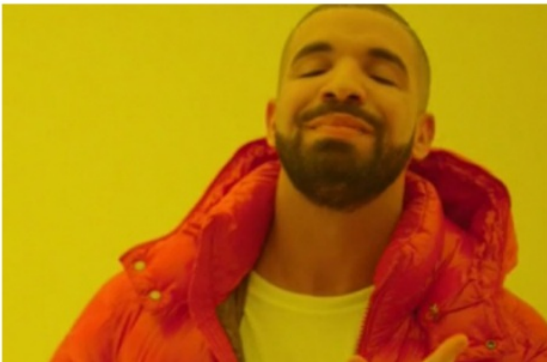
How can we see this mathematical reasoning in action?

$$y_1 = \sin(x)$$

Degree Mode



Degrees



Radians



**RADIANS ILLUSTRATE
MATHEMATICAL BEAUTY!**



**DEGREES ARE FAR
MORE RELEVANT
TO OUR LIVED EXPERIENCE!**



**VERY LITTLE POWERFUL
MATH CAN BE DONE WITH
ARBITRARY 360°! RADIANS
ARE UNIVERSAL!**

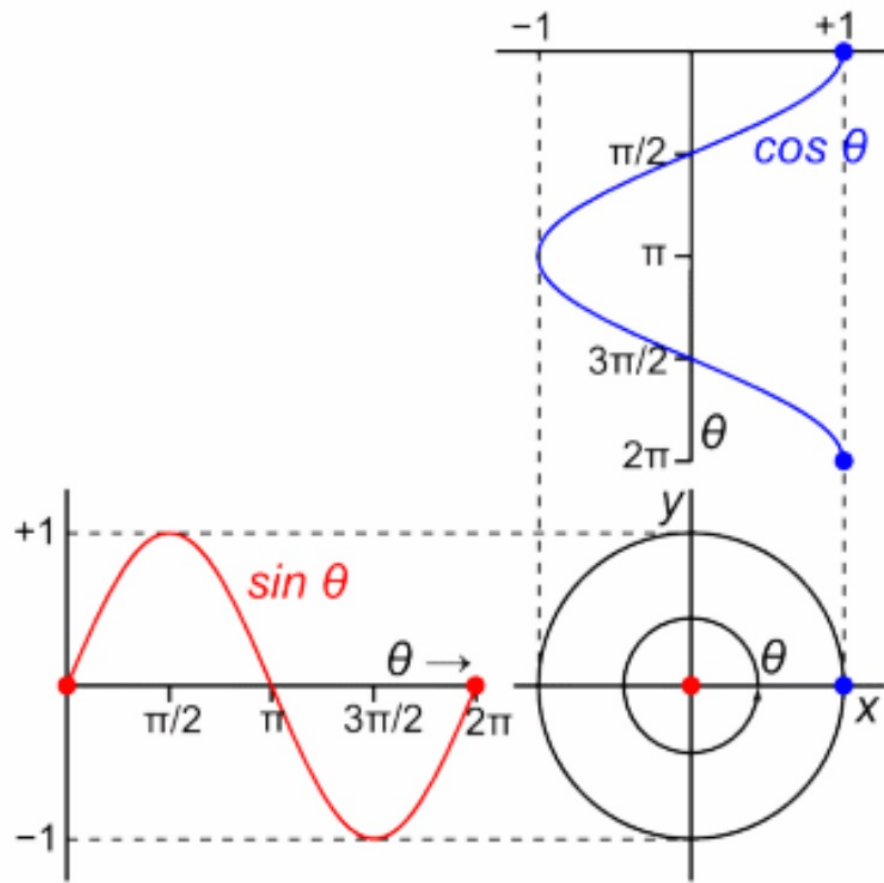


**JUST TRY TO FIND
ME A PERSON OFF
THE STREET
WHO USES RADIANS
EVERY DAY!**

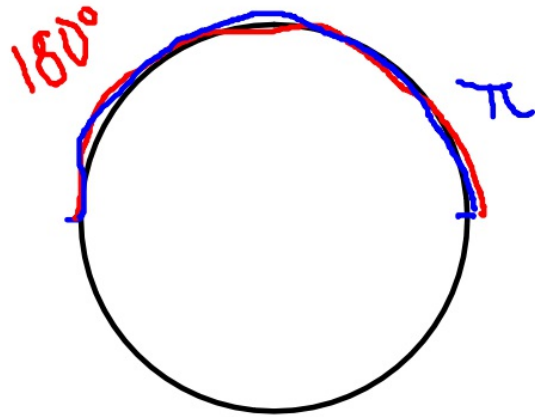


**TRY THE TEACHERS
LOUNGE**

imgflip.com



How to convert between degrees and radians



Use $180^\circ = \pi$ in proportion

ex:

convert 120° to radians

$$\frac{180^\circ}{\pi} = \frac{120^\circ}{x} \rightarrow \frac{180x}{180} = \frac{120\pi}{180}$$

$$x = \frac{12\pi}{18}$$

$$\boxed{\frac{2}{3}\pi}$$

convert $\frac{3\pi}{4}$ to degrees

$$\frac{180}{\pi} \times \frac{x}{\frac{3\pi}{4}}$$

$$180x = 135\pi$$

$$\boxed{x = 135^\circ}$$

Try these:

$$270^\circ \quad \frac{180}{\pi} = \frac{270}{x}$$

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

$$60^\circ \quad \frac{180}{\pi} = \frac{60}{x}$$

$$\frac{1}{3}\pi = \frac{\pi}{3}$$

$$\frac{5\pi}{3} \quad \frac{180}{\pi} = \frac{x}{5\pi/3}$$

300°

$$\frac{7\pi}{6} \quad \frac{180}{\pi} = \frac{x}{\frac{7\pi}{6}}$$

$$\frac{210^\circ}{}$$

Handout: #5-8; 13-16

English EOC on Monday: be sure to check website after school to catch up

keep memorizing the formulas: bit.ly/formulas18

next assessment: 4/19