

Good afternoon: no warm up, have practice assessment out when bell rings to check over/discuss with table

*Need to have
your book today!!*

reminders: EOC is Apr 27-28...must know all quizlet formulas cold!

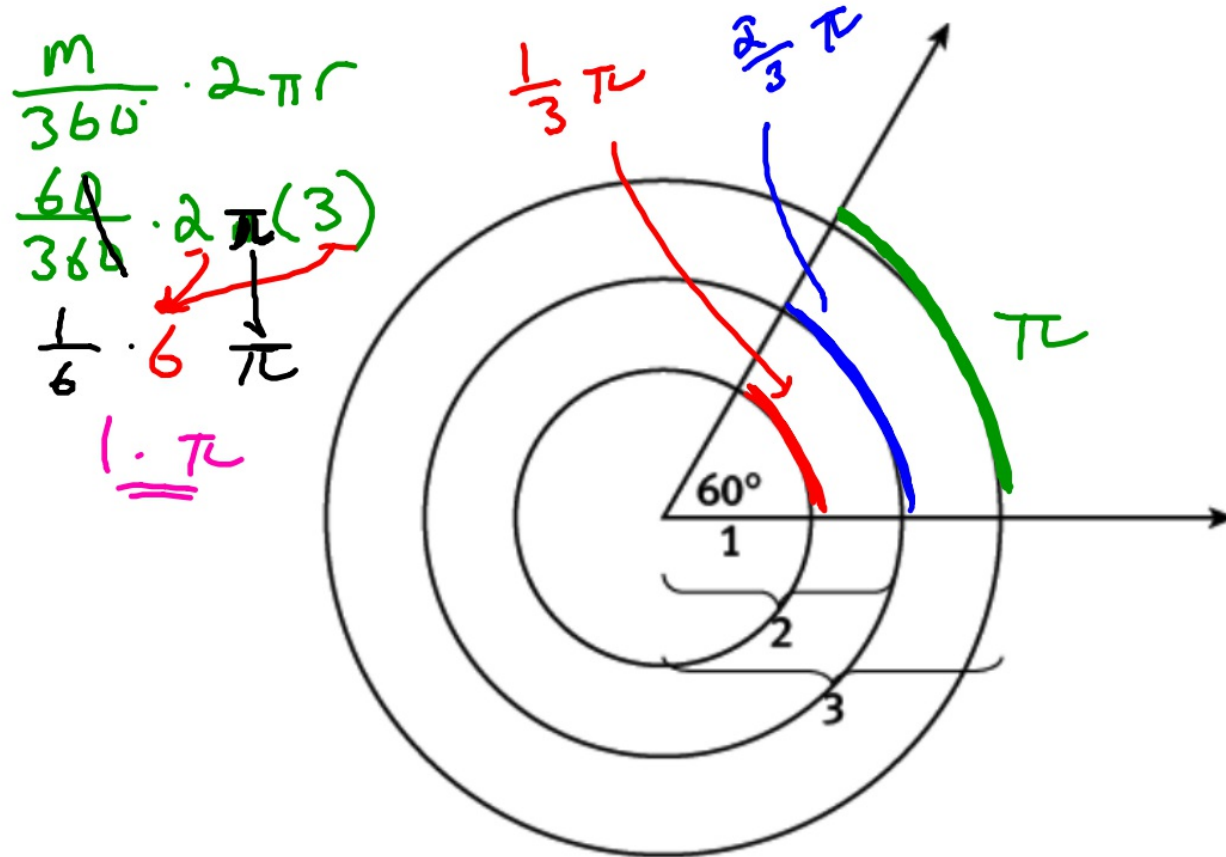
Practice Assessment

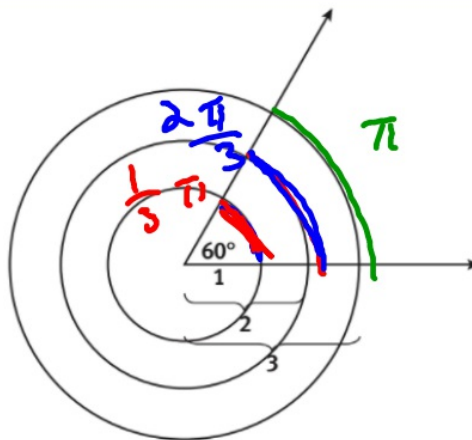
Assessment

- Be sure your name is on it
- Use a cover sheet
- turn it into basket when finished, then turn to p 472, read and do #7 and 8. Recall:
$$\text{Arc Length} = \frac{m^\circ}{360^\circ} (2\pi r)$$

Note: the last column in the table is indicating a ratio
Arc Length : Radius

7. Given the three concentric circles below, with radius 1 unit, 2 units, and 3 units, do the following.
- a. Calculate the arc lengths of each of the three arcs formed by the 60° angle.





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

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

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

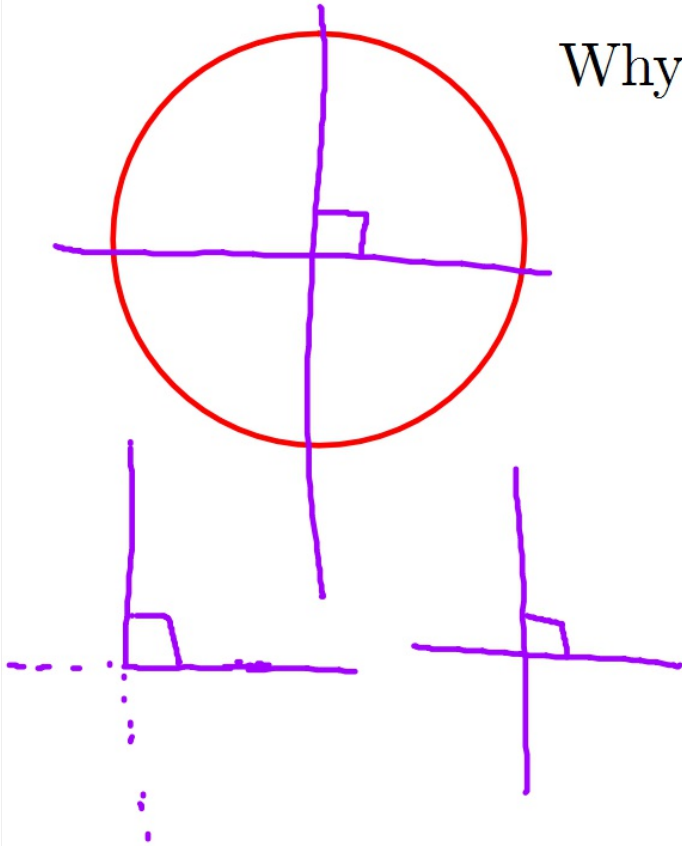
b. Complete the following table for the three circles. Do not use an approximation for π .

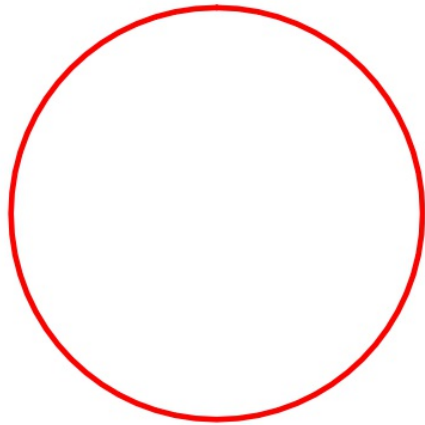
Circle	Measure of Central Angle	Radius	Arc Length	Arc Length: Radius
1	60°	1	$\frac{1}{3}\pi$	$\frac{1}{3}\pi$
2	60°	2	$\frac{2}{3}\pi$	$\frac{1}{3}\pi$
3	60°	3	π	$\frac{1}{3}\pi$

A different way of measuring angles

(Notes)

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



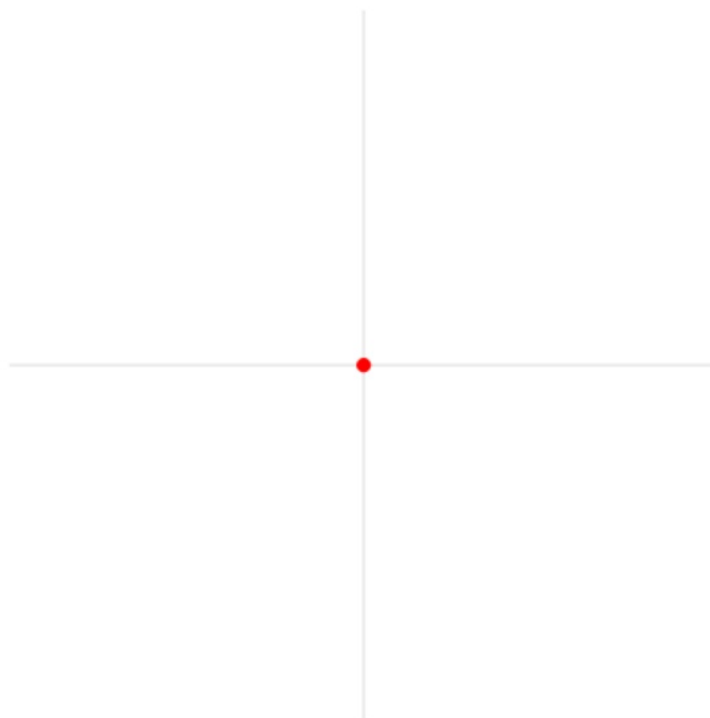
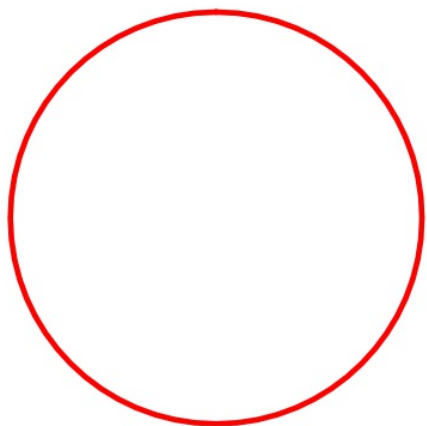


360° has no mathematical basis

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

There must be a better way....

A more mathematical way



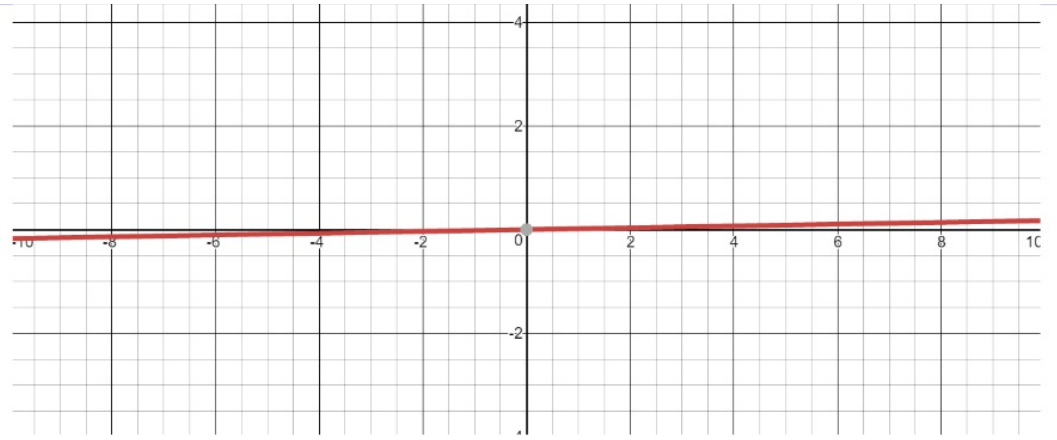
How can we see this mathematical reasoning in action?

$$y_1 = \sin(x)$$

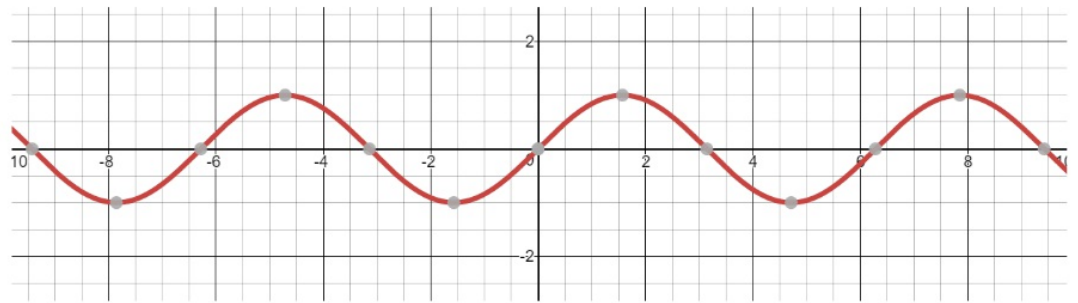
Degree Mode

,

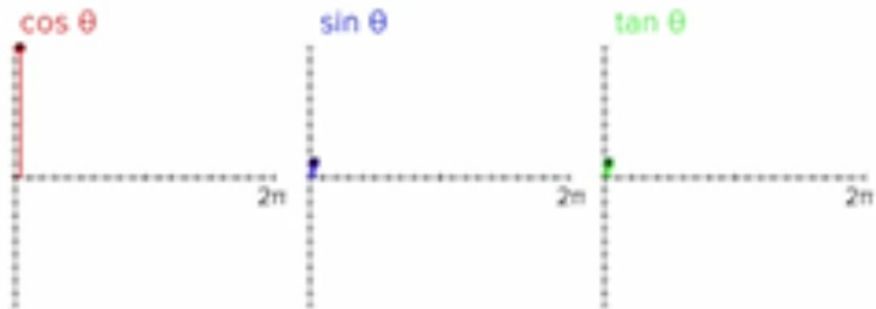
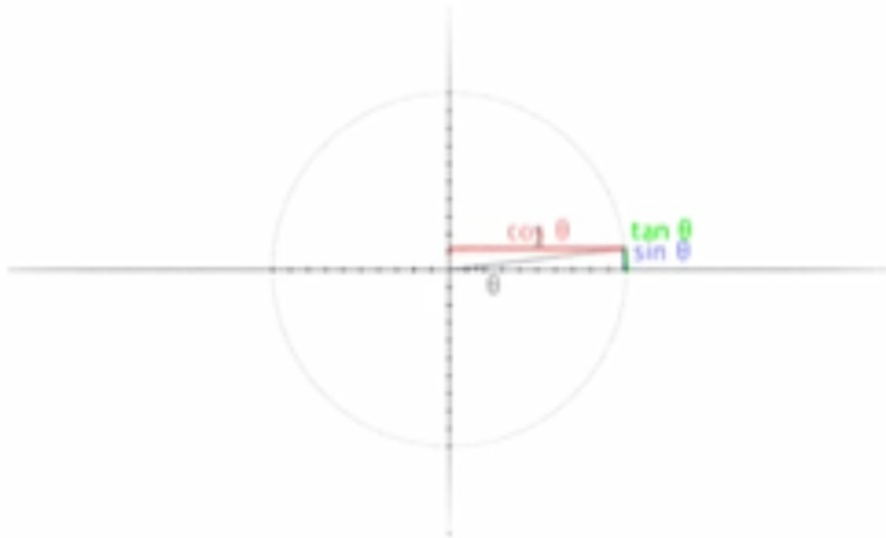
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Degrees

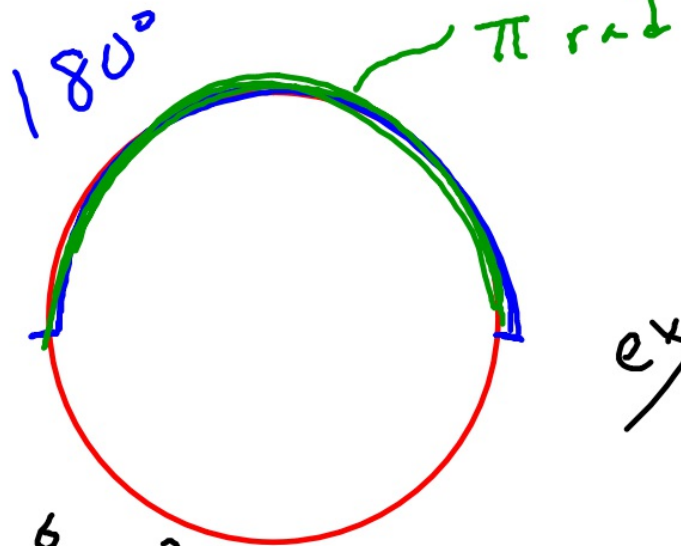


Radians



<https://twitter.com/fermatslibrary/status/847433345256624128>

How to convert between degrees and radians



↳ convert by using

$$\frac{180^\circ}{\pi} \text{ as a proportion}$$

ex/ $120^\circ \rightarrow \text{rad}$

$$\frac{120^\circ}{x} \times \frac{180^\circ}{\pi}$$

$$\frac{180}{180} x = \frac{120\pi}{180}$$

$$\frac{12}{18} \rightarrow \frac{6}{9} \rightarrow \frac{2}{3}$$

$$x = \frac{120\pi}{180}$$

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

Connect equivalent degrees and radians

(NOT ALL WILL
CONNECT)

120°

$\pi/4$

45°

$\pi/6$

90°

$3\pi/4$

135°

$2\pi/3$

30°

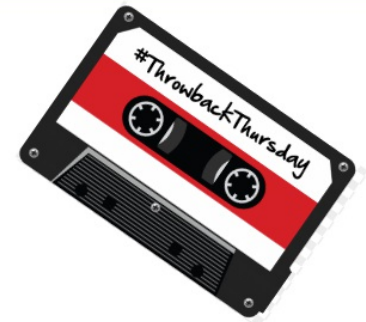
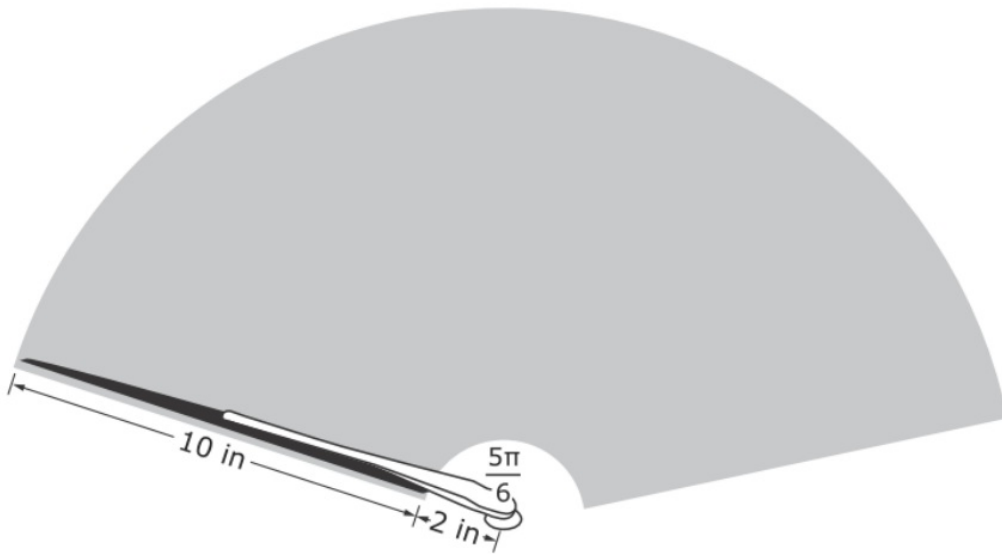
$5\pi/6$

Why use radians?

Arc Length: $s = r \times \Theta$

Sector Area: $A = \frac{1}{2}r^2\Theta$

The windshield wiper of a car rotates through an angle of measure $\frac{5\pi}{6}$ radians, as shown.



The shaded section of the diagram represents the area cleared by the 10-inch blade of the windshield wiper as it moves from one side to the other. Approximately what is the area cleared by the blade of the windshield wiper?

- A. 125 in^2
- B. 183 in^2
- C. 367 in^2
- D. 790 in^2

HW: watch and take notes on video