

## Today's Plan:

**Learning Target (standard):** I will compare and contrast angles in degrees and radians.

**Students will:** Complete practice problems over previous concepts at the boards, put up homework problems on the board and make necessary corrections to their own work, take notes over new material and complete practice problems over new concepts.

**Teacher will:** Provide practice problems over previous concepts, check homework problems for accuracy and provide students feedback, describe and provide examples of new concepts and assign students assessment problems over new concepts.

**Assessment:** Board work, homework check and homework assignment

**Differentiation:** Students will work at the board, go over and correct homework at their seats, actively engage in lecture over new concepts, practice new concepts with the aid of other students and the teacher and complete homework assignment.

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\* Make sure your work includes ALL units as well! \*

61)  $40.174^\circ$

67)  $40^\circ 19' 12''$

62)  $61.706^\circ$

68)  $61^\circ 14' 24''$

63)  $1.034^\circ$

69)  $18^\circ 15' 18''$

64)  $73.678^\circ$

70)  $29^\circ 24' 39.6''$

65)  $9.153^\circ$

71)  $19^\circ 59' 24''$

66)  $98.379^\circ$

72)  $44^\circ 36''$

Convert to D° M' S".

$$-123.458^\circ$$

$$-123^\circ 27' 28.8''$$

$$.458^\circ (60) = 27.48'$$

$$.48' (60) = 28.8''$$

$$315.672^\circ$$

$$315^\circ 40' 19.2''$$

$$.672^\circ (60) = 40.32'$$

$$.32' (60) = 19.2''$$

Convert to d-d°.

$$56^\circ 23' 17''$$

$$56.388^\circ$$

$$56 + \frac{23}{60} + \frac{17}{3600} = \frac{201600 + 1380 + 17}{3600}$$

$$\frac{202997}{3600} = 56.388^\circ$$

$$-246^\circ 43' 45''$$

$$-246.729^\circ$$

$$246 + \frac{43}{60} + \frac{45}{3600} = \frac{885600 + 2580 + 45}{3600}$$

$$\frac{888225}{3600} = 246.729^\circ$$

How do walking paths fit the criteria for trigonometric angles?

- measure a direction (clockwise or counterclockwise)
- have a specific starting point
- involve a rotation
- measure a magnitude
- measure can be negative infinity to infinity
- measured in degrees

What does it mean for an angle to be in standard position?  
Why is this important?

Standard Position:

- angle on x-y coordinate plane
- vertex at the origin
- initial side on the positive x-axis

\* This is important so that every trigonometric angle looks the same if it has the same value as another

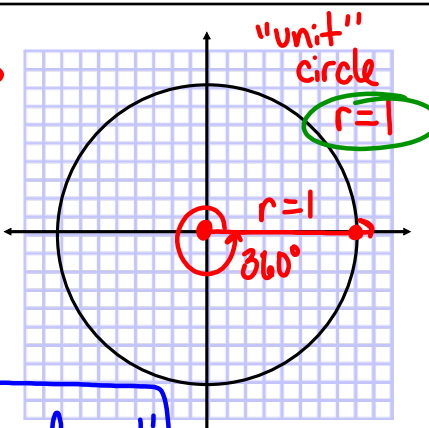
### Angles & Circles:

- 1) Draw a  $90^\circ$  trig angle
- 2) Draw a circle on a different coordinate plane that has a radius of 1
- 3) Determine the circumference of the circle
- 4) Determine what percentage of the circle is mapped out by the  $90^\circ$  angle. Determine that percentage of the circumference.
- 5) Describe what you notice about these.

Degrees vs. Radians

1 rotation =  $360^\circ$

Circumference  
 $C = 2\pi r$   
 $C = 2\pi$



$360^\circ = 2\pi$  "radians"

$1^\circ = \frac{\pi}{180}$  degrees  $\rightarrow$  radians

1 "radian" =  $\frac{180^\circ}{\pi}$  radians  $\rightarrow$  degrees

$\frac{360^\circ}{360} = \frac{2\pi}{2\pi}$   
 $\frac{180^\circ}{\pi} = 1$

radian - the distance around the circumference of a **unit** circle

## More Angle Conversions

- Convert from degrees to radians:

$$+30^\circ$$

$$30 \cdot 1^\circ = \frac{\pi}{180} \cdot 30$$

$$-135^\circ$$

$$30^\circ = \frac{\pi}{6}$$

$$-90^\circ$$

## Yet More

- Convert from radians to degrees:

$$-\frac{5\pi}{4}$$

$$-\frac{5\pi}{4} \cdot 1 \text{ "radian"} = \frac{180^\circ}{\pi} \cdot -\frac{5\pi}{4}$$

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

$$-\frac{5\pi}{4} = -225^\circ$$

$$3.14$$

# Assignment:

p.378 #8-60 even

\* write the problem & show work with necessary units \*