

WARM UP

Simplify each expression.

$$\frac{4\pi}{3} \cdot 180$$

$$240\pi$$

$$180 \cdot \frac{3}{2\pi}$$

$$\frac{270}{\pi}$$

$$\frac{2\pi}{3} \cdot 180$$

$$120\pi$$

$$180 \cdot \frac{3}{4\pi}$$

$$\frac{135}{\pi}$$

$$\frac{\pi}{4} \cdot 180$$

$$45\pi$$

$$180 \cdot \frac{6}{5\pi}$$

$$\frac{216}{\pi}$$

ESSENTIAL QUESTION

How can you express angles in a different way than degrees?

NEEDED VOCAB:

► **Radians**

GOAL: "I CAN...

Convert Radians into Degrees or Degrees into Radians."

Practice unit conversion

12 feet = ? inches **144 in.**

12 in for every 1 ft

or

$\frac{12 \text{ in}}{1 \text{ ft}}$ or $\frac{1 \text{ ft}}{12 \text{ in}}$

12 feet = ? inches **144 in.**
 36 inches = ? feet **3 ft.**
 19 feet = ? Inches **228 in.**
 90 inches = ? feet **7.5 ft.**

$$\frac{12 \text{ in}}{1 \text{ ft.}} \text{ or } \frac{1 \text{ ft.}}{12 \text{ in.}}$$

to convert it's multiply by 12 or \div by 12 depending on desired units.

Ex.

$$12 \text{ ft.} \cdot \frac{12 \text{ in.}}{1 \text{ ft.}} = \frac{144 \text{ in.} \cdot \cancel{\text{ft.}}}{1 \cancel{\text{ft.}}}$$

$$144 \text{ in.}$$

↑
leaving only in.

Converting between Degrees and Radians

Degrees to radians

Multiply degree measure by

$$\frac{2\pi \text{ radians}}{360^\circ}, \text{ or } \frac{\pi \text{ radians}}{180^\circ}$$

Radians to degrees

Multiply radian measure by

$$\frac{360^\circ}{2\pi \text{ radians}}, \text{ or } \frac{180^\circ}{\pi \text{ radians}}$$

Convert 45° to radians.

$$45^\circ \cdot \frac{\pi}{180^\circ}$$

$$45 \cdot \pi = 1 \cdot \pi = \boxed{\pi}$$

Convert $\frac{3\pi}{2}$ to degrees.

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

$$2 \cdot 180^\circ$$

$$\frac{45 \cdot \pi}{180} \rightarrow \frac{1 \cdot \pi}{4} \rightarrow \boxed{\frac{\pi}{4}}$$

$$\frac{3 \cdot 180^\circ}{2}$$
$$\frac{3 \cdot 90^\circ}{\boxed{270^\circ}}$$

Convert 15° to radians.

$$15^\circ \cdot \frac{\pi}{180^\circ}$$

$$\frac{15 \cdot \pi}{180}$$
$$\boxed{\frac{\pi}{12}}$$

Convert $\frac{4\pi}{3}$ to degrees.

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

$$\frac{4 \cdot 180^\circ}{3}$$

$$\boxed{240^\circ}$$

Convert 135° to radians.

$$135^\circ \cdot \frac{\pi}{180^\circ}$$

$$\frac{135 \cdot \pi}{180}$$

$$\boxed{\frac{3\pi}{4}}$$

Convert $\frac{5\pi}{6}$ to degrees.

$$\frac{5\pi}{6} \cdot \frac{180^\circ}{\pi}$$

$$\frac{5 \cdot 180^\circ}{6}$$

$$\boxed{150^\circ}$$

Convert 330° to radians.

$$330^\circ \cdot \frac{\pi}{180^\circ}$$

$$\frac{330 \cdot \pi}{180}$$

$$\boxed{\frac{11\pi}{6}}$$

Convert $\frac{8\pi}{9}$ to degrees.

$$\frac{\cancel{8\pi}}{9} \cdot \frac{180^\circ}{\cancel{\pi}}$$

$$\frac{8 \cdot 180^\circ}{9}$$

$$\boxed{160^\circ}$$

<https://tinyurl.com/yx7saamg>



HOMework

HAVE A GOOD TIME. YOU'RE
TEENAGERS.
