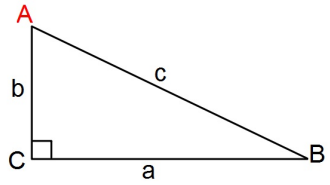
Explain why SinA can't equal 2.



because SinA is defined as

$$\text{Sin}A = \frac{\text{Leg opposite A}}{\text{Hypotenuse}}$$

Since the hypotenuse is always larger than either leg this ratio will always be less than 1.

Can TanA equal 2?

Yes,because TanA is defined as

$$\text{Tan}A = \frac{\text{Leg opposite A}}{\text{Leg adjacent to A}}$$

The opposite leg could be twice as long as the adjacent leg which means this ratio could reduce to $\frac{2}{1}$

Convert 100 meters to yards. Round to the nearest hundredth.

Linear Measure

- 2.54 cm = 1 in
- 1 foot (ft) = 12 inches (in)
- 1 yard (yd) = 3 ft

1 mile (mi) = 5280 ft

1 kilometer (km) = 1000 meters (m)

- 100 centimeters (cm) = 1 m

1760 yds = 1 mi

$$100\text{ m} \cdot \frac{100\text{ cm}}{1\text{ m}} \cdot \frac{1\text{ in}}{2.54\text{ cm}} \cdot \frac{1\text{ ft}}{12\text{ in}} \cdot \frac{1\text{ yd}}{3\text{ ft}}$$

$$= 109.36\text{ yds}$$

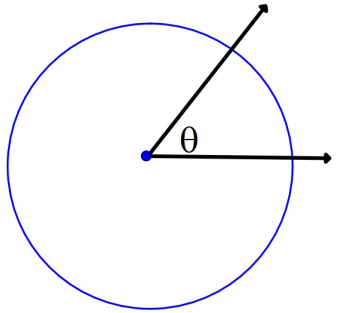
What is the measure of an angle?

The size of an angle
or
The amount of rotation to move from one side of the angle to the other side.

Units used to measure angles:

- Degrees
- Radians

Central Angle:
An angle whose vertex is at the center of a circle.

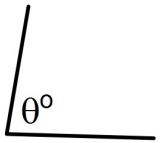


θ

Greek letter Theta

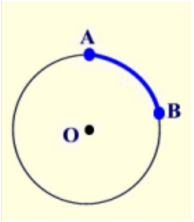
Variable often used to represent an angle

Sinθ



What is an Arc ?

What is Arc Length ?

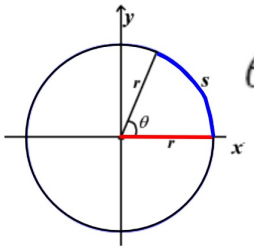


An arc of a circle is a "portion" of the circumference.

The length of an arc is simply the length of its "portion" of the circumference.

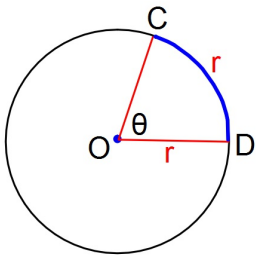
Radian Measure of an angle:

Ratio of the length of the arc intercepted by a central angle to the radius of the circle.



$$\theta = \frac{S}{r} = \frac{\text{Length of intercepted arc}}{\text{Length of radius}}$$

One radian is the measure of an angle that intercepts an arc whose length is equal to the radius of the circle.



$$\theta = \frac{S}{r} = \frac{r}{r} = 1$$

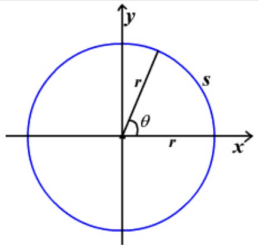
$m\angle COD = 1$ radian

Using this formula: $\theta = \frac{S}{r}$

S = arc length
r = radius

You can write this as: $S = \theta r$

Length of an arc equals the measure of the angle, in radians, times the radius.



If the arc length equals the entire circle then

S is the entire circumference $S=2\pi r$

$S = \theta r$ becomes $2\pi r = \theta r$

$2\pi = \theta$

This means a full circle is equal to 2π radians.

Therefore, the relationship between degrees and radians is:

$2\pi = 360^\circ$

This can be simplified into: $\pi = 180^\circ$

This relationship: $\pi = 180^\circ$

can be written as the following two conversion factors:

$\frac{\pi}{180^\circ}$ *or* $\frac{180^\circ}{\pi}$

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

Use one of the above conversion factors to convert each angle into degrees. Round to the nearest tenth when needed.

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

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

$= 120^\circ$

2. $\frac{5\pi}{9}$

$\frac{5\pi}{9} \cdot \frac{180^\circ}{\pi}$

$= 100^\circ$

3. $\frac{23\pi}{15}$

$\frac{23\pi}{15} \cdot \frac{180^\circ}{\pi}$

$= 276^\circ$