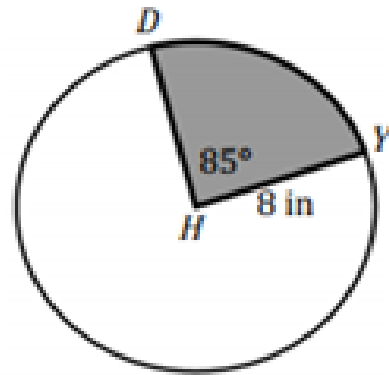


Informal Assessment:

In Sarah's family, the birthday person always gets to cut the first piece of cake. Sarah is celebrating her birthday with both of her parents, her two brothers, and her best friend. She cuts her piece of birthday cake as shown by the sector below.



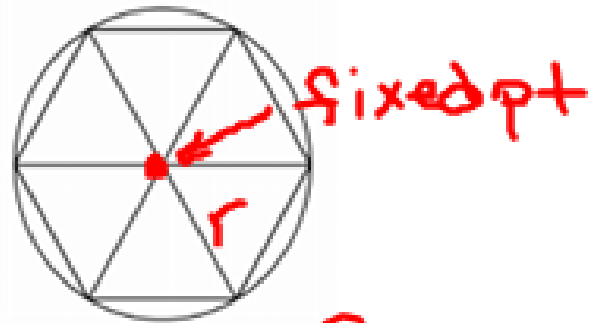
If the rest of the party equally shares the remaining portion of the cake, what is approximate area each one receives?

- 30.718 in²
- 47.473 in²
- 153.589 in²
- 201.062 in²

$$360 - 85 = 275$$

$$\frac{x}{\pi(8)^2} = \frac{275}{360}$$

$$153.589 \div 5$$



For one complete Revolution of a circle, we have the circumference, $d\pi$ or $2\pi r$

Radius is the size of the circle and determines the arc measure

Radians represent the number of times the radius goes around a fixed pt.

Radians is define by an arc of a circle.

Radians represents the 360° needed to complete one revolution.

Therefore, in radians the angle around the circle is

$$\frac{2\pi}{360} = \frac{\pi}{180}$$

To convert from degree to radians multiply the angle by $\frac{\pi}{180}$

To convert from radians to degree, multiply the angle by $\frac{180}{\pi}$

Practice:

Perform the following conversions.

1. Convert 160° to radians.

$$\frac{160^\circ \pi}{180} = \frac{8\pi}{9}$$

2. Convert $\frac{11\pi}{6}$ radians to degrees.

$$\frac{11\pi \cdot 180}{6\pi} = 330^\circ$$

What is the length of an arc with a measure of 60° in a circle with a 10-centimeter radius? $d = 20$

$$\frac{x}{20\pi} = \frac{60}{360}$$

$$\begin{aligned} \frac{x}{20\pi} &= \frac{1}{6} \\ 6x &= 20\pi \\ x &= \frac{10\pi}{3} \end{aligned}$$

Your turn:

Convert 315° to radians.

$$315^\circ \frac{\pi}{180} = \frac{63\pi}{36}$$

$$\frac{7\pi}{4}$$

Convert $\frac{7\pi}{4}$ to degrees.

$$315^\circ$$

$$\frac{7\pi}{4} \left(\frac{180}{\pi} \right)$$

$$7(45) = 315^\circ$$

$$\begin{array}{r} 45 \\ 4 \overline{)180} \\ \underline{16} \\ 20 \end{array}$$

An arc with a measure of 120° has an arc length of 10π inches.

What is the radius of the circle on which the arc sits?

$$\frac{10\pi}{x\pi} = \frac{120}{360}$$

$$\frac{10}{x} = \frac{1}{3}$$

$$30 = x$$

$$2(x=15)$$

$$\begin{array}{r} 63 \\ 5 \overline{)315} \\ \underline{30} \\ 15 \\ 5 \overline{)180} \\ \underline{15} \\ 30 \end{array}$$