

## Arc Length and Degrees to Radians

### Degrees to Radians

Multiply the degree by  $\pi/180$

1. What is  $150^\circ$  in radians

$$\frac{150}{1} \cdot \frac{\pi}{180} = \frac{150\pi}{180} = \frac{5\pi}{6}$$

4. What is  $4\pi/3$  in degrees

$$\frac{4\pi}{3} \cdot \frac{180}{\pi} = \frac{4 \cancel{\pi} 180}{3 \cancel{\pi}} = \frac{720}{3} = 240^\circ$$

2. What is  $255^\circ$  in radians

$$\frac{255^\circ}{1} \cdot \frac{\pi}{180} = \frac{255\pi}{180} = \frac{17\pi}{12}$$

5. What is  $2\pi/3$  in degrees

$$\frac{2\pi}{3} \cdot \frac{180}{\pi} = \frac{2 \cancel{\pi} 180}{3 \cancel{\pi}} = \frac{360}{3} = 120^\circ$$

3. What is  $120^\circ$  in radians

$$\frac{120^\circ}{1} \cdot \frac{\pi}{180} = \frac{120\pi}{180} = \frac{2\pi}{3}$$

6. What is  $11\pi/6$  in degrees

$$\frac{11\pi}{6} \cdot \frac{180}{\pi} = \frac{11 \cancel{\pi} 180}{6 \cancel{\pi}} = \frac{1980}{6} = 330^\circ$$

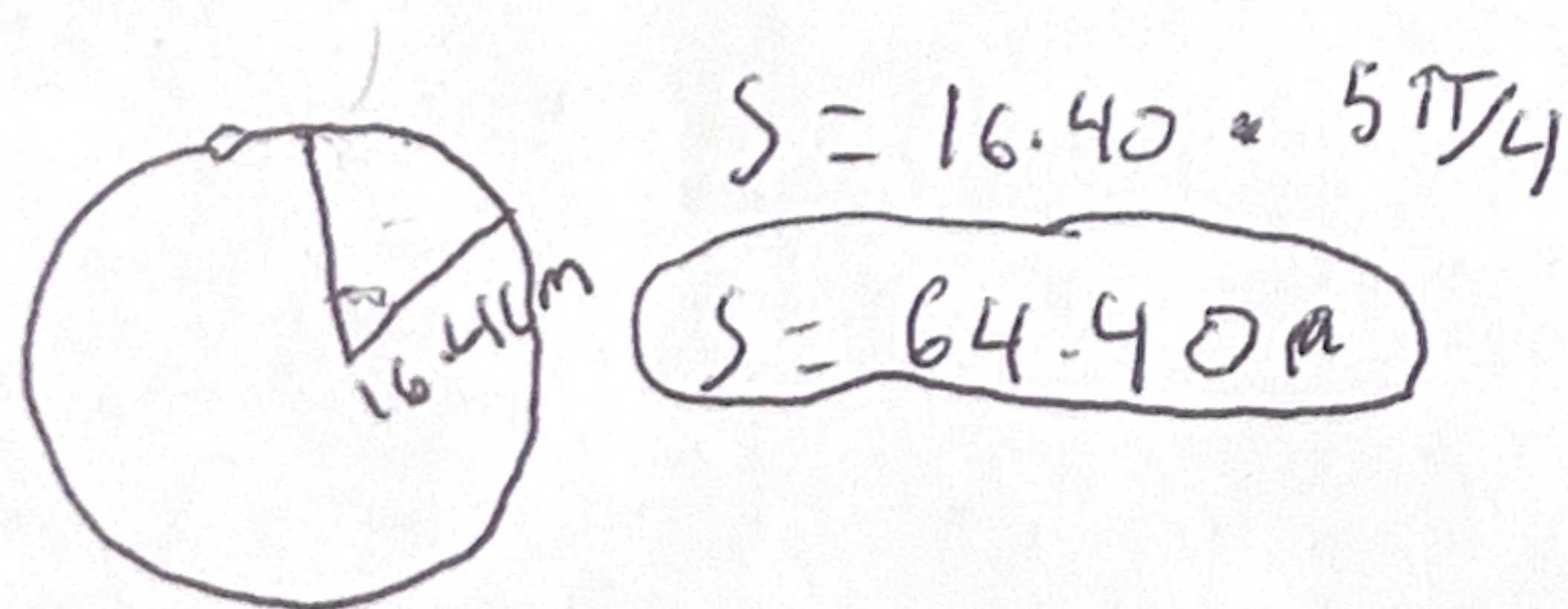
### Arc Length

Formula:  $S = r \times \theta$

\*Theta HAS to be in ~~DEGREES~~ <sup>radians</sup>

1. If a circle has a radius of 16.40cm find the arc length of the two degrees below.

A)  $5\pi/4$



$$S = 16.40 \cdot 5\pi/4$$

$$S = 64.40\pi$$

B)  $175^\circ$

$$\frac{175}{1} \cdot \frac{\pi}{180}$$

$$\frac{35\pi}{36} \cdot 16.40$$

$$S = 50.09$$

C)  $3\pi/2$

$$\frac{3\pi}{2} \cdot 16.40$$

$$S = 77.28$$

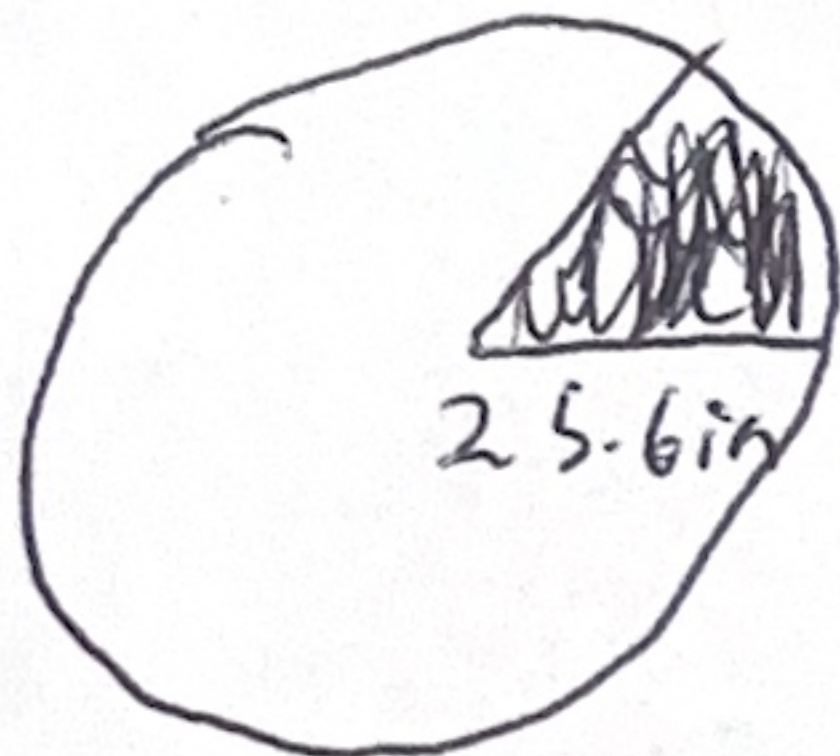


### Area of a Sector

Formula:  $A = \frac{1}{2} r^2 \theta$

$\theta$  has to be in radians!

If a circle has a radius of 25.60 inch, what is the Area of the sector if is  $\theta = 20^\circ$ ?



$$\frac{20}{1} \cdot \frac{\pi}{180} = \frac{\pi}{9}$$

$$A = \frac{1}{2} (25.6)^2 \cdot \frac{\pi}{9}$$

$$A = 114.38$$

If a circle has a radius of 34.53 cm, what is the area of the sector if is  $\theta = 45^\circ$ ?



$$\frac{45}{1} \cdot \frac{\pi}{180} = \frac{\pi}{4}$$

$$A = \frac{1}{2} (34.53)^2 \cdot \frac{\pi}{4}$$

$$A = 468.22$$