

Objective: SWBAT find the arc length and area of a sector

Warm Up

The following equations describe a moving circle:

$$\text{time 0: } (x-2)^2 + (y-2)^2 = 9$$

$$\text{time 1: } (x-2)^2 + y^2 = 9$$

$$\text{time 2: } (x-2)^2 + (y+2)^2 = 9$$

1. What direction is the circle moving in?

Objective: SWBAT find the arc length and area of a sector

Agenda:

- Warm Up
- Practice
- Reflection

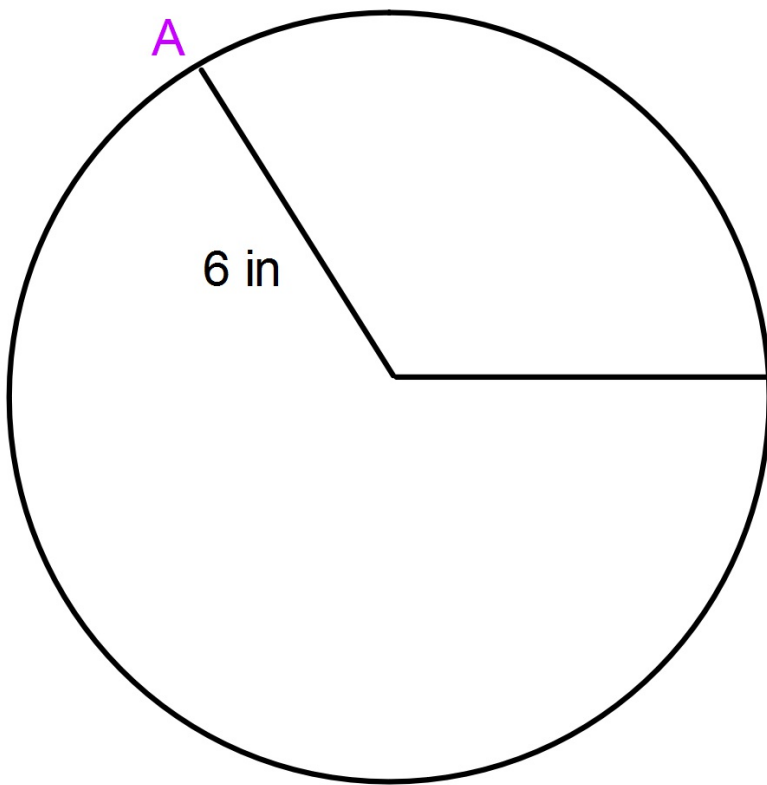
- HW: Arc Length

How many suitcases will it take to make the whole circle?





Find the circumference of the circle



Discuss with your partner how you think you would find the length of AB

What else would you need to know? why?

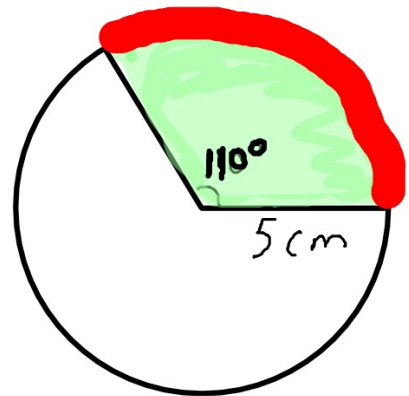
Arc Length and Area of Sector notes:

$$\text{Arc Length: } \frac{\text{Central angle} \cdot 2\pi \cdot r}{360}$$

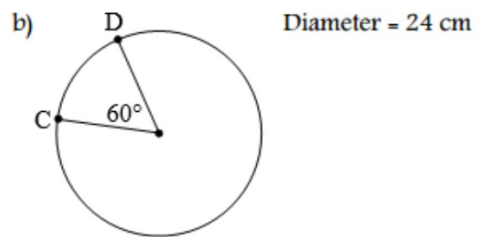
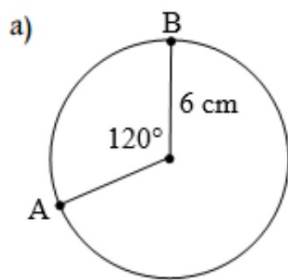


Examples

1. Find the length of the red arc.



2. If $r = 20$ inches and the central angle $\theta = 300^\circ$, find the:
arc length

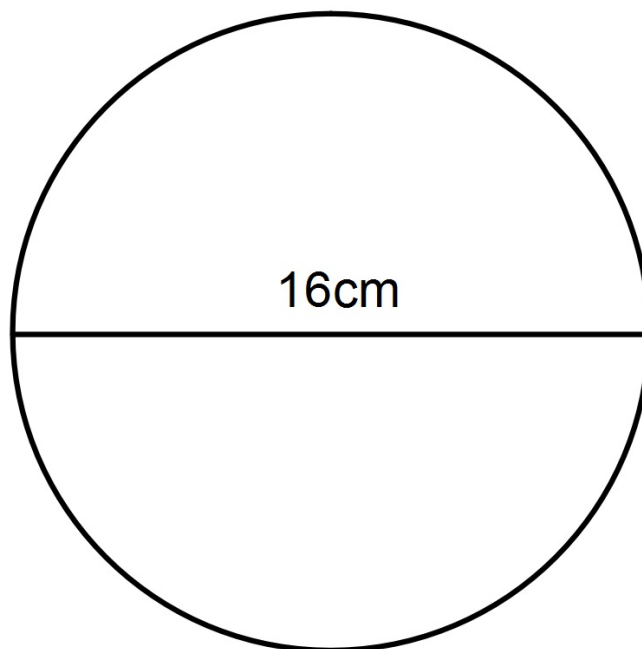


3) A circle has an arc whose measure is 80° and whose length is 88π . What is the diameter of the circle?

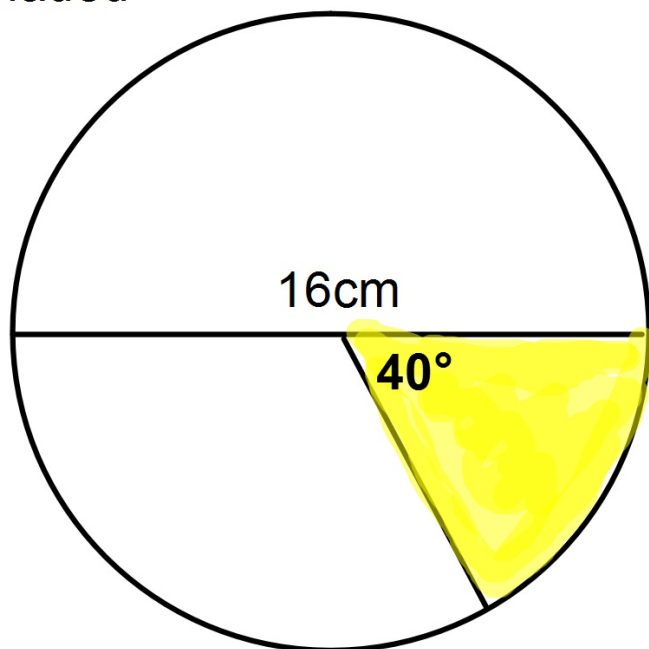
4) A circle has a circumference of 25π . Find the length of an arc whose central angle is 50° .

5) Find the measure of the central angle of a circle if its minor arc length is 14π and the radius is 18 inches.

Find the area of the circle:



Discuss with your partner
how you think you would
find the area of the shaded
region.

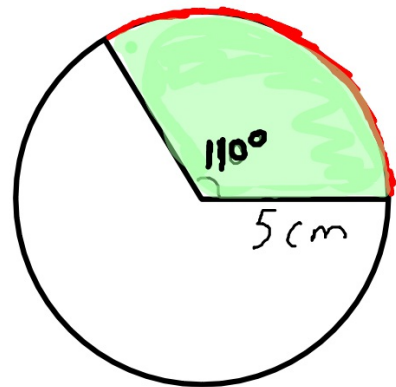


Arc Length and Area of Sector notes:

$$\text{Arc Length: } \frac{\text{Central angle} \cdot 2\pi \cdot r}{360} \text{ or } \frac{\theta}{360} \cdot 2\pi r$$

$$\text{Area of Sector: } \frac{\text{Central angle} \cdot \pi \cdot r^2}{360} \text{ or } \frac{\theta}{360} \cdot \pi r^2$$

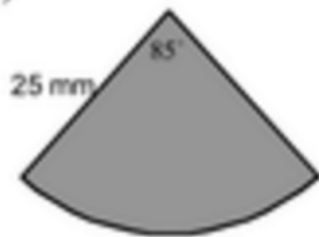
Examples



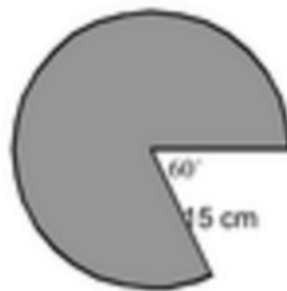
Find the area of the green sector.

3. If $r = 20$ inches and the central angle $\theta = 300^\circ$, find the sector area

(b)



(c)



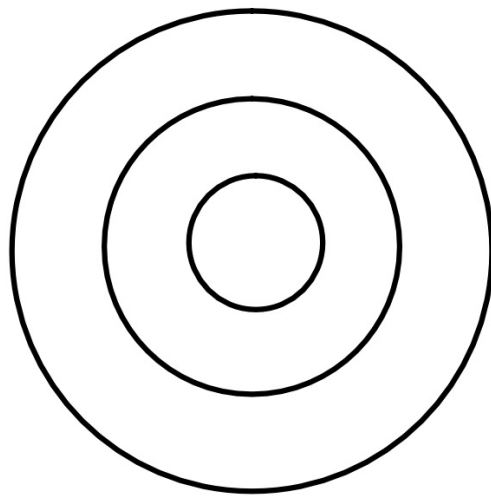
5) $r = 18 \text{ cm}, \theta = 60^\circ$

6) $r = 16 \text{ m}, \theta = 75^\circ$

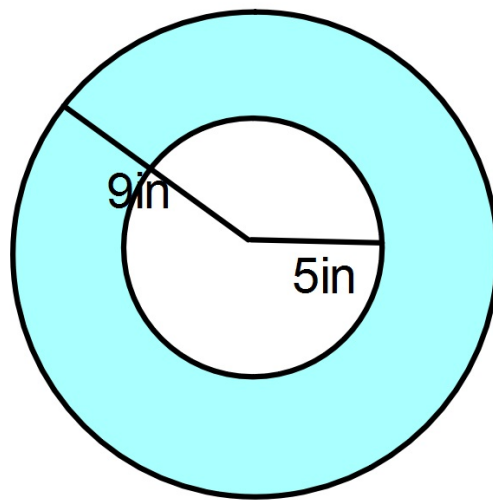
7) $r = 9 \text{ ft}, \theta = \frac{7\pi}{4}$

8) $r = 14 \text{ ft}, \theta = \frac{19\pi}{12}$

Concentric circles:

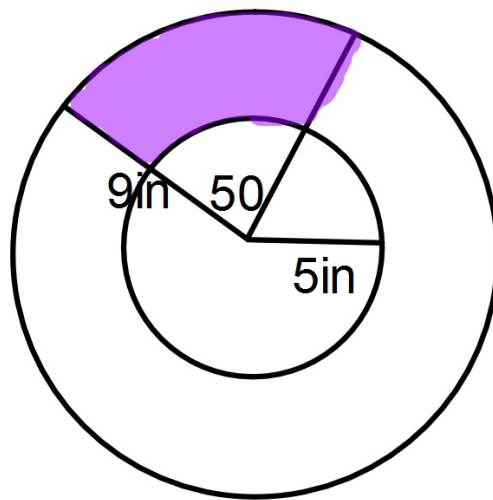


Circles in a plane with the same center, but different radii.



How would you find the area of the shaded region?

Think - pair - share!!



How would you find the area of the shaded region?

Think - pair - share!!

Problem-Based Task 6.4.2: Pizza Specials

A pizza parlor has a \$5 lunch special this week for 3 pieces of a small cheese pizza and a soft drink. Next week, the \$5 special will be for 2 pieces of a large cheese pizza and a soft drink. A small pizza measures 10 inches in diameter and is cut into 6 equal slices. A large pizza measures 14 inches in diameter and is cut into 8 equal slices. Which special is the better deal?

Reflection

How are arc length, sector area, and similar triangles related?

