

1. Determine the arc length.

a) Central Angle of 30° ,
radius of 3 cm

b) Central Angle of 90° ,
radius of 8 cm

c) Central Angle of 72° ,
radius of 10 cm

$s = \underline{\hspace{2cm}}$ (E)

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d) Central Angle of $\frac{\pi}{4}$ rad.,
radius of 12 cm

e) Central Angle of $\frac{2\pi}{3}$ rad.,
radius of 15 cm

f) Central Angle of $\frac{4\pi}{5}$ rad.,
radius of 10 cm

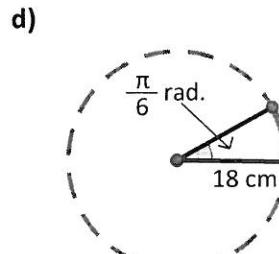
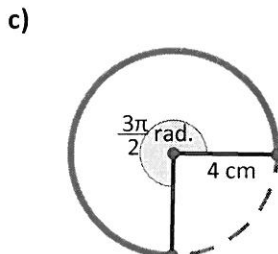
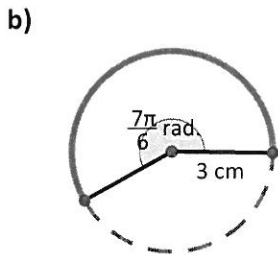
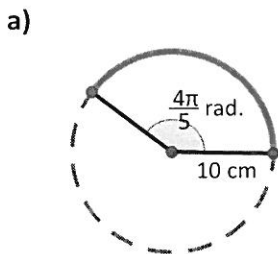
$s = \underline{\hspace{2cm}}$ (E)

$s = \underline{\hspace{2cm}}$ (E)

$s = \underline{\hspace{2cm}}$ (E)

2. After class Angela says, "I didn't understand how he got the formula for arc length, $s = \theta r$. Did you understand it?" Explain to Angela where the formula comes from.

3. Determine the arc length of the following.



$s = \underline{\hspace{2cm}}$ (E)

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4. Circle G has a radius of 7 cm. After computing an arc on circle G Nancy finds the arc length to be 14 cm. She exclaims, "The central angle must be 2 radians." How did she know this?

5. Determine the missing information.

a) $s = 4\pi$ cm, $r = 8$ cm b) $\theta = 0.8$ rad., $s = 8$ cm c) $r = 4.5$ cm, $\theta = \frac{\pi}{3}$ rad., d) $\theta = \frac{7\pi}{4}$ rad., $s = 28\pi$ cm

$\theta =$ _____ rad. $r =$ _____ cm $s =$ _____ cm $r =$ _____ cm

e) $s = 10\pi$ cm, $r = 8$ cm f) $\theta = \frac{2\pi}{5}$ rad., $s = 5\pi$ cm g) $r = 8$ cm, $\theta = \frac{\pi}{2}$ rad., h) $\theta = \frac{5\pi}{6}$ rad., $s = 10\pi$ cm

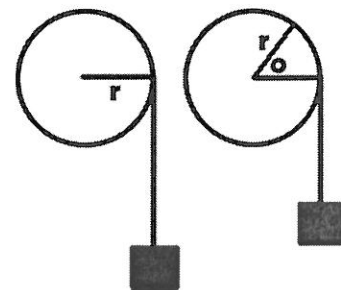
$\theta =$ _____ rad. $r =$ _____ cm $s =$ _____ cm $r =$ _____ cm

6. Find the radius of a circle in which a central angle of 5 radians intercepts an arc length of 62.5 feet?

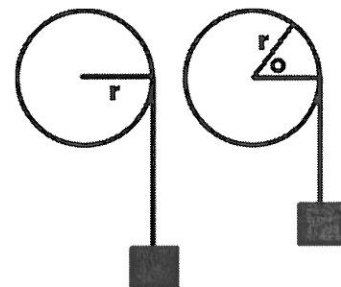
7. Find the measure (in radians) of a central angle that intercepts an arc of length 16 cm in a circle of radius 8 cm.

8. Find the measure (in radians) of a central angle that intercepts an arc of length 24π cm in a circle of radius 10 cm.

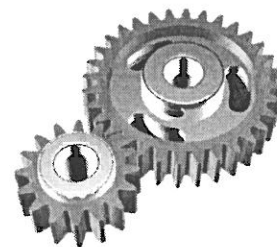
1. If the radius of the pulley is 12 cm and the rotation of the pulley was $\frac{7\pi}{6}$ radians, how many cm will the weight rise?



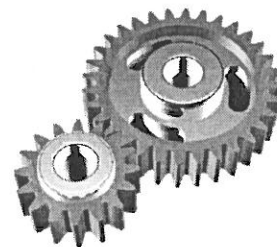
2. If the arc length of the pulley was 8π cm and the rotation of the pulley was $\frac{4\pi}{5}$ radians, what was the radius of the pulley?



3. The rotation of the smaller gear with a radius of 10 cm was $\frac{11\pi}{6}$ radians. What was the angle of rotation (radians) of the larger gear with a radius 20 cm?

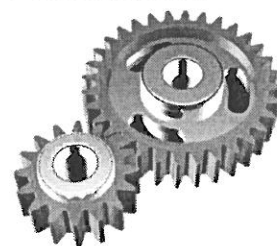


4. Find the radius of the larger gear in the figure if the smaller gear rotates 120° and the larger gear rotates 30° . Show all work.



Radius Small Gear = 5 cm

5. Find the angle of rotation of the smaller gear (in radians) if the larger gear rotates 180° . Show all work



Radius Small Gear = 5 cm
Radius Large Gear = 12 cm

Did the small gear rotate more than one full revolution? Yes or No

1. Determine the area of the sector. (**r** – radius, **d** – diameter, **s** – arc length, **A** – Area)

a) $r = 8 \text{ cm}, \theta = \frac{\pi}{4} \text{ rad.}$

b) $r = 3 \text{ cm}, \theta = \frac{5\pi}{3} \text{ rad.}$

c) $d = 4 \text{ cm}, \theta = 60^\circ$

A = _____ (E)

A = _____ (E)

A = _____ (E)

d) $r = 12 \text{ cm}, \theta = \frac{3\pi}{2} \text{ rad.}$

e) $d = 6 \text{ cm}, \theta = 240^\circ$

f) $d = 10 \text{ cm}, \theta = \frac{2\pi}{5} \text{ rad.}$

A = _____ (E)

A = _____ (E)

A = _____ (E)

2. After class Michael says, "I didn't understand how he got the formula for area, $s = \frac{1}{2}\theta r^2$. Did you understand it?"

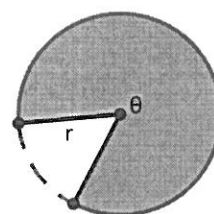
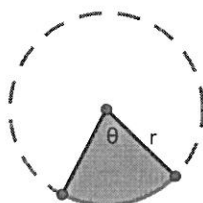
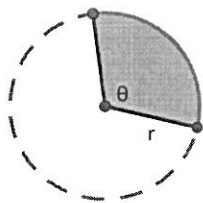
Explain to Michael where the formula comes from.

3. Determine the required information. (**r** – radius, **d** – diameter, **s** – arc length, **A** – Area)

a) $r = 10 \text{ cm}, \theta = 2 \text{ rad.}$

b) $A = 6\pi \text{ cm}^2, \theta = \frac{\pi}{3} \text{ rad.}$

c) $r = 3 \text{ cm}, \theta = 300^\circ$



Area = _____

r = _____

Area = _____