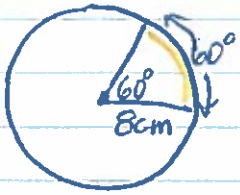
Day 67

10.6/10.7

① Arc Length $= \frac{m\overset{\frown}{arc}}{360^\circ} \cdot 2\pi r$

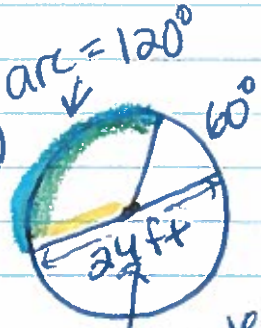
↑ circumference

ex



$= \frac{60^\circ}{360^\circ} \cdot 2\pi \cdot 8 = \boxed{\frac{8\pi}{3}\text{ cm}}$ or $2\frac{2}{3}\pi$ cm

ex



diameter
radius = 12

$= \frac{120^\circ}{360^\circ} \cdot 2\pi \cdot 12$

$= \boxed{8\pi \text{ ft}}$

② Area Sector (piece of pie)

$A = \frac{m\overset{\frown}{arc}}{360^\circ} \cdot \pi r^2$

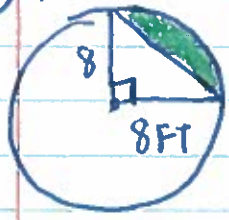
↑ area of circle

ex

$\frac{45^\circ}{360^\circ} \cdot \pi \cdot 18^2 = \frac{81\pi}{2}\text{ yd}^2$

OR $40.5\pi\text{ yd}^2$

③ Area Segment = Area Sector − Area △



$\frac{m\overset{\frown}{arc}}{360} \cdot \pi r^2 - \frac{1}{2}bh$

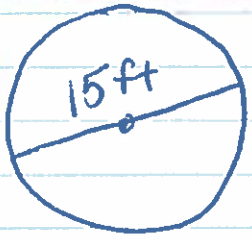
$\frac{90}{360} \cdot \pi \cdot 8^2 - \frac{1}{2}(8)(8)$

$(16\pi - 32)\text{ ft}^2$

Area Circle

$A = \pi r^2$

ex



$r = \frac{15}{2} = 7.5$

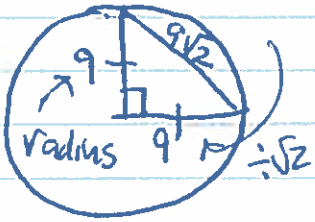
$A = \pi \cdot (7.5)^2$

$A = 56.25\pi \text{ ft}^2$

Circumference $C = \pi d$

$C = 15\pi \text{ ft}$

ex



$\frac{9\sqrt{2}}{\sqrt{2}}$

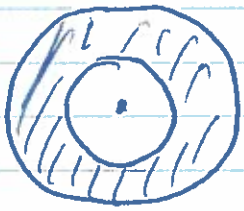
$A = \pi \cdot 9^2$

$A = 81\pi \text{ un}^2$

$C = 2 \cdot \pi \cdot 9$

$C = 18\pi \text{ un}$

Annulus OF Circle



R = 15cm

r = 6cm

Area Big ⊙ − Area Small ⊙

$\pi \cdot 15^2 - \pi \cdot 6^2$

$225\pi - 36\pi$

$189\pi \text{ cm}^2$

Practice

Complete each table by converting the given measure to its equivalent measure in degrees or radians.

1.

Degrees	Radians
0°	
30°	
	$\frac{\pi}{4}$
	$\frac{\pi}{2}$

2.

Degrees	Radians
	$\frac{2\pi}{3}$
	π
270°	
360°	2π

REMEMBER $360° = 2\pi$ rad

Write an appropriate word to complete each statement.

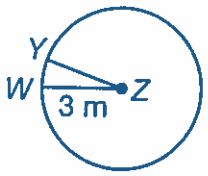
3. Angles and arcs can be measured in degrees or in _____.

4. The length of a(n) _____ is a fraction of the circumference of a circle.

5. A sector is a region of a circle bounded by a(n) _____ and two _____ of the circle.

Choose the best answer.

6. What is the area of sector WZY if the measure of $\angle WZY$ is $\frac{\pi}{9}$ radians?



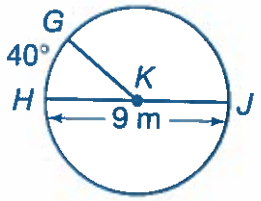
A. $\frac{\pi}{3}$ m^2

B. $\frac{\pi}{2}$ m^2

C. 2π m^2

D. 3π m^2

7. What is the length of $\overset{\frown}{GJ}$, in radians, if $m\overset{\frown}{GH} = 40°$ and $\overline{HJ}$ is a diameter?



A. π m

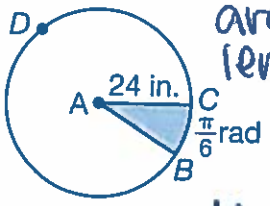
B. 2π m

C. $\frac{7\pi}{9}$ m

D. 7π m

Find each indicated arc length and sector area in each circle A. $\frac{215}{360} \cdot 2\pi \cdot 36$

8.

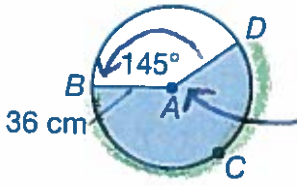


arc length $= \frac{1\pi}{6} \cdot 24$

length of $\overset{\frown}{CB}$ = 4π in

area of shaded sector = _____

9.



$\frac{360}{145}$

215°

length of $\overset{\frown}{BCD}$ = 43π cm

area of shaded sector = 774π cm^2

$\frac{215°}{360°} \cdot \pi \cdot 36^2 =$

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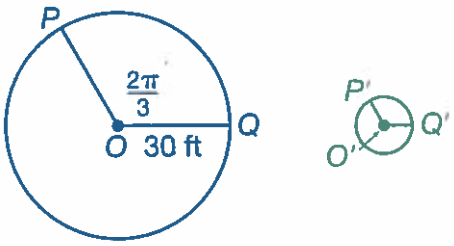
Circle O was dilated by a scale factor of $\frac{1}{3}$ and translated to the right to form circle O'. Use these circles for questions 10–12.



10. How does the radian measure of $\overset{\frown}{PQ}$ compare to the measure of $\overset{\frown}{P'Q'}$?

_____

11. What are the lengths of $\overset{\frown}{PQ}$ and $\overset{\frown}{P'Q'}$? How do they compare to each other?

_____

_____

12. What are the areas of sectors POQ and $P'O'Q'$? How do they compare to each other?

_____

_____

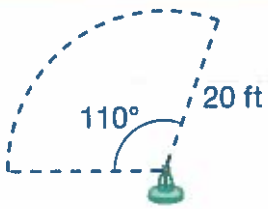
Solve.

13. APPLY A lawn sprinkler is set to spray water over a distance of 20 feet and rotate through an angle of 110°. What is the approximate area of the lawn that will be watered? Explain how you found your answer.

_____

_____

_____



14. COMPUTE Line segments OM and ON are radii of circle O. The shaded area that is bounded by $\overline{MN}$ and $\overset{\frown}{MN}$ is called a segment of the circle. Compute the approximate area of this segment.

_____

$\frac{80}{360} \cdot \pi \cdot 12^2 - \frac{1}{2} \cdot 12 \cdot 12 \cdot \sin 80°$

$32\pi - 70.9$ or

$29.6 ft^2$

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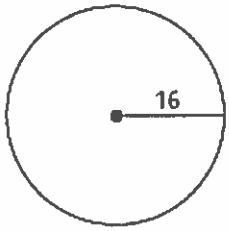
Name _____ Block _____ Date _____

Practice 10-6/10.7 **Circles and Arcs**

Find the Circumference and Area of each circle. Leave your answers in terms of π.

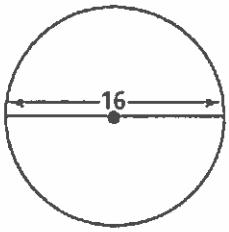
1.



C = _____

A = _____

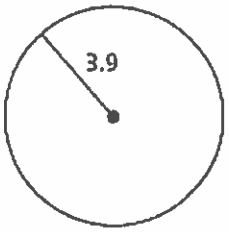
2.



C = _____

A = _____

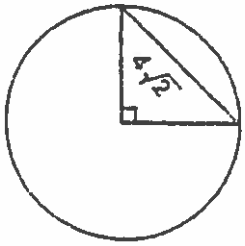
3.



C = _____

A = _____

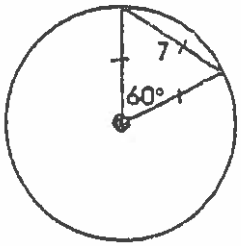
4.



C = _____

A = _____

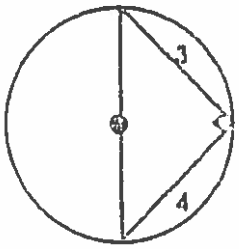
5.



C = _____

A = _____

6.

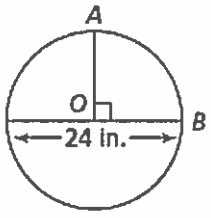


C = _____

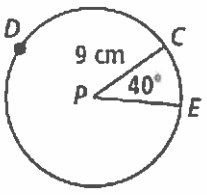
A = _____

Find the length of each arc. Leave your answers in terms of π.

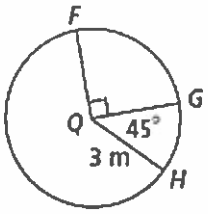
7. $\overset{\frown}{AB}$



8. $\overset{\frown}{CDE}$

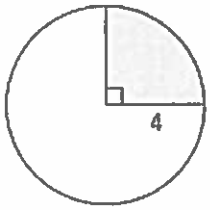


9. $\overset{\frown}{FH}$

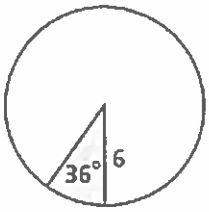


Find the area of each shaded sector of a circle. Leave your answers in terms of π.

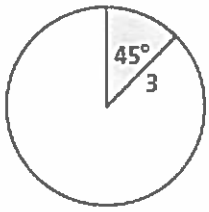
10.



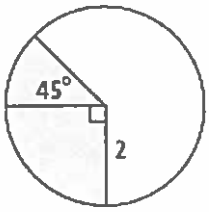
11.



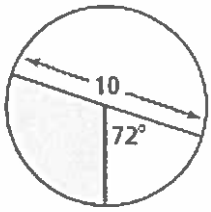
12.



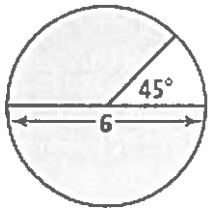
13.



14.

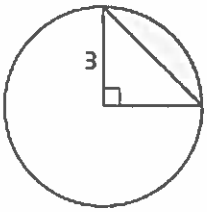


15.

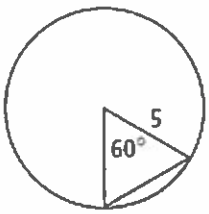


Find the area of each shaded segment of a circle. Round your answers to the nearest whole number.

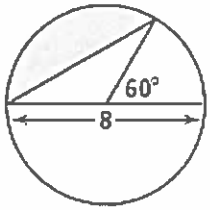
16.



17.

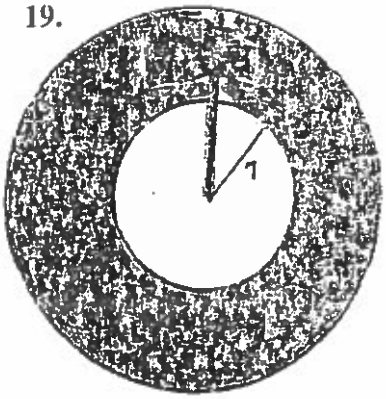


18.



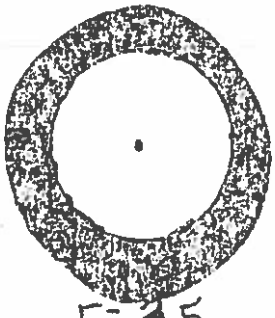
Find the area of the Annulus. Leave your answers in terms of π.

19.



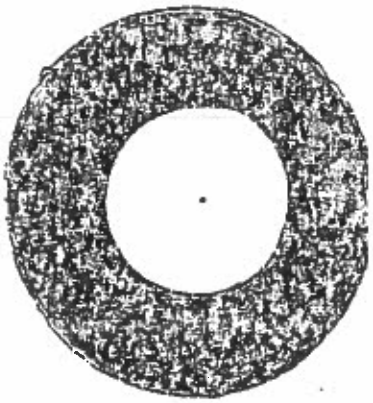
r = 7
R = 15

20.



r = 3.5
R = 5

21.



r = 10
R = 22