Name: _____ # _____

Geometry: Period _____

Ms. Pierre

Date: _____

Areas of Circles & Sectors

Today's Objective

SWBAT find the area of a circle given the radius or the diameter and use the relationship between area and angles to determine the area of a sector.

THEOREM 6.20: AREA OF A CIRCLE

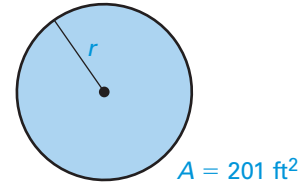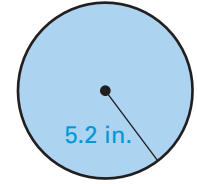The area of a circle is π times the square of the radius.

$A = $ _____

Example 1

Find the indicated measure.

a. Radius

$A = 201$ ft^2

b. Area

5.2 in.

☑ **Check for Understanding**

Use the diagram to find the indicated measure.

a) The diameter of a circle is 11 centimeters. Find the area.
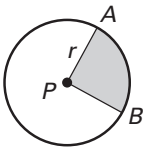
b) The area of a circle is 158.3 square yards. Find the radius.

The sector of a circle is the region bounded by two radii of the circle and their intercepted arc

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THEOREM 6.21: AREA OF A SECTOR

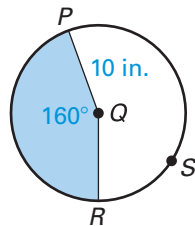The ratio of the area of a sector of a circle to the area of the whole circle (πr^2) is equal to the ratio of the measure of the intercepted arc to 360°.

$$\frac{\text{Area of sector } APB}{\boxed{}} = \frac{\boxed{}}{360°}, \text{ or}$$

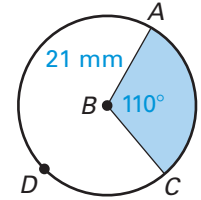$$\text{Area of sector } APB = \frac{\boxed{}}{360°} \cdot \underline{}$$

Example 2

Find the areas of the sectors formed by $\angle PQR$.

10 in.
160°

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a) Find the areas of the sectors formed by $\angle ABC$.

21 mm
110°

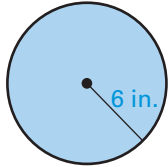b) Find the area of $\odot H$.

$A = 123.45$
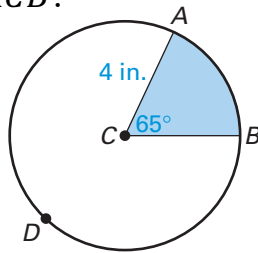70°
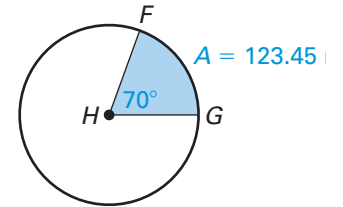
Guided Practice

Find the exact area of the circle. Then find the area to the nearest hundredth.

1.

6 in.
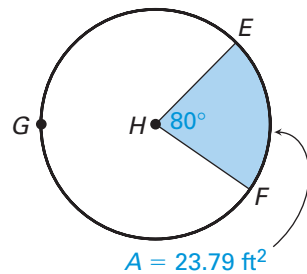
2. The area of a circle is 173 square inches. Find the radius.
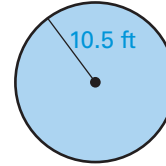
3. Find the areas of the sectors formed by $\angle ACB$.

A
4 in.
65°
C
B
D

4. Find the area of $\odot H$.

E
G
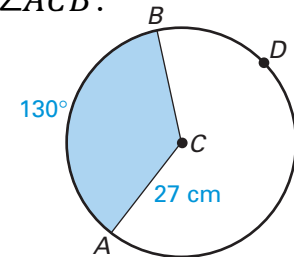H 80°
F
$A = 23.79$ ft²

Independent Practice

Find the exact area of the circle. Then find the area to the nearest hundredth.

1.

10.5 ft
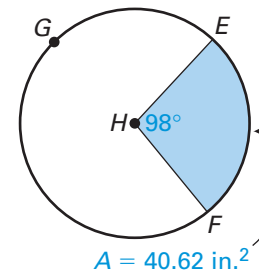
2. The area of a circle is 290 square meters. Find the radius.

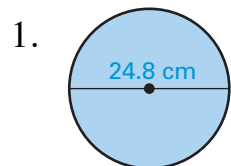3. Find the areas of the sectors formed by $\angle ACB$.

B
D
130°
C
27 cm
A

4. Find the radius of $\odot H$.
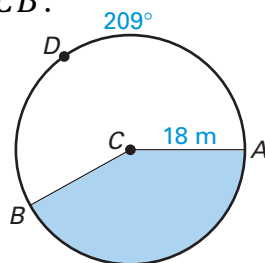

G
E
H 98°
F
$A = 40.62$ in.²

📖 Home Work

Find the exact area of the circle. Then find the area to the nearest hundredth.
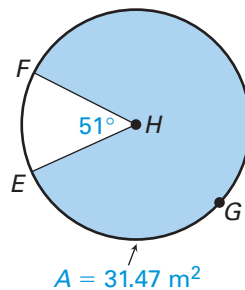
1.

24.8 cm

2. The area of a circle is 52 square millimeters. Find the radius.

3. Find the areas of the sectors formed by ∠ACB.

209°
D
C   18 m   A
B
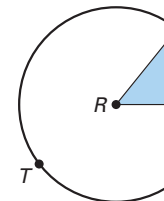
4. Find the diameter of ⊙ H.

F
51° ●H
E
G
A = 31.47 m²

💡 Enrichment

Please complete all necessary working for enrichment questio on a separate sheet of notebook paper.

The area of ⊙R is 295.52 square inches. The area of sector PRQ is 55 square inches. Find the indicated measure.

16. Radius of ⊙R   **17.** Circumference of ⊙R

18. $m\widehat{PQ}$ **19.** Length of $\widehat{PQ}$

20. Perimeter of shaded region   **21.** Perimeter of unshaded region

R ●
T

Find the area of the shaded region.

22.

6 cm   43°

23.

13 in.

24.

9 m

25.

2 ft
10 ft

26.

6 in.

27.

8 v