

78 37

A regular pentagon is centered about the origin and has a vertex at (0, 4). Identify ALL transformations that would map it onto itself.

A. A reflection across the line m .
 B. A dilation of 1 centered at the origin.
 C. A clockwise rotation of 100° about the origin.
 D. A reflection across the y -axis.
 E. A clockwise rotation of 144° about the origin.
 F. A dilation of $\frac{1}{2}$ centered about the origin.

1

Area of a circle

$$A = \pi r^2$$

ANSWERS WILL BE IN SQUARE UNITS

2

Find the area of each circle in terms of π and to the nearest hundredth. $A = \pi r^2$

$A = \pi (7.6)^2$
 $= 57.76 \pi \text{ cm}^2$
 $\approx 181.46 \text{ cm}^2$

$A = \pi (10)^2$
 $= 100 \pi \text{ in}^2$
 $\approx 314.16 \text{ in}^2$

3

If $\odot S$ has a circumference of 10π inches, find the area of the circle to the nearest hundredth.

$C = 2\pi r$ $A = \pi r^2$

$\frac{10\pi}{2\pi} = \frac{2\pi r}{2\pi}$ $A = \pi (5)^2$
 $5 = r$ $A = 25\pi$
 $\approx 78.54 \text{ in}^2$

4

SECTOR AREA:

sector = $\frac{\pi r^2 \theta}{360}$

5

sector = $\frac{\pi r^2 \theta}{360}$ Find the area of the sector of pizza. Leave answer in terms of π

60°

$S = \frac{\pi (6)^2 60}{360}$
 $S = 6\pi \text{ cm}^2$

Find the area of the sector of cake. Round to the nearest tenth.

120°

$S = \frac{\pi (7)^2 (120)}{360}$
 $= \frac{49\pi}{3} \approx 51.3 \text{ cm}^2$

6

Area of a segment: a segment is a region bound by a chord and its corresponding arc.

Area of segment = $\frac{\text{Sector}}{\frac{\pi r^2 \theta}{360}} - \text{triangle } \frac{1}{2} b \cdot h$

7

Find the area of the segment in the image below.

Segment = sector - triangle

$$\frac{\pi r^2 \theta}{360} - \frac{1}{2} b h$$

$$\frac{\pi (12)^2 (90)}{360} - \frac{1}{2} (12)(12)$$

$$36\pi - 72$$

$$\approx 41.09 \text{ yd}^2$$

8

Given arc XY is 90° and $ZX = 8$
Find the shaded area.

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

$$16\pi - 32 = 18.27 \text{ units}^2$$

9

Find the area of the shaded region.

$$\frac{C_1}{\pi (2)^2} = \frac{C_2}{\pi (4)^2}$$

$$4\pi \quad 16\pi$$

$$A = 16\pi - 4\pi = 12\pi \text{ in}^2$$

$$\approx 37.7 \text{ in}^2$$

10

RADIANS
Another way to measure angles
It is based on the length of the radius.

To convert from radians to degrees.
mult. $\frac{180}{\pi}$

To convert from degrees to radians.
mult. $\frac{\pi}{180}$

$\pi \text{ radians} = 180^\circ$

11

Convert from radians to degrees

$$\frac{\pi}{2} \cdot \frac{180}{\pi} = 90^\circ$$

$$\frac{3\pi}{4} \cdot \frac{180}{\pi} = 135^\circ$$

$$\frac{8\pi}{6} \cdot \frac{180}{\pi} = 240^\circ$$

$$\frac{18\pi}{12} \cdot \frac{180}{\pi} = 270^\circ$$

Convert from degrees to radians

$$270^\circ \cdot \frac{\pi}{180} = \frac{3\pi}{2}$$

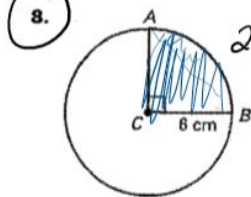
$$45^\circ \cdot \frac{\pi}{180} = \frac{\pi}{4}$$

$$135^\circ \cdot \frac{\pi}{180} = \frac{3\pi}{4}$$

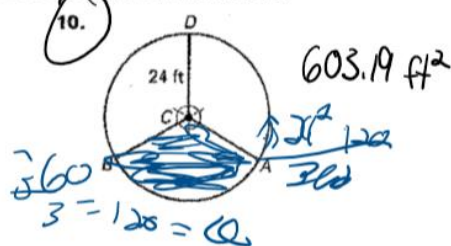
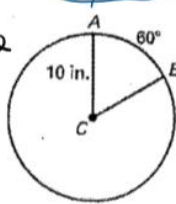
$$300^\circ \cdot \frac{\pi}{180} = \frac{5\pi}{3}$$

12

Find the areas of the sectors formed by $\angle ACB$. round to the nearest hundredths.



9. 28.27 cm^2



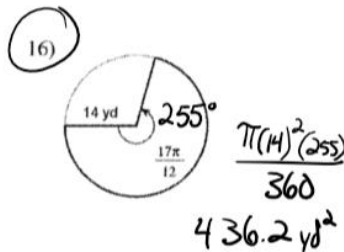
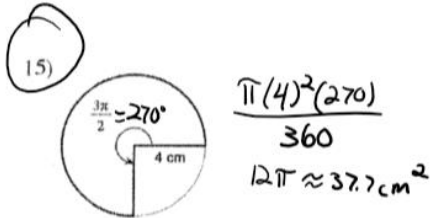
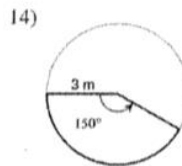
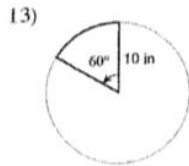
Convert the following radians measures to degrees.

11. $\frac{7\pi}{9} \cdot \frac{180}{\pi} = 140^\circ$

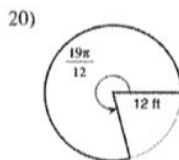
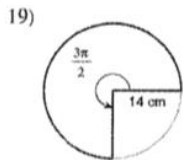
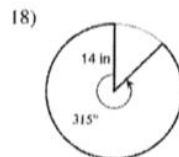
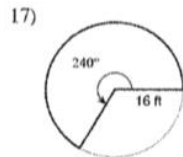
12. $\frac{5\pi}{4} = 225^\circ$

Homework

Find the area of each sector. Round your answers to the nearest tenth.



Find the area of each sector. Do not round.



21) $r = 10 \text{ mi}, \theta = \frac{\pi}{2}$

22) $r = 12 \text{ yd}, \theta = \frac{5\pi}{3}$

23) $r = 7 \text{ km}, \theta = 60^\circ$

24) $r = 7 \text{ mi}, \theta = 225^\circ$