

6. Area of segment AB of the circle = Area of sector AOB - Area of triangle AOB. Area of sector AOB = 90.48 from problem 5.

To find the area of $\triangle AOB$, we must use trigonometry.

Area of $\triangle AOB = \frac{1}{2}bh$
 $\sin 36^\circ = \frac{12}{x}$
 $7.0534 = x$
 $AB = 2x = 14.107$

Area of $\triangle AOB = \frac{1}{2}bh = 9.708$ in.²

Area of $\triangle AOB = 68.48$ sq. in.
 Area of the circle = 90.48 - 68.48 = 22.0 sq. in.

1. $c = 2\pi r$ ($2r = d$)
 $\frac{c}{2} = \pi$
 $d = 2\pi$
2. $c = 2\pi r$ (T25-3)
 $c = 2\pi(12)$
 $c = 75.4$ in
3. $A = \pi r^2$ (T25-5)
 $A = \pi \cdot (12)^2$
 $A = 452.4$ sq. in.
4. $A_1 = \frac{360^\circ}{\theta} \cdot 2\pi r^2$ (T25-4)
 $A_1 = \frac{360^\circ}{72^\circ} \cdot 2\pi \cdot 12^2$
 $A_1 = 15.1$ in
5. $A_s = \frac{360^\circ}{\theta} \cdot 2\pi r^2$ (T25-7)
 $A_s = \frac{360^\circ}{72^\circ} \cdot \pi \cdot 12^2$
 $A_s = 90.5$ sq. in.

7. 2:1
 8. 4:1

9. $A = \pi r^2$
 $200 = \pi r^2$
 $\frac{200}{\pi} = r^2$
 $r = 8$ ft

10. $c = \pi d$
 $300 = \pi d$
 $\frac{300}{\pi} = d$
 95.5 cm = d

11. $c = 2\pi r$
 $c = 2\pi \cdot 13$ in
 $c = 81.68$ in
 $c = 6.80678$ ft

12. $A_{AN} = \pi r^2 - \pi r^2$
 $A_{AN} = \pi \cdot 12^2 - \pi 9^2$
 $A_{AN} = 144\pi - 81\pi$
 $A_{AN} = 63\pi$

Area of inner circle
 $A_o = \pi r^2$
 $A_o = \pi 3^2$
 $A_o = 9\pi$

$63\pi : 9\pi = 7 : 1$

1 mile / 5280 ft $\cdot \frac{1 \text{ rev}}{6.80678 \text{ ft}} = 775.7 \text{ rev/mile}$

For a free complete catalog of educational videos contact:

TMW MEDIA GROUP
 2321 Abbot Kinney Blvd., Venice, CA 90291
 (310) 577-8581 Fax (310) 574-0886
 Email: info@tmwmedia.com
 Web: www.tmwmedia.com

GEOMETRY

The Complete Course

Lesson Twenty Five

The Circle As A Whole And Its Parts

KA8425

Worksheet

I. VIDEOTAPE FOLLOW-UP QUESTIONS

- I. Introduction.
- II. Pi(π)
- Definition of Pi
 - The history of Pi
 - The approximation for Pi (π)
 - 3.14
 - 22
 - 3.1416
 - π button

III. Circumference and Arc Length.

- Circumference of a circle
 - Definition
 - Related theorems
 - For all circles, the ratio of the circumference to the length of the diameter is the same. (T25 -1)
 - The circumferences of any two circles have the same ratio as their radii. (T25 -2)
 - If C is the circumference of a circle with a diameter of length d and a radius of length r , then $C = \pi d$, or $C = 2\pi r$. (T25-3)
 - Example
 - Application
- Arc Length of a Circle
 - Definition
 - In a circle, the ratio of the length l of an arc to the circumference C equals the ratio of the degree measure m of the arc to

$$l = \frac{m}{360} (2\pi r)$$
 - Example
 - Application (T25 -4)

IV. Areas of Circles and Its Parts.

- Area of a circle
 - Definition
 - The area A of a circle with radius of length r is given by the formula $A = \pi r^2$. (T25-5)
 - The areas of two circles have the same ratio as the squares of their radii. (T25-6)
 - Example
 - Application
- Area of a Sector
 - Definition

- In a circle with radius r , the ratio of the area A of a sector to the area of the circle (πr^2) equals the ratio of the degree measure m of the arc of the sector to 360.

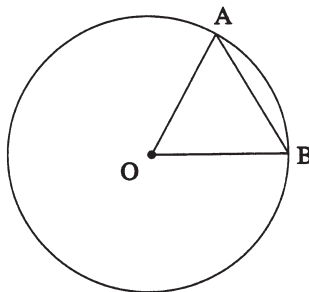
$$\frac{A}{\pi r^2} = \frac{m}{360}, \text{ or } A = \frac{m}{360} (\pi r^2) \quad (\text{T25-7})$$

- Example
- Application
- Area of a segment
 - Definition (T25-7)
 - Formula for area of a segment of a circle
- Area of an annulus
 - Definition
 - Formula for area of an annulus of a circle

II. SUPPLEMENTARY EXERCISES

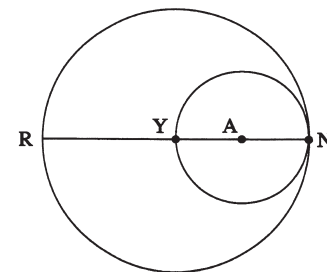
- Which ratio represents the number π ?
 - diameter:radius
 - diameter:circumference
 - circumference:diameter
 - circumference:radius

2-6 Given circle O with radii \overline{OA} and \overline{OB} , $m \angle AOB = 72^\circ$, $OB = 12$ inches.



- Circumference of circle O = ___
- Area of circle O = ___
- Length of \widehat{AB} = ___
- Area of sector AOB = ___
- Area of segment AB of the circle = ___

7-8 Given circle Y with diameter \overline{RN} and circle A with diameter \overline{YN} .



- What is the ratio of the circumference of circle Y to the circumference of circle A?
- What is the ratio of the area of circle Y to the area of circle A?
- If the area of a circle is 200 sq. feet, what is the radius of the circle?
- If the circumference of a circle is 300 centimeters what is the diameter of the circle?
- If the diameter of a bicycle wheel is 26 inches, how many revolutions does the wheel make in one mile?
- Given four concentric circles with center C, $CH = HR = RI = IS = 3$. How does the area of the outer annulus compare to the area of the innermost circle?

