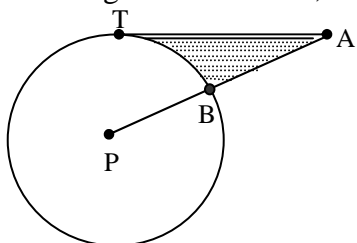


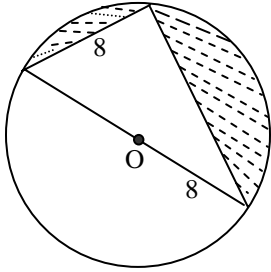
Do the following problems as indicated. Show all work.

- Find the area of each figure.
 - An isosceles triangle with base 20 cm and perimeter 64 cm
 - An equilateral triangle with side 28 in
 - A rectangle with perimeter 28 cm inscribed in a circle of radius 5 cm
 - A square circumscribed about a circle of radius 20 m
 - A rhombus with perimeter 68 cm and longer diagonal 30 cm
 - A trapezoid with sides 6 in, 5 in, 12 in and 5 in
 - A parallelogram with 60° angle and sides 6 in and 14 in
 - A kite with diagonals 18 in and 24 in
 - An isosceles trapezoid with perimeter 44 cm and consecutive sides with ratio 2:5:10:5
 - A regular pentagon with side 15 m and apothem 10.32 m
 - A regular hexagon with radius 16 ft
 - A circle with circumference 28π yards
 - A sector of a circle of radius 20 cm whose arc measures 120°
- A set of points is *concyclic* if they all lie on the same circle. Are the vertices of each figure concyclic always (A), sometimes (S), or never (N)?
 - A parallelogram
 - A rectangle
 - A rhombus
 - A non-isosceles trapezoid
 - An isosceles trapezoid
 - A square
 - A quadrilateral
 - An octagon
 - A kite
 - A regular polygon
- A regular hexagon is inscribed in one circle and circumscribed about another circle. If the radius of the smaller circle is 15 inches, find the radius of the larger circle. (5 pts)
- A right triangle has legs measuring 10 cm and 24 cm. Find the ratio of the area of the inscribed circle to the area of the circumscribed circle.
- \overline{AT} is tangent to $\odot P$ at T, and $AB = 16$ ft. If $PB = AB$, find the exact area of the shaded region.

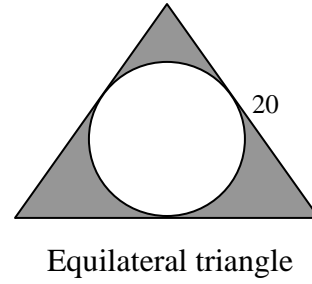


6. Find the exact area of the shaded region:

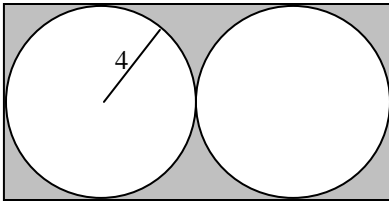
a.



b.

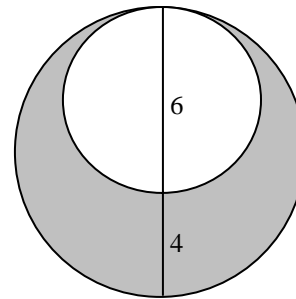


c.

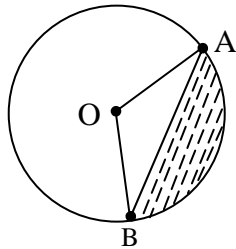


Two \cong tangent \odot s inscribed in a rectangle

d.



7. Find the exact perimeter and area of the segment shown, given that $m\angle O = 120^\circ$ and $OA = 26$ in.



8. For each of the following solids, find a) Lateral area L; b) Total area T; and c) Volume V.

- a. Right octagonal prism: each side of base is 8.00 inches long, apothem is 9.66 inches and altitude of prism is 6 inches.
- b. Regular pentagonal pyramid: each base edge measures 10.00 cm, radius measures 8.51 cm, and each lateral edge measures 13 cm.
- c. Right circular cylinder: radius is 12 cm and altitude is 10 cm.
- d. Right circular cone: slant height is 15 in and altitude is 12 in.

ANSWER KEY

1. a. $Area = 80\sqrt{6} \text{ cm}^2 \approx 195.96 \text{ cm}^2$

b. $Area = 196\sqrt{3} \text{ in}^2 \approx 339.48 \text{ in}^2$

c. $Area = 48 \text{ cm}^2$

d. $Area = 1600 \text{ m}^2$

e. $Area = 240 \text{ cm}^2$

f. $Area = 36 \text{ in}^2$

g. $Area = 42\sqrt{3} \text{ in}^2 \approx 72.75 \text{ in}^2$

h. $Area = 216 \text{ in}^2$

i. $Area = 72 \text{ cm}^2$

j. $Area = 387 \text{ m}^2$

k. $Area = 384\sqrt{3} \text{ ft}^2 \approx 665.11 \text{ ft}^2$

l. $Area = 196\pi \text{ yards}^2 \approx 615.75 \text{ yards}^2$

m. $Area = \frac{400\pi}{3} \text{ cm}^2 \approx 418.88 \text{ cm}^2$

2. S A S N A A S S S A

3. Radius of larger circle = $10\sqrt{3} \text{ in} \approx 17.32 \text{ in}$

4. $\frac{A_{\text{inscribed}}}{A_{\text{circumscribed}}} = \frac{16}{169}$

5. $Area = \left(128\sqrt{3} - \frac{128\pi}{3}\right) \text{ ft}^2$

6. a. $Area = (32\pi - 32\sqrt{3}) \approx 45.11$

b. $Area = \left(100\sqrt{3} - \frac{100\pi}{3}\right) \approx 68.49$

c. $Area = 128 - 32\pi \approx 27.47$

d. $Area = 16\pi \approx 50.27$

7. $Area = \left(\frac{676\pi}{3} - 169\sqrt{3}\right) \text{ in}^2 \approx 415.19 \text{ in}^2$, $P = \left(26\sqrt{3} + \frac{52\pi}{3}\right) \text{ in} \approx 99.49 \text{ in}$

8. a. $L = 384 \text{ in}^2$, $T = 1002.24 \text{ in}^2$, $V = 1854.72 \text{ in}^3$

b. $L = 300 \text{ cm}^2$, $T = 472.25 \text{ cm}^2$, $V = 564.41 \text{ cm}^3$

c. $L = 240\pi \text{ cm}^2 \approx 753.98 \text{ cm}^2$, $T = 528\pi \text{ cm}^2 \approx 1658.76 \text{ cm}^2$, $V = 1440\pi \text{ cm}^3 \approx 4523.89 \text{ cm}^3$

d. $L = 135\pi \text{ in}^2 \approx 424.12 \text{ in}^2$, $T = 216\pi \text{ in}^2 \approx 678.58 \text{ in}^2$, $V = 324\pi \text{ in}^3 \approx 1017.88 \text{ in}^3$