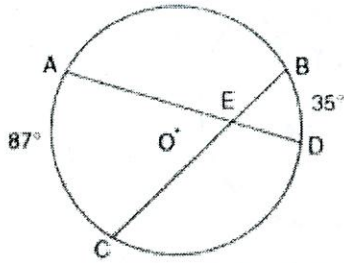


Name: _____

Date: _____

1.

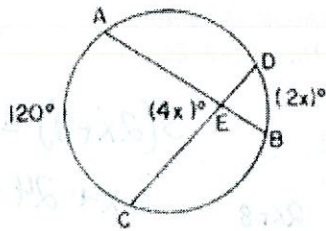


$$4x = \frac{87 + 35}{2}$$

What is the degree measure of $\angle CEA$?

- 1) 87
- 2) 61
- 3) 43.5
- 4) 26

2.



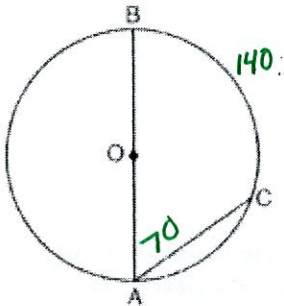
$$4x = \frac{120 + 2x}{2}$$

$$8x = 120 + 2x$$

$$x = 20$$

- 1) 12
- 2) 20
- 3) 30
- 4) 60

3.



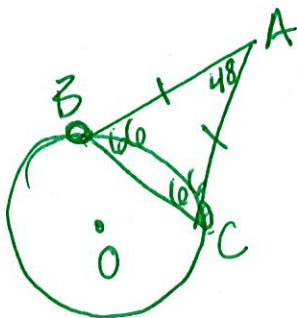
If $m\angle BAC = 70$, then $m\widehat{BC}$ is

- 1) 40
- 2) 70
- 3) 110
- 4) 140

4.

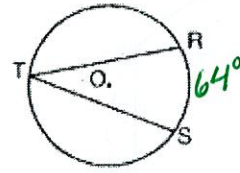
From external point A , two tangents to circle O are drawn. The points of tangency are B and C . Chord BC is drawn to form $\triangle ABC$. If $m\angle ABC = 66$, what is $m\angle A$?

- 1) 33
- 2) 48
- 3) 57
- 4) 66



5.

In the accompanying diagram of circle O , the measure of \widehat{RS} is 64° .

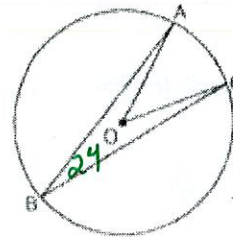


What is $m\angle RTS$?

- 1) 32
- 2) 64
- 3) 96
- 4) 128

6.

In the diagram below of circle O , $m\angle ABC = 24$.

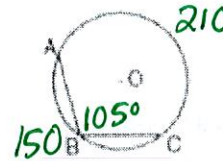


What is the $m\angle AOC$?

- 1) 12
- 2) 24
- 3) 48
- 4) 60

7.

In the accompanying diagram of circle O , $m\widehat{ABC} = 150$.

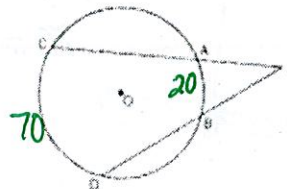


8.

What is $m\angle ABC$?

- 1) 210
- 2) 105
- 3) 95
- 4) 75

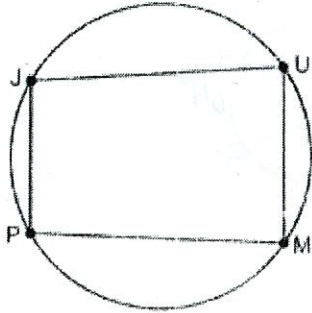
$$\angle = \frac{70 - 20}{2}$$



If $m\widehat{CD} = 70$ and $m\widehat{AB} = 20$, what is the degree measure of $\angle P$?

- 1) 25
- 2) 35
- 3) 45
- 4) 50

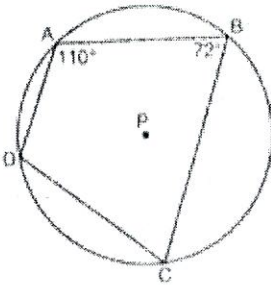
9. In the diagram below, quadrilateral $JUMP$ is inscribed in a circle.



Opposite angles J and M must be

- 1) right
- 2) complementary
- 3) congruent
- 4) supplementary

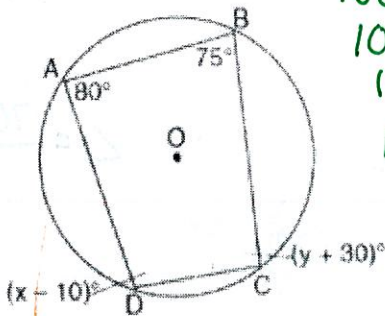
10. In the diagram below, quadrilateral $ABCD$ is inscribed in circle P .



What is $m\angle ADC$?

- 1) 70°
- 2) 72°
- 3) 108°
- 4) 110°

11. Quadrilateral $ABCD$ is inscribed in circle O , as shown below.



$$180 = 75 + (x - 10)$$

$$105 = x - 10$$

$$115 = x$$

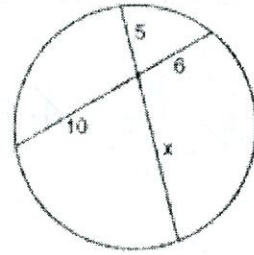
$$100 = y + 30$$

$$70 = y$$

If $m\angle A = 80^\circ$, $m\angle B = 75^\circ$, $m\angle C = (y + 30)^\circ$, and $m\angle D = (x - 10)^\circ$, which statement is true?

- 1) $x = 85$ and $y = 50$
- 2) $x = 90$ and $y = 45$
- 3) $x = 110$ and $y = 75$
- 4) $x = 115$ and $y = 70$

12.

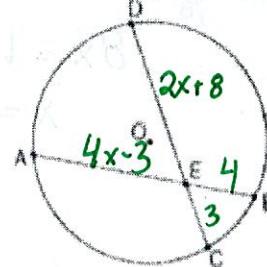


What is the length of the portion of the path marked x ?

$$5 \cdot x = 10 \cdot 6$$

- 1) $8\frac{1}{3}$
- 2) 11
- 3) 3
- 4) 12

13. In the diagram of circle O below, chord \overline{AB} intersects chord \overline{CD} at E , $DE = 2x + 8$, $EC = 3$, $AE = 4x - 3$, and $EB = 4$.



$$3(2x + 8) = 4(4x - 3)$$

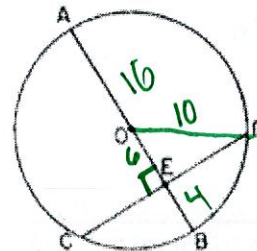
$$6x + 24 = 16x - 12$$

$$36 = 10x$$

What is the value of x ?

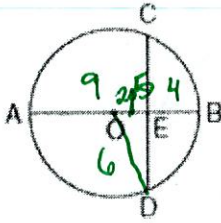
- 1) 1
- 2) 3.6
- 3) 5
- 4) 10.25

14. In circle O , diameter \overline{AB} is perpendicular to chord \overline{CD} at E . If $AE = 16$ and $EB = 4$, what is CD ?



- 1) 32
- 2) 16
- 3) 10
- 4) 8

15. In the accompanying diagram of circle O , diameter \overline{AB} is perpendicular to chord \overline{CD} and intersects \overline{CD} at E . $AE = 9$, and $EB = 4$.

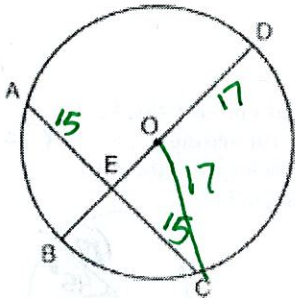


$r = 6.5$
 $2\frac{1}{2} + b^2 = 6\frac{1}{2}$
 $b^2 = 36$

What is ED ?

- 1) 8
 2) 7
 3) 6
 4) 4

16. In circle O shown below, diameter \overline{DB} is perpendicular to chord \overline{AC} at E .



$r = 17$
 $a^2 + 15^2 = 17^2$
 $a^2 = 64$
 $a = 8$

If $DB = 34$, $AC = 30$, and $DE > BE$, what is the length of BE ?

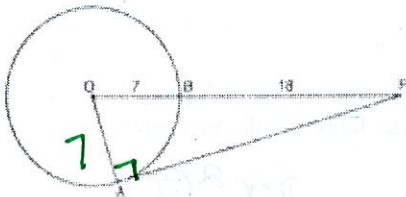
- 1) 8
 2) 9
 3) 16
 4) 25

17. The angle formed by the radius of a circle and a tangent to that circle has a measure of
 1) 45° 2) 90° 3) 135° 4) 180°

18. Line segment \overline{AB} is tangent to circle O at A . Which type of triangle is always formed when points A , B , and O are connected?

- 1) right 2) obtuse 3) scalene 4) isosceles

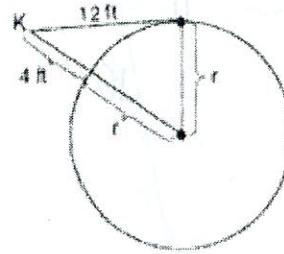
In the diagram below of $\triangle PAO$, \overline{AP} is tangent to circle O at point A , $OB = 7$, and $BP = 18$.



What is the length of \overline{AP} ?

- 1) 10 2) 12 3) 17 4) 24

19. Kimi wants to determine the radius of a circular pool without getting wet. She is located at point K , which is 4 feet from the pool and 12 feet from the point of tangency, as shown in the accompanying diagram.

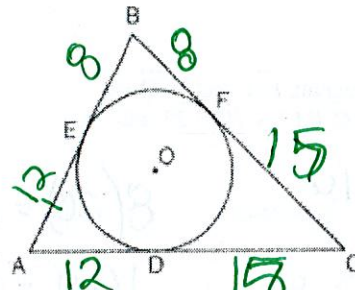


$12^2 + r^2 = (r+4)^2$
 $144 + r^2 = r^2 + 8r + 16$
 $128 = 8r$

What is the radius of the pool?

- 1) 16 ft 2) 20 ft 3) 32 ft 4) $4\sqrt{10}$ ft

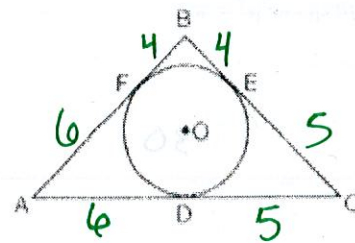
20. In the diagram below, $\triangle ABC$ is circumscribed about circle O and the sides of $\triangle ABC$ are tangent to the circle at points D , E , and F .



If $AB = 20$, $AE = 12$, and $CF = 15$, what is the length of \overline{AC} ?

- 1) 8
 2) 15
 3) 23
 4) 27

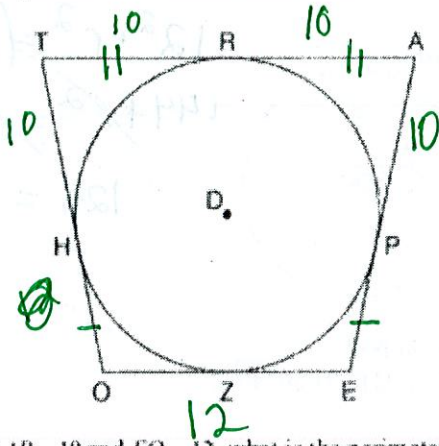
21. In the diagram below, \overline{AB} , \overline{BC} , and \overline{AC} are tangents to circle O at points F , E , and D , respectively, $AF = 6$, $CD = 5$, and $BE = 4$.



What is the perimeter of $\triangle ABC$?

- 1) 15
 2) 25
 3) 30
 4) 60

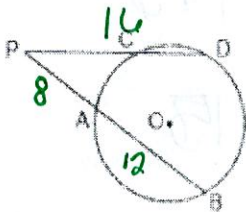
22. In the figure shown below, quadrilateral $TAEQ$ is circumscribed around circle D . The midpoint of \overline{TA} is R , and $\overline{HO} \cong \overline{PE}$.



If $AP = 10$ and $EO = 12$, what is the perimeter of quadrilateral $TAEQ$?

- 1) 56
- 2) 64
- 3) 72
- 4) 76

23. In the accompanying diagram, \overline{PA} and \overline{PCD} are secants drawn to circle O , $PA = 8$, $PB = 20$, and $PD = 16$.

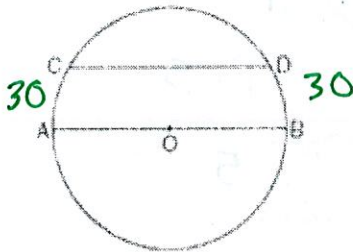


$8(20) = x(16)$
 $160 = 16x$

What is PC ?

- 1) 6.4
- 2) 10
- 3) 12
- 4) 40

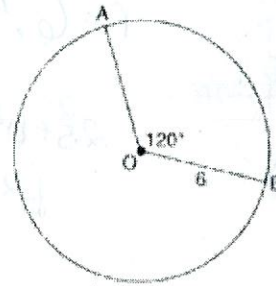
24. In the diagram of circle O below, chord \overline{CD} is parallel to diameter \overline{AOB} and $m\widehat{AC} = 30$.



What is $m\widehat{CD}$?

- 1) 150
- 2) 120
- 3) 100
- 4) 60

25. The diagram below shows circle O with radii \overline{OA} and \overline{OB} . The measure of angle AOB is 120° , and the length of a radius is 6 inches.



Which expression represents the length of arc AB , in inches?

- 1) $\frac{120}{360}(6\pi)$
- 2) $120(6)$
- 3) $\frac{1}{3}(36\pi)$
- 4) $\frac{1}{3}(12\pi)$

$\frac{2\pi r \theta}{360}$ $\frac{2\pi 6(120)}{360}$

26. A circle is drawn to represent a pizza with a 12 inch diameter. The circle is cut into eight congruent pieces. What is the length of the outer edge of any one piece of this circle?

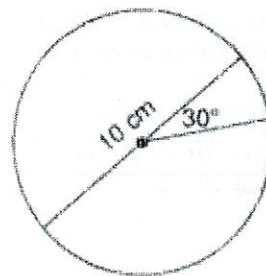
$r = 6$

- 1) $\frac{3\pi}{4}$
- 2) π
- 3) $\frac{3\pi}{2}$
- 4) 3π



27. A two-dimensional cross section is taken of a three-dimensional object. If this cross section is a triangle, what can *not* be the three-dimensional object?

- 1) cone
- 2) cylinder
- 3) pyramid
- 4) rectangular prism



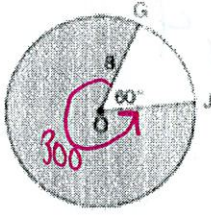
28. What is the area, to the nearest tenth of a square centimeter, of the sector formed by the 30° angle?

- 1) 5.2
- 2) 6.5
- 3) 13.1
- 4) 26.2

$\frac{\pi r^2 \theta}{360}$
 $\frac{\pi 5^2 (30)}{360}$

29.

In the diagram below of circle O , $GO = 8$ and $m\angle GOJ = 60^\circ$.



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

$$\frac{\pi (8)^2 (300)}{360}$$

What is the area, in terms of π , of the shaded region?

- 1) $\frac{4\pi}{3}$
- 2) $\frac{20\pi}{3}$
- 3) $\frac{32\pi}{3}$
- 4) $\frac{160\pi}{3}$

30.

The area of a sector of a circle with a radius measuring 15 cm is $75\pi \text{ cm}^2$. What is the measure of the central angle that forms the sector?

- 1) 72°
- 2) 120°
- 3) 144°
- 4) 180°

$$75\pi = \frac{\pi (15)^2 \theta}{360}$$

31.

A right cylinder is cut perpendicular to its base. The shape of the cross section is a

- 1) circle
- 2) cylinder
- 3) rectangle
- 4) triangular prism

Which object is formed when right triangle RST shown below is rotated around leg \overline{RS} ?



- 1) a pyramid with a square base
- 2) an isosceles triangle
- 3) a right triangle
- 4) a cone

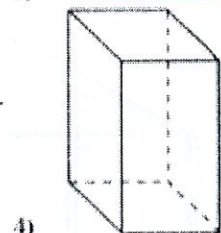
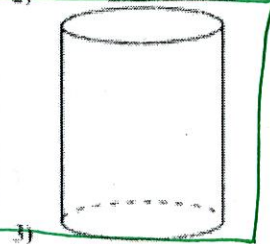
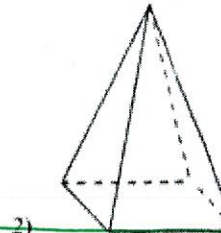
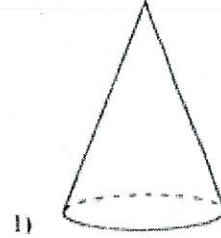
33.

The cross section of a regular pyramid contains the altitude of the pyramid. The shape of this cross section is a

- 1) circle
- 2) square
- 3) triangle
- 4) rectangle

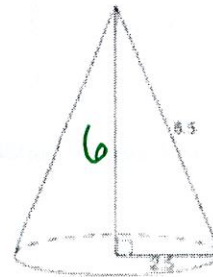
34.

A student has a rectangular postcard that he folds in half lengthwise. Next, he rotates it continuously about the folded edge. Which three-dimensional object below is generated by this rotation?



35.

As shown in the diagram below, the radius of a cone is 2.5 cm and its slant height is 6.5 cm.



$$\frac{1}{3} \pi r^2 h$$

How many cubic centimeters are in the volume of the cone?

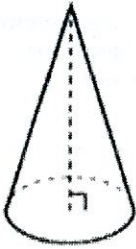
- 1) 12.5π
- 2) 13.5π
- 3) 30.0π
- 4) 37.5π

36.





A right cylinder is cut perpendicular to its base. The shape of the cross section is a

- 1) circle
- 2) cylinder
- 3) rectangle
- 4) triangular prism





37.



Which drawing can *not* be a cross section of a cone?

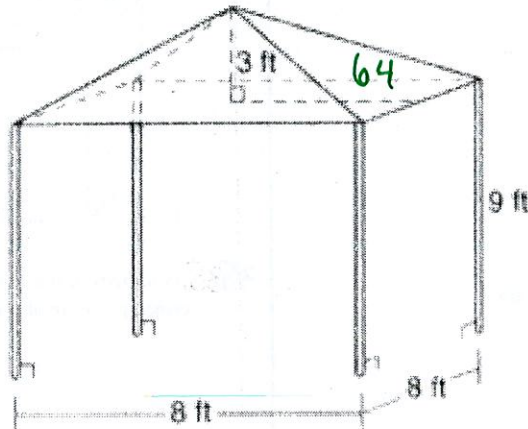
- 1) 
- 2) 
- 3) 
- 4) 

38. Which diagram represents the figure with the greatest volume?

- 1) 
- 2) 
- 3) 
- 4) 

64

$$\pi (2)^2 \cdot 4 = 16\pi \approx 50.27$$

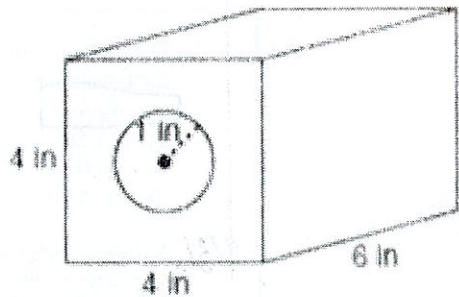


$$\frac{1}{3} B \cdot h$$

$$\frac{1}{3} (8 \cdot 8) \cdot 9$$

39. What is the volume, in cubic feet, of space the tent occupies?

- 1) 256
- 2) 640
- 3) 672
- 4) 768



96 -

$$\pi r^2 h$$

$$6\pi$$

40. What is the approximate volume of the remaining solid, in cubic inches?

- 1) 19
- 2) 77
- 3) 93
- 4) 96