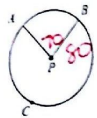


Name: Answer Key

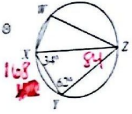
1. In circle P, $m\angle APB = 70^\circ$ and $AP = 80$ cm. Find the length of BC .

$$\frac{310}{360} \cdot 2\pi(80) = 128\frac{2}{9}\pi \text{ cm}$$



2. What is the $m\widehat{XY}$ in the figure at the right? This figure is not even remotely drawn to scale.

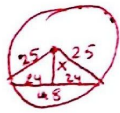
$$m\widehat{XY} = 168$$



3. How far from the center of a circle with radius 25 is a chord of length 48?

$$24^2 + x^2 = 25^2$$

$$x = 7$$



4. Find the length of a 45° arc of a circle whose radius is 8.

$$\frac{45}{360} \cdot 2\pi(8) = 2\pi$$

5. A block of copper with dimensions 6" by 7" by 11" is melted down and made into wire with a diameter of 0.5". Find the length of the wire, in feet.

$$V = 6 \cdot 7 \cdot 11 = 462$$

$$V = \pi r^2 h$$

$$462 = \pi (0.25)^2 h$$

$$h \approx 2352.94 \text{ in}$$

$$h \approx 196 \text{ ft}$$

6. A side of an equilateral triangle is of length 12. Find the radius of the circumscribed circle of the triangle.

$$\text{radius} = 4\sqrt{3}$$



7. If $m\angle P = 52^\circ$ and $m\widehat{D} = 108^\circ$, find $m\widehat{AB}$.

$$\frac{1}{2}(108 - x) = 52$$

$$108 - x = 104$$

$$-x = -4$$

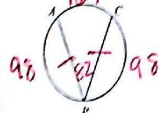
$$x = 4$$

$$m\widehat{AB} = 4^\circ$$

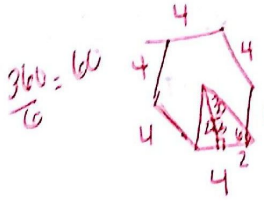


8. $\overline{AP} \perp \overline{BC}$, $m\angle P = 38^\circ$. Find the measures of $\angle C$.

$$m\angle C = 52^\circ$$



9. The perimeter of the base of a hexagonal prism is 24 and the height is 15. Find the volume of the prism.



$$P = 24$$

$$a = 2\sqrt{3}$$

$$B = \frac{1}{2}(2\sqrt{3})(24) = 24\sqrt{3}$$

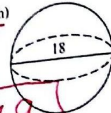
$$V = (24\sqrt{3})(15)$$

$$V = 360\sqrt{3}$$

For numbers 10 and 11, use the following diagram. (Round to the nearest tenth)

10. What is the surface area of the sphere?

$$S.A. = 4\pi(9)^2 = 324\pi \approx 1017.9$$



11. What is the volume of the sphere?

$$V = \frac{4}{3}\pi(9)^3 = 972\pi \approx 3053.6$$

12. \overline{PQ} is tangent to circle O at Q. If $PQ = 18$ and $PR = 8$ what is the length of RS ?

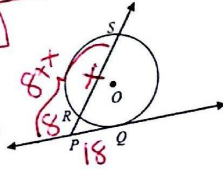
$$18^2 = 8(8+x)$$

$$324 = 64 + 8x$$

$$260 = 8x$$

$$x \approx 32.5$$

$$RS = 32.5$$

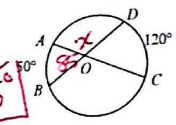


13. Use the figure at the right. If $m\widehat{AB} = 50^\circ$ and $m\widehat{CD} = 120^\circ$, what is the $m\angle AOD$?

$$\frac{1}{2}(50 + 120) = 85$$

$$180 - 85 = 95$$

$$m\angle AOD = 95^\circ$$



14. Use the figure at the right. \overline{XZ} is tangent to circle Y at Z. If $XY = 50$ and $XZ = 48$, what is the circumference of circle Y?

$$48^2 + x^2 = 50^2$$

$$x^2 = 196$$

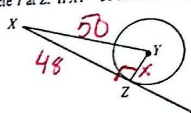
$$x = 14$$

$$r = 14$$

$$C = 2\pi r$$

$$C = 2\pi(14)$$

$$C = 28\pi$$



15. If two figures are similar and the ratio of their corresponding sides is 9 : 4, what is the ratio of their areas?

$$\frac{9^2}{4^2} = \frac{81}{16}$$

For numbers 16 - 18, use the given right triangular prism. (Round answers to the nearest tenth, if necessary).

16. What is the approximate lateral area of the prism?

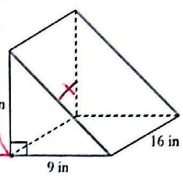
$$L.A. = 32.5(16) \approx 520.0 \text{ m}^2$$

17. What is the approximate surface area of the prism?

$$S.A. \approx 520 + 2(45) \approx 610 \text{ m}^2$$

18. What is the volume of the prism?

$$V = 45(16) \approx 720 \text{ m}^3$$



$$B = \frac{1}{2}(16)(9) = 45$$

$$h = 16$$

$$P \approx 32.5$$

$$9^2 + 16^2 = x^2$$

$$81 + 256 = x^2$$

$$337 = x^2$$

$$x \approx 18.35$$

For numbers 19 - 22, use the given right cone. (Round answers to the nearest tenth, if necessary).

19. What is the approximate height of the cone?

$$h \approx 20.3$$

20. What is the approximate lateral area of the cone?

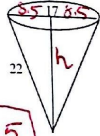
$$L.A = \pi r l = \pi (8.5)(22) = 187\pi \approx 587.5$$

21. What is the approximate surface area of the cone?

$$S.A = L + B = 187\pi + 72.25\pi = 259.25\pi \approx 814.5$$

22. What is the approximate volume of this cone?

$$V = \frac{1}{3}(2.25\pi)(20.3) \approx 1535.9$$



$$8.5^2 + h^2 = 22^2$$

$$h^2 = 411.75$$

$$h \approx 20.3$$

$$B = \pi (8.5)^2$$

$$B = 72.25\pi$$

For numbers 23 - 26, use the given right square pyramid. (Round answers to the nearest tenth, if necessary).

23. What is the approximate slant height?

$$l \approx 56.0$$

24. What is the approximate lateral area of the pyramid?

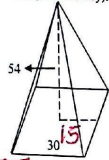
$$L.A = \frac{1}{2} P l \approx \frac{1}{2}(120)(56) \approx 3360$$

25. What is the approximate surface area of the pyramid?

$$S.A = L + B = 3360 + 900 \approx 4260$$

26. What is the volume of the pyramid?

$$V = \frac{1}{3}(900)(54) = 16200$$



$$15^2 + 54^2 = l^2$$

$$3141 = l^2$$

$$l \approx 56.0$$

$$B = 900$$

27. A volleyball has a diameter of 13" and is sold in a box with a height of 13". How much empty space is left in the box for packaging material?

$$V_{\text{box}} - V_{\text{ball}} = 13 \cdot 13 \cdot 13 - \frac{4}{3}\pi (6.5)^3 \approx 2197 - 366\frac{1}{6}\pi \approx 1046.7 \text{ in}^3$$

28. If a pyramid has a volume of 95 cm³ and its base has an area of 15 cm², what is its height?

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

$$95 = \frac{1}{3}(15)h$$

$$\frac{95}{5} = \frac{5h}{5}$$

$$h = 19 \text{ cm}$$

29. Write an equation for the circle with radius 6 and center at (4, -8).

$$(x-4)^2 + (y+8)^2 = 36$$