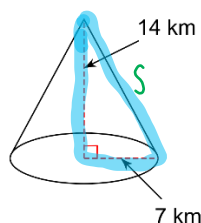


Lesson 4.3: Cones, Pyramids and Spheres

Learning Goal: We are learning to calculate the surface area and volume of cones, square-based pyramids and spheres.

For each figure calculate the surface area and the volume.

1.



$$r = 7$$

$$h = 14$$

$$s = 15.7$$

$$r^2 + h^2 = s^2$$

$$7^2 + 14^2 = s^2$$

$$49 + 196 = s^2$$

$$\sqrt{245} = s$$

$$15.7 = s$$

$$SA = \pi r^2 + \pi r s$$

$$SA = (3.14)(7^2) + (3.14)(7)(15.7)$$

$$SA = 153.86 + 345.09$$

$$SA = 498.95 \text{ km}^2$$

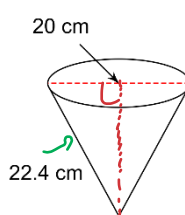
$$V = \frac{\pi r^2 h}{3}$$

$$V = \frac{(3.14)(7^2)(14)}{3}$$

$$V = \frac{2154.04}{3}$$

$$V = 718.01 \text{ km}^3$$

2.



$$r = 10$$

$$h = ? \rightarrow 20$$

$$s = 22.4$$

$$r^2 + h^2 = s^2$$

$$10^2 + h^2 = 22.4^2$$

$$100 + h^2 = 501.76$$

$$\sqrt{h^2} = \sqrt{401.76}$$

$$h = 20$$

$$SA = \pi r^2 + \pi r s$$

$$SA = (3.14)(10^2) + 3.14(10)(22.4)$$

$$SA = 314 + 703.36$$

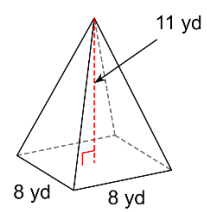
$$SA = 1017.36 \text{ cm}^2$$

$$V = \frac{\pi r^2 h}{3}$$

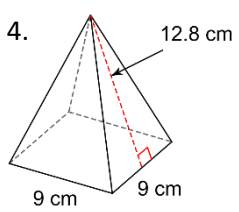
$$V = \frac{(3.14)(10^2)(20)}{3}$$

$$V = 2093.3 \text{ cm}^3$$

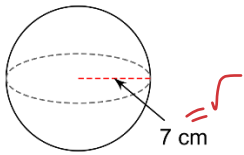
3.



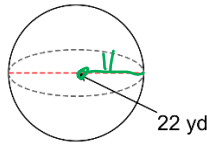
4.



5.



6.



$$r = 11$$

$$SA = 4\pi r^2$$

Circle

$$SA = 4(3.14)(7)^2 = 615.44 \text{ cm}^2$$

$$V = \frac{4\pi r^3}{3}$$

$$V = \frac{4(3.14)(7)^3}{3} = 1436.03 \text{ cm}^3$$

Use the appropriate formula to solve for the missing measurement.

7. A cone has a volume of 2094.4 cm^3 with a radius of 10 cm . Determine the length of the slant.

$$V = \frac{\pi r^2 h}{3}$$

$$2094.4 = \frac{(3.14)(10)^2 h}{3}$$

$$2094.4 = 104.7h$$

$$20 = h$$

$$r^2 + h^2 = s^2$$

$$10^2 + 20^2 = s^2$$

$$100 + 400 = s^2$$

$$\sqrt{500} = \sqrt{s^2}$$

$$22.4 \text{ cm} = s$$

8. A sphere has a volume of 904.78 in^3 . Determine the length of the radius.

Success Criteria

- I can use the appropriate formula to find the surface area or volume of a cone, pyramid, or sphere