

Chapter 12 Review Worksheet

Key

Given: A regular square pyramid LMNOP. Altitude LR has a length of 15. Slant height LS has length of 17.

1) Find SR. 8

2) Find MP. 16

3) Find the area of the base of the pyramid.

$$A = bh = 16 \cdot 16 = \boxed{256}$$

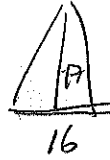
4) Find the lateral area of the pyramid.

$$\boxed{544}$$

$$A = \frac{1}{2}(16)(17) = 8 \cdot 17 = 136$$

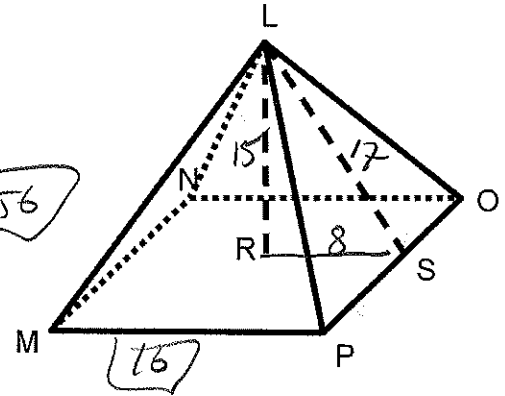
each

(x4)



5) Find the volume of the pyramid.

$$V = \frac{1}{3}Bh = \frac{1}{3}(256)(15) = \boxed{1280}$$



Given: A cube with an edge length of 5.

6) Find the area of one face of the cube.

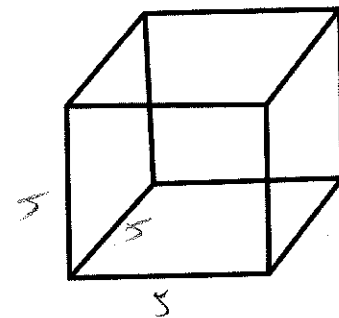
$$5 \cdot 5 = \boxed{25}$$

7) Find the total surface area of the cube.

$$25 \times 6 = \boxed{150}$$

8) Find the volume of the cube.

$$5 \cdot 5 \cdot 5 = \boxed{125}$$



Given: A right circular cylinder, with O the center of the base. OY = 5, YZ = 9.

9) Find the area of one base of the cylinder.

$$A = \pi r^2 = \pi(5)^2 = \boxed{25\pi}$$

10) Find the total surface area of the cylinder.

$$A_{\text{lateral}} = 2\pi rh = 2\pi(5)(9) = 90\pi$$

$$A_{\text{bases}} = 50\pi$$

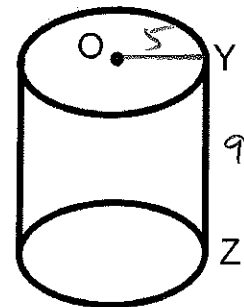
$$A_{\text{total}} = \boxed{140\pi}$$

11) Find the volume of the cylinder.

$$V = \pi r^2 h = \pi(5)^2(9)$$

$$= \pi(25)(9)$$

$$= \boxed{225\pi}$$



Given: A right circular cone, with base radius of length 7, altitude of length 24.

12) Find a slant height of the cone.

$$\boxed{25}$$

13) Find the circumference of the base.

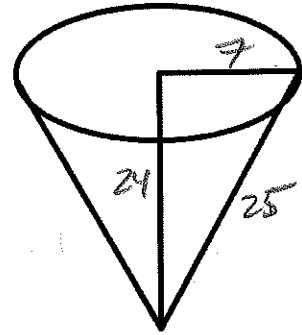
$$C = 2\pi r = 2\pi(7) = \boxed{14\pi}$$

14) Find the lateral area of the cone.

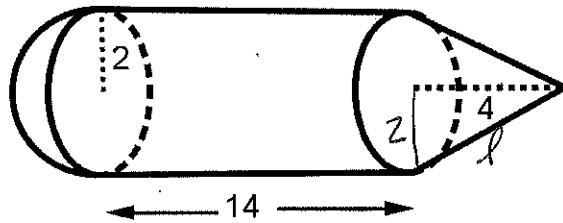
$$L.A. = \pi r l = \pi(7)(25) = \boxed{175\pi}$$

15) Find the volume of the cone.

$$V = \frac{1}{3}\pi r^2 h = \frac{1}{3}\pi(7)^2(24) = \frac{1}{3}\pi(49)(24) = \boxed{392\pi}$$



A pencil consists of a hemispherical eraser (with radius 2), a cylinder (with height 14), and a cone (with height of 4):



$$\begin{aligned} 2^2 + 4^2 &= l^2 \\ 4 + 16 &= l^2 \\ 20 &= l^2 \\ l &= \sqrt{20} \end{aligned}$$

16) In terms of π , find the volume of each of the 3 components (the hemisphere, the cylinder, and the cone).

hemisphere

$$\begin{aligned} \frac{1}{2} V_{\text{sphere}} &= \frac{1}{2} \left[\frac{4}{3} \pi r^3 \right] \\ &= \frac{1}{2} \left[\frac{4}{3} \pi (2)^3 \right] \\ &= \frac{4\pi \cdot 8}{6} = \frac{32\pi}{6} = \frac{16\pi}{3} \end{aligned}$$

Total volume =

cylinder

$$\begin{aligned} V &= \pi r^2 h \\ &= \pi (2)^2 (14) \\ &= \pi (4)(14) \\ &= 56\pi \end{aligned}$$

cone

$$\begin{aligned} V &= \frac{1}{3} \pi r^2 h \\ &= \frac{1}{3} \pi (2)^2 (4) \\ &= \frac{1}{3} \pi (4)(4) = \frac{16\pi}{3} \end{aligned}$$

$$\frac{16\pi}{3} + 56\pi = \frac{32\pi}{3} + 56\pi$$

$$\text{or } \frac{200\pi}{3}$$

$$\frac{16\pi}{3} + \frac{16\pi}{3} + 56\pi = \frac{32\pi}{3} + 56\pi$$

$$\frac{32\pi}{3} + \frac{56\pi \cdot 3}{3} = \frac{32\pi + 168\pi}{3} = \frac{200\pi}{3}$$

17) Find the total surface area of the submarine

hemisphere

$$\begin{aligned} \frac{1}{2} S_{\text{sphere}} &= \frac{1}{2} [4\pi r^2] \\ &= 2\pi (2)^2 \\ &= \boxed{8\pi} \end{aligned}$$

cylinder

$$\begin{aligned} SA (\text{lateral only}) &= 2\pi r h \\ &= 2\pi (2)(14) \\ &= \boxed{56\pi} \end{aligned}$$

cone

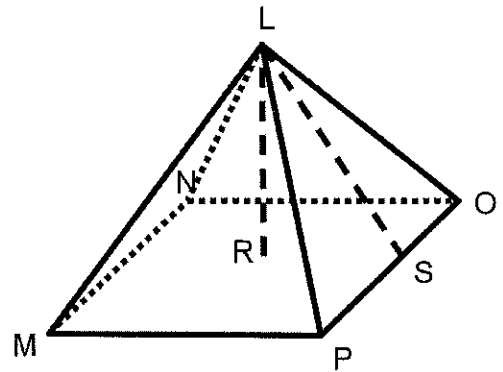
$$\begin{aligned} SA (\text{lateral only}) &= \pi r l \\ &= \pi (2)(\sqrt{20}) \\ &= \boxed{2\sqrt{20}\pi} \end{aligned}$$

$$\text{Total surface area} = 8\pi + 56\pi + 2\sqrt{20}\pi = \boxed{64\pi + 2\sqrt{20}\pi}$$

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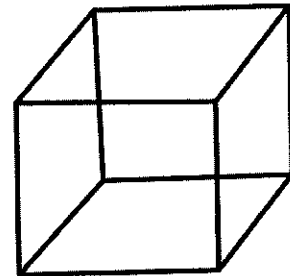
Given: A regular square pyramid LMNOP. Altitude LR has a length of 15. Slant height LS has length of 17.

- 1) Find SR.
- 2) Find MP.
- 3) Find the area of the base of the pyramid.
- 4) Find the **lateral area** of the pyramid.
- 5) Find the **volume** of the pyramid.



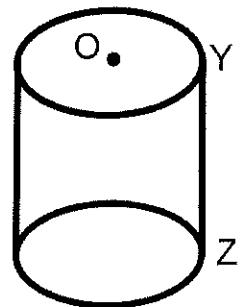
Given: A cube with an edge length of 5.

- 6) Find the area of one face of the cube.
- 7) Find the **total surface area** of the cube.
- 8) Find the **volume** of the cube.



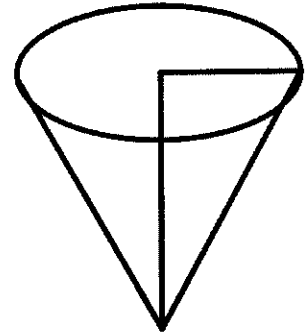
Given: A right circular cylinder, with O the center of the base. $OY = 5$, $YZ = 9$.

- 9) Find the area of one base of the cylinder.
- 10) Find the **total surface area** of the cylinder.
- 11) Find the **volume** of the cylinder.

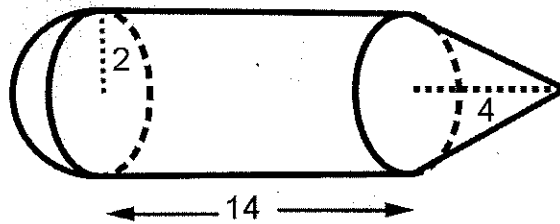


Given: A right circular cone, with base radius of length 7, altitude of length 24.

- 12) Find a slant height of the cone.
- 13) Find the circumference of the base.
- 14) Find the **lateral area** of the cone.
- 15) Find the **volume** of the cone.



A pencil consists of a hemispherical eraser (with radius 2), a cylinder (with height 14), and a cone (with height of 4):



- 16) In terms of π , find the **volume** of each of the 3 components (the hemisphere, the cylinder, and the cone).
- hemisphere cylinder cone

Total volume = _____

- 17) Find the **total surface area** of the submarine
- hemisphere cylinder cone

Total surface area = _____