

LESSON 12.5

Practice

For use with pages 828-837

Pyramid

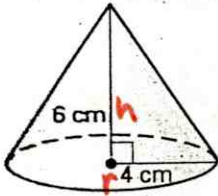
$$V = \frac{Bh}{3}$$

Cone

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

Find the volume of the solid. Round your answer to two decimal places.

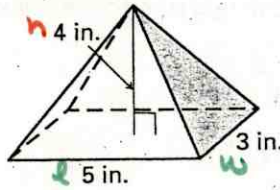
1.



$$V = \frac{\pi(4)^2(6)}{3}$$

$$V = 32\pi \text{ cm}^3$$

2.



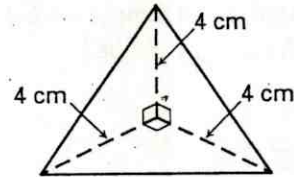
$$B = 5(3) = 15$$

$$h = 4$$

$$V = \frac{15(4)}{3}$$

$$V = 20 \text{ in}^3$$

3.



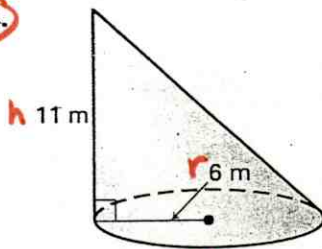
$$B = \frac{4(4)}{2} = 8$$

$$V = \frac{8(4)}{3}$$

$$V = \frac{32}{3}$$

$$V = 10.67 \text{ cm}^3$$

4.

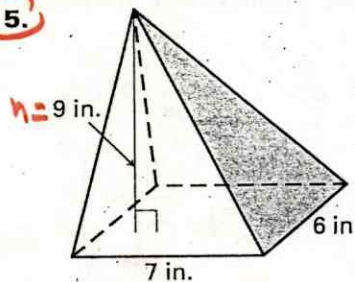


$$V = \frac{\pi(6)^2(11)}{3}$$

$$= \frac{396\pi}{3}$$

$$V = 132\pi \text{ m}^3$$

5.

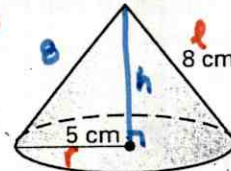


$$B = 7(6) = 42$$

$$V = \frac{42(9)}{3}$$

$$V = 126 \text{ in}^3$$

6.



$$r^2 = h^2 + 5^2$$

$$64 = h^2 + 25$$

$$h^2 = 39$$

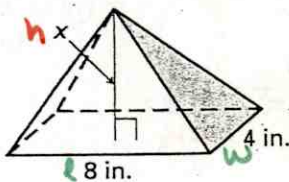
$$h \approx 6.24$$

$$V = \frac{\pi(5)^2(6.24)}{3}$$

$$V = 52\pi \text{ cm}^3$$

Find the value of x.

7. $V = 64 \text{ in}^3$



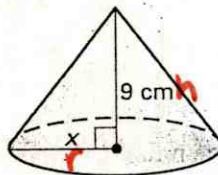
$$B = 8(4) = 32$$

$$64 = \frac{32x}{3}$$

$$192 = 32x$$

$$x = 6 \text{ in}$$

8. $V = 147\pi \text{ cm}^3$



$$147\pi = \frac{\pi x^2(9)}{3}$$

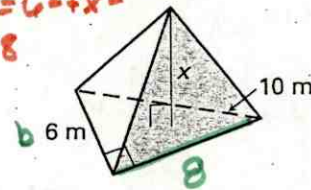
$$\frac{441\pi}{9\pi} = \frac{\pi x^2(9)}{9\pi}$$

$$49 = x^2 \quad x = 7 \text{ cm}$$

9. $V = 56 \text{ m}^3$

$$10^2 = 6^2 + x^2$$

$$x = 8$$



$$A(\Delta) = \frac{bh}{2}$$

$$= \frac{6(8)}{2} = 24$$

$$56 = \frac{24x}{3}$$

$$168 = 24x$$

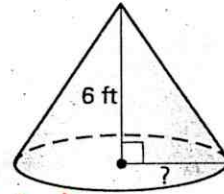
$$x = 7 \text{ m}$$

LESSON 12.5

Practice *continued*
For use with pages 828-837

10. **Multiple Choice** A right cone has a height of 6 feet and a volume of 32π cubic feet. What is its radius?

- A. 2 ft
- B. 3 ft
- C. 4 ft
- D. 5 ft

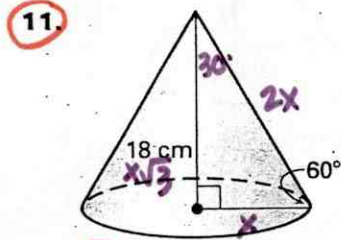


$$V = \frac{\pi r^2 h}{3} \rightarrow 32\pi = \frac{\pi r^2 (6)}{3}$$

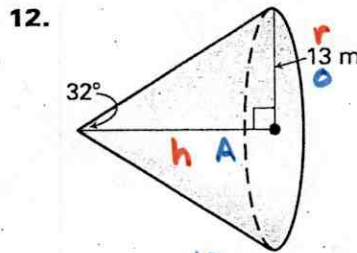
$$\frac{96\pi}{6\pi} = \frac{\pi r^2 (6)}{6\pi} \rightarrow 16 = r^2$$

$$r = 4$$

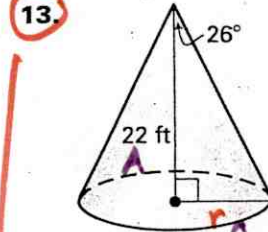
Find the volume of the right cone. Round your answer to two decimal places.



$$\begin{aligned} x &= 6\sqrt{3} \\ x\sqrt{3} &= 18 \\ 2x &= \\ V &= \frac{\pi (6\sqrt{3})^2 (18)}{3} \\ &= \frac{108\pi (18)}{3} \\ &= 972\pi \text{ cm}^3 \end{aligned}$$



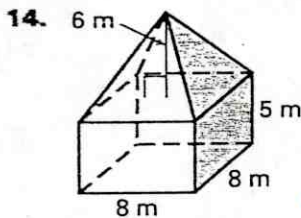
$$\begin{aligned} \tan(32) &= \frac{13}{h} \\ h &= 20.8 \\ V &= \frac{\pi (13)^2 (20.8)}{3} \\ &= 1171.7\pi \text{ m}^3 \end{aligned}$$



$$\begin{aligned} \tan(26) &= \frac{r}{22} \\ r &= 22(\tan(26)) \\ r &= 10.73 \end{aligned}$$

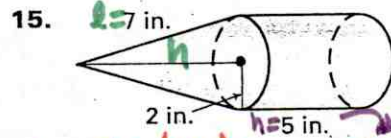
$$\begin{aligned} V &= \frac{\pi (10.73)^2 (22)}{3} \\ V &= 844.31\pi \text{ ft}^3 \end{aligned}$$

Find the volume of the solid. The prisms, pyramids, and cones are right. Round your answer to two decimal places.



$$\begin{aligned} V(\text{Prism}) &= Bh \\ B &= 8(8) \quad h = 5 \\ &= 64 \\ &= 64(5) \\ &= 320 \\ V(\text{Pyramid}) &= \frac{Bh}{3} \\ B &= 8^2 = 64 \quad h = 6 \\ \frac{64(6)}{3} &= 128 \end{aligned}$$

$$\begin{aligned} \text{Total Volume} &= 320 + 128 \\ &= 448 \text{ m}^3 \end{aligned}$$



$$\begin{aligned} V(\text{cylinder}) &= \pi r^2 h \\ &= \pi (2)^2 (5) \\ &= 20\pi \\ V(\text{cone}) &= \frac{\pi r^2 h}{3} \\ &= \frac{\pi (2)^2 (7)}{3} \\ &= 8.95\pi \end{aligned}$$

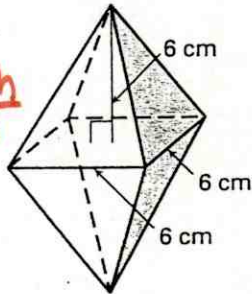
$$\begin{aligned} \text{Total Volume} &= 20\pi + 8.95\pi \\ &= 28.95\pi \text{ in}^3 \end{aligned}$$

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$$\begin{aligned} 7^2 &= h^2 + 2^2 \\ 49 &= h^2 + 4 \\ h^2 &= 45 \\ h &= 6.71 \end{aligned}$$

LESSON 12.5 Practice *continued*
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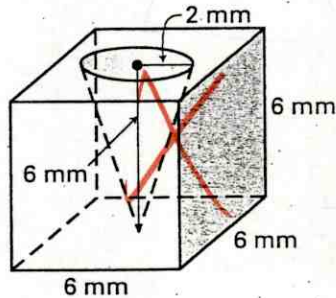
16.



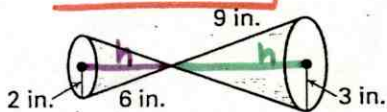
$V(\text{Pyramid}) = \frac{Bh}{3}$
 $B = 6^2 = 36$
 $h = 6$
 $= \frac{36(6)}{3}$
 $= 72$

Total Volume =
 $72 + 72$
 $= 144 \text{ cm}^3$

17.



18.



$V(\text{cone}) = \frac{\pi r^2 h}{3}$

$9^2 = 3^2 + h^2$
 $81 = 9 + h^2$
 $h^2 = 72$
 $h \approx 8.49$

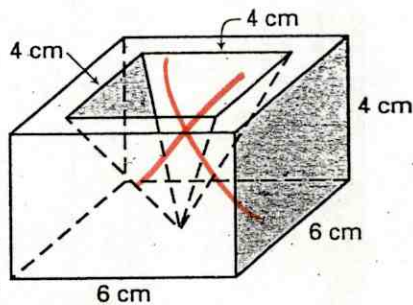
$V = \frac{\pi(2)^2(8.49)}{3}$
 $V = 7.55\pi$

$9^2 = 3^2 + h^2$
 $81 = 9 + h^2$
 $h^2 = 72$
 $h \approx 8.49$

$V = \frac{\pi(3)^2(8.49)}{3}$
 $V = 25.47\pi$

Total = $7.55\pi + 25.47\pi$
 $= 32.02\pi \text{ in}^3$

19.



20. Height of a Pyramid A right pyramid with a square base has a volume of 16 cubic feet. The height is six times the base edge length. What is the height of the pyramid?

$V = 16 \text{ ft}^3$
 $h = 6x$
 $s = x$



$V = \frac{Bh}{3}$
 $16 = \frac{x(x)(6x)}{3}$

$\frac{48}{6} = \frac{6x^3}{6}$
 $8 = x^3$
 $x = 2$

height = $6(2)$
 $h = 12$

In Exercises 21-23, use the following information.

Concrete To complete a construction job, a contractor needs 78 cubic yards of concrete. The contractor has a conical pile of concrete mix that measures 22 feet in diameter and 12 feet high.

21. How many cubic feet of concrete are available to the contractor?

22. How many cubic yards of concrete are available to the contractor?

23. Does the contractor have enough concrete to finish the job?