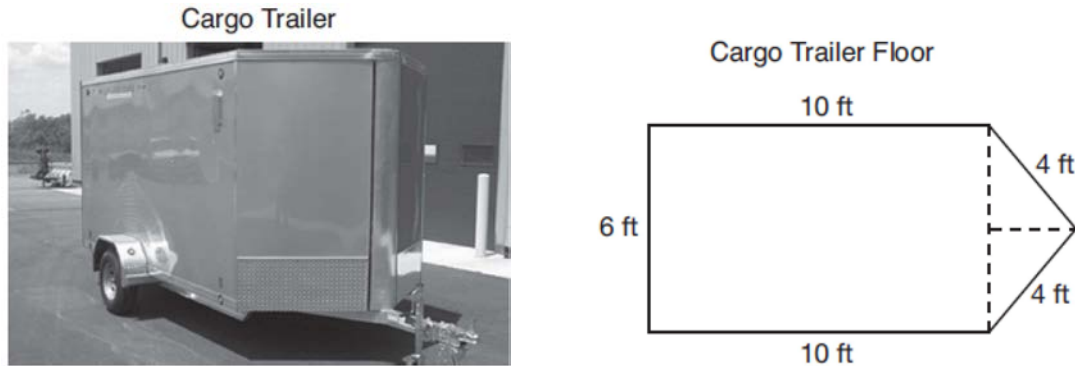
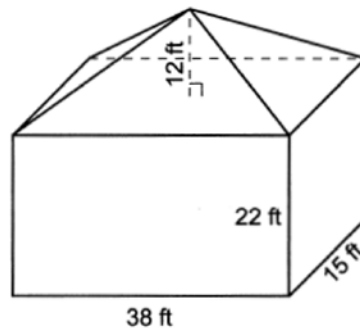


- 9 A cargo trailer, pictured below, can be modeled by a rectangular prism and a triangular prism. Inside the trailer, the rectangular prism measures 6 feet wide and 10 feet long. The walls that form the triangular prism each measure 4 feet wide inside the trailer. The diagram below is of the floor, showing the inside measurements of the trailer.



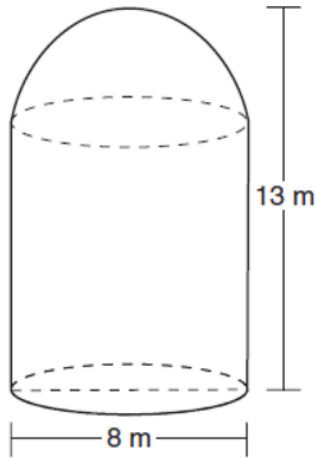
If the inside height of the trailer is 6.5 feet, what is the total volume of the inside of the trailer, to the *nearest cubic foot*?

- 10 A building is composed of a rectangular pyramid on top of a rectangular prism, as shown in the diagram below. The rectangular prism has a length of 38 feet, a width of 15 feet, and a height of 22 feet. The rectangular pyramid sits directly on top of the rectangular prism, and its height is 12 feet.

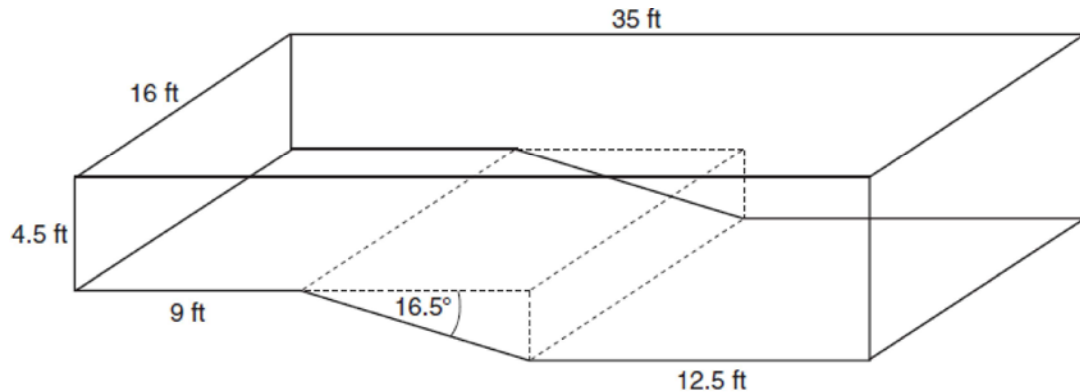


An air purification filter was installed that will clean all the air in the building at a rate of 2400 cubic feet per minute. Determine and state how long it will take, to the *nearest tenth of a minute*, for the filter to clean the air contained in the building.

- 11 A storage tank is in the shape of a cylinder with a hemisphere on the top. The highest point on the inside of the storage tank is 13 meters above the floor of the storage tank, and the diameter inside the cylinder is 8 meters. Determine and state, to the *nearest cubic meter*, the total volume inside the storage tank.



- 12 A rectangular in-ground pool is modeled by the prism below. The inside of the pool is 16 feet wide and 35 feet long. The pool has a shallow end and a deep end, with a sloped floor connecting the two ends. Without water, the shallow end is 9 feet long and 4.5 feet deep, and the deep end of the pool is 12.5 feet long.



If the sloped floor has an angle of depression of 16.5 degrees, what is the depth of the pool at the deep end, to the *nearest tenth of a foot*? Find the volume of the inside of the pool to the *nearest cubic foot*. A garden hose is used to fill the pool. Water comes out of the hose at a rate of 10.5 gallons per minute. How much time, to the *nearest hour*, will it take to fill the pool 6 inches from the top? [1 ft³=7.48 gallons]

G.GMD.A.3: Volume 7**Answer Section**

1 ANS: 1

$$44 \left(\left(10 \times 3 \times \frac{1}{4} \right) + \left(9 \times 3 \times \frac{1}{4} \right) \right) = 627$$

REF: 082221geo

2 ANS: 3

$$2.5 \times 1.25 \times (27 \times 12) + \frac{1}{2} \pi (1.25)^2 (27 \times 12) \approx 1808$$

REF: 061723geo

3 ANS: 1

$$20 \cdot 12 \cdot 45 + \frac{1}{2} \pi (10)^2 (45) \approx 17869$$

REF: 061807geo

4 ANS: 3

$$\pi(6)^2(24) + \frac{4\pi(6)^3}{(3)(2)} = 864\pi + 144\pi = 1008\pi$$

REF: 082414geo

5 ANS: 2

$$8 \times 8 \times 9 + \frac{1}{3} (8 \times 8 \times 3) = 640$$

REF: 011909geo

6 ANS: 2

$$4 \times 4 \times 6 - \pi(1)^2(6) \approx 77$$

REF: 011711geo

7 ANS: 4 REF: 061606geo

8 ANS:

$$\frac{(3.5)^2(1.5) - (2)^2(1.5)}{.6} \approx 20.6. \text{ 21 bags}$$

REF: 082332geo

9 ANS:

$$\left((10 \times 6) + \sqrt{7(7-6)(7-4)(7-4)} \right) (6.5) \approx 442$$

REF: 081934geo

10 ANS:

$$\frac{22 \times 38 \times 15 + \frac{1}{3}(38 \times 15 \times 12)}{2400} \approx 6.2$$

REF: 062432geo

11 ANS:

$$V = (\pi)(4^2)(9) + \left(\frac{1}{2}\right)\left(\frac{4}{3}\right)(\pi)(4^3) \approx 586$$

REF: 011833geo

12 ANS:

$$\begin{aligned} \tan 16.5 &= \frac{x}{13.5} & 9 \times 16 \times 4.5 &= 648 & 3752 - (35 \times 16 \times .5) &= 3472 \\ x &\approx 4 & 13.5 \times 16 \times 4.5 &= 972 & 3472 \times 7.48 &\approx 25971 \\ 4 + 4.5 &= 8.5 & \frac{1}{2} \times 13.5 \times 16 \times 4 &= 432 & \frac{25971}{10.5} &\approx 2473.4 \\ & & 12.5 \times 16 \times 8.5 &= \frac{1700}{3752} & \frac{2473.4}{60} &\approx 41 \end{aligned}$$

REF: 081736geo