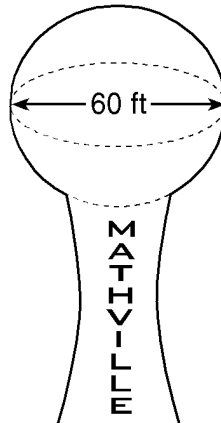


Name: _____

CC Geometry

Volume of Spheres

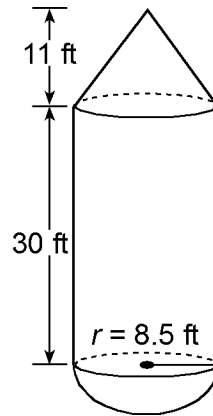
- 1) The top of the *Mathville* water tower is shaped like a sphere. The base only contains the plumbing and does not store water.



If the water tank measures 60 feet across, approximately how many cubic feet of water does the tank hold?

- A) 15,072 ft³ B) 904,320 ft³ C) 3,768 ft³ D) 113,040 ft³
- 2) The *WorldView Technology Company* is building a satellite in the shape of a sphere with a diameter of 4.8 feet. If the satellite weighs 15 pounds per cubic foot before launch, what is the total weight in pounds of the satellite on Earth? [Round your answer to the nearest tenth of a cubic foot.]
- A) 361.9 lbs B) 120.2 lbs C) 90.5 lbs D) 868.7 lbs

- 3) Consider the water tower with the dimensions shown below.



- (a) Find the total volume of the water tower, to the nearest cubic foot. [*Show all work.*]
- (b) Given that water has a density of 62.4 lb/ft^3 , what is the mass in the water tower when it is $\frac{2}{3}$ full, to the nearest tenth of a cubic foot? [*Show all work.*]

1) D 2) D

3) (a) 8,928 ft³

$$\text{WORK SHOWN: } V_{\text{total}} = V_{\text{cone}} + V_{\text{cylinder}} + V_{\text{hemisphere}} = \frac{1}{3}\pi r^2 h + \pi r^2 h + \frac{1}{2}\left(\frac{4}{3}\pi r^3\right) = \frac{1}{3}\pi(8.5)^2(11) + \pi(8.5)^2(30) +$$

$$\frac{1}{2}\left(\frac{4}{3}\pi(8.5)^3\right) = 832.260 + 6,809.402 + 1,286.220 = 8,927.883 \approx 8,928;$$

(b) 371,399.9 ft³

$$\text{WORK SHOWN: } m = D \times V = \left(\frac{2}{3}\right)(8,928) \times 62.4 = 371,399.921 \approx 371,399.9$$