

Lesson 23 Practice Problems

1. A baseball fits snugly inside a transparent display cube. The length of an edge of the cube is 2.9 inches.

Is the baseball's volume greater than, less than, or equal to 2.9^3 cubic inches? Explain how you know.

2. There are many possible cones with a height of 18 meters. Let r represent the radius in meters and V represent the volume in cubic meters.

- Write an equation that represents the volume V as a function of the radius r .
- Complete this table for the function, giving three possible examples.

r	V
2	

- If you double the radius of a cone, does the volume double? Explain how you know.

- Is the graph of this function a line? Explain how you know.

(From Unit 6, Lesson 22.)

3. A hemisphere fits snugly inside a cylinder with a radius of 6 cm. A cone fits snugly inside the same hemisphere.

a. What is the volume of the cylinder?

b. What is the volume of the cone?

c. Estimate the volume of the hemisphere by calculating the average of the volumes of the cylinder and cone.

4. a. Find the hemisphere's diameter if its radius is 6 cm.

b. Find the hemisphere's diameter if its radius is $\frac{1000}{3}$ m.

c. Find the hemisphere's diameter if its radius is 9.008 ft.

d. Find the hemisphere's radius if its diameter is 6 cm.

e. Find the hemisphere's radius if its diameter is $\frac{1000}{3}$ m.

f. Find the hemisphere's radius if its diameter is 9.008 ft.

5. After almost running out of space on her phone, Elena checks with a couple of friends who have the same phone to see how many pictures they have on their phones and how much memory they take up. The results are shown in the table.

number of photos	2,523	3,148	1,875
memory used in MB	8,072	10,106	6,037

a. Could this information be reasonably modeled with a linear function? Explain your reasoning.

b. Elena needs to delete photos to create 1,200 MB of space. Estimate the number of photos she should delete.

(From Unit 6, Lesson 9.)

6. Clare was solving an equation, but when she checked her answer she saw her solution was incorrect. She knows she made a mistake, but she can't find it. Where is Clare's mistake and what is the solution to the equation?

$$\begin{aligned}
 12(5 + 2y) &= 4y - (5 - 9y) \\
 72 + 24y &= 4y - 5 - 9y \\
 72 + 24y &= -5y - 5 \\
 24y &= -5y - 77 \\
 29y &= -77 \\
 y &= \frac{-77}{29}
 \end{aligned}$$

(From Unit 4, Lesson 13.)