Lesson 20: Truncated Cones

Classwork
Opening Exercise

Examine the bucket below. It has a height of 9 inches and a radius at the top of the bucket of 4 inches.

a. Describe the shape of the bucket. What is it similar to?

b. Estimate the volume of the bucket.
Example 1

Determine the volume of the truncated cone shown below.
Exercises 1–5

1. Find the volume of the truncated cone.

   a. Write a proportion that will allow you to determine the height of the cone that has been removed. Explain what all parts of the proportion represent.

   b. Solve your proportion to determine the height of the cone that has been removed.

   c. Write an expression that can be used to determine the volume of the truncated cone. Explain what each part of the expression represents.

   d. Calculate the volume of the truncated cone.
2. Find the volume of the truncated cone.
3. Find the volume of the truncated pyramid with a square base.

   a. Write a proportion that will allow you to determine the height of the cone that has been removed. Explain what all parts of the proportion represent.

   b. Solve your proportion to determine the height of the pyramid that has been removed.

   c. Write an expression that can be used to determine the volume of the truncated pyramid. Explain what each part of the expression represents.

   d. Calculate the volume of the truncated pyramid.
4. A pastry bag is a tool used to decorate cakes and cupcakes. Pastry bags take the form of a truncated cone when filled with icing. What is the volume of a pastry bag with a height of 6 inches, large radius of 2 inches, and small radius of 0.5 inches?

5. Explain in your own words what a truncated cone is and how to determine its volume.