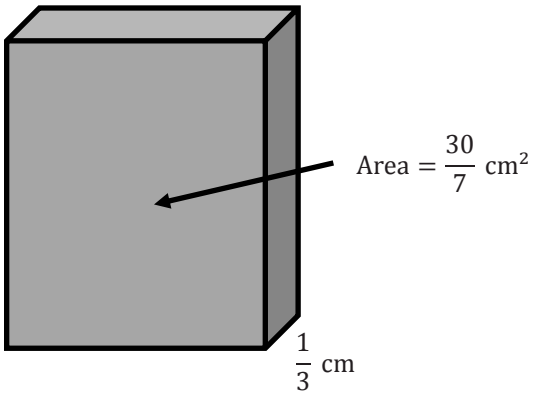
Problem Set

1. Determine the volume of the rectangular prism.



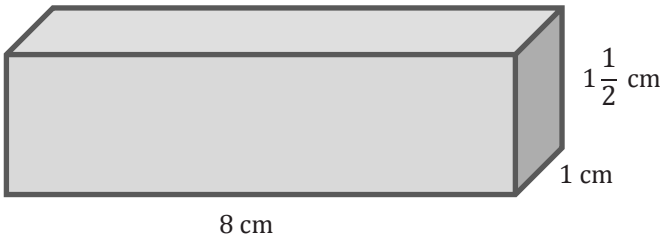
2. Determine the volume of the rectangular prism in Problem 1 if the height is quadrupled (multiplied by four). Then, determine the relationship between the volumes in Problem 1 and this prism.

3. The area of the base of a rectangular prism can be represented by B, and the height is represented by h.
   a. Write an equation that represents the volume of the prism.
   b. If the area of the base is doubled, write an equation that represents the volume of the prism.
   c. If the height of the prism is doubled, write an equation that represents the volume of the prism.
   d. Compare the volume in parts (b) and (c). What do you notice about the volumes?
   e. Write an expression for the volume of the prism if both the height and the area of the base are doubled.

4. Determine the volume of a cube with a side length of $5\frac{1}{3}$ in.

5. Use the information in Problem 4 to answer the following:
   a. Determine the volume of the cube in Problem 4 if all of the side lengths are cut in half.
   b. How could you determine the volume of the cube with the side lengths cut in half using the volume in Problem 4?

6. Use the rectangular prism to answer the following questions.



a. Complete the table.

Length of Prism	Volume of Prism
$l = 8$ cm	
$\frac{1}{2}l =$	
$\frac{1}{3}l =$	
$\frac{1}{4}l =$	
$2l =$	
$3l =$	
$4l =$	

b. How did the volume change when the length was one-third as long?

c. How did the volume change when the length was tripled?

d. What conclusion can you make about the relationship between the volume and the length?

7. The sum of the volumes of two rectangular prisms, Box A and Box B, are 14.325 cm^3. Box A has a volume of 5.61 cm^3.

a. Let B represent the volume of Box B in cubic centimeters. Write an equation that could be used to determine the volume of Box B.

b. Solve the equation to determine the volume of Box B.

c. If the area of the base of Box B is 1.5 cm^2, write an equation that could be used to determine the height of Box B. Let h represent the height of Box B in centimeters.

d. Solve the equation to determine the height of Box B.