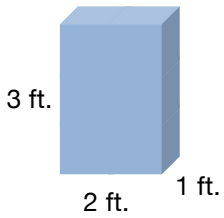
Changing Dimensions: Volume

Use What You've Learned

1. Sketch three different rectangular prisms that are similar to the one shown below using the following directions:
   Prism 1: Double the length, width, and height (scale factor = 2).
   Prism 2: Triple the length, width, and height (scale factor = 3).
   Prism 3: Quadruple the length, width, and height (scale factor = 4).

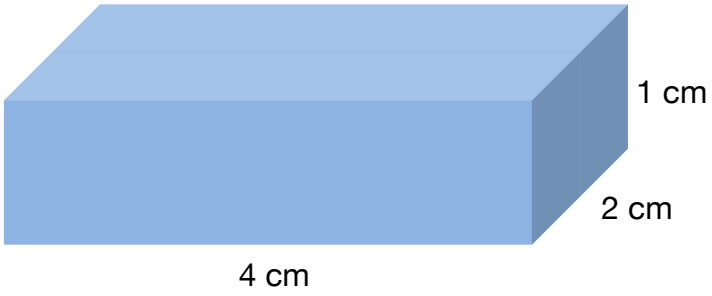


2. Find the volume of each of the rectangular prisms.

3. Study your results for problems 1 and 2. What happens to the volume of a rectangular prism when you double the dimensions, triple the dimensions, quadruple the dimensions, or make the dimensions n times as large (scale factor = n)? Record your answers in the following table.

Scale Factor	Volume
1	**V**
2	
3	
4	
n	

4. Sketch a rectangular prism that is similar to the following prism. Make the length, width, and height one half of the original length, width, and height. What happens to the volume of a prism when you make the dimensions ½ as large? Does this follow the pattern you described in problem 3?



5. A truck holds 8 large boxes. If a smaller box is similar in shape, but all the dimensions are one half the size of the large box, how many boxes can the truck hold?

6. A DVD case is 5.5 inches by 0.5 inches by 7.5 inches. How many DVD cases would fit on a shelf that measures 22 inches by 30 inches by 2 inches?

7. One section of a freezer case at a grocery store is tightly packed with 27 containers of ice cream. The dimensions of one container of ice cream are shown below. What are the dimensions of that section of the freezer case? Assume that each dimension is greater than 6.5 inches.