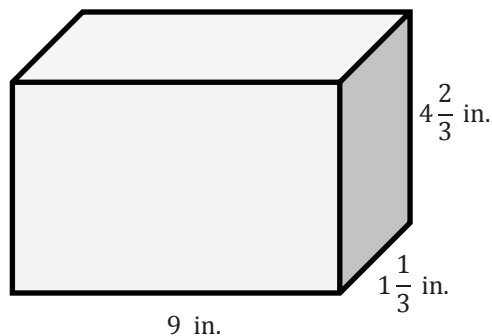


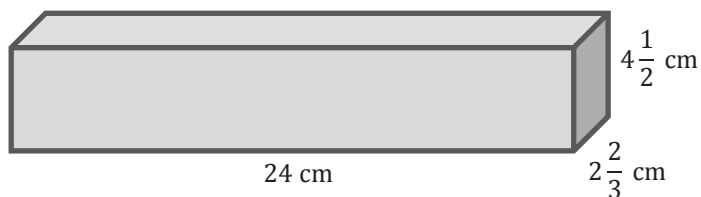
## Problem Set

1. Answer the following questions using this rectangular prism:

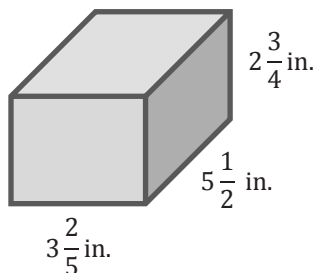


- What is the volume of the prism?
  - Linda fills the rectangular prism with cubes that have side lengths of  $\frac{1}{3}$  in. How many cubes does she need to fill the rectangular prism?
  - How is the number of cubes related to the volume?
  - Why is the number of cubes needed different from the volume?
  - Should Linda try to fill this rectangular prism with cubes that are  $\frac{1}{2}$  in. long on each side? Why or why not?
2. Calculate the volume of the following prisms.

a.



b.



3. A rectangular prism with a volume of 12 cubic units is filled with cubes twice: once with cubes with  $\frac{1}{2}$ -unit side lengths and once with cubes with  $\frac{1}{3}$ -unit side lengths.
- How many more of the cubes with  $\frac{1}{3}$ -unit side lengths than cubes with  $\frac{1}{2}$ -unit side lengths are needed to fill the prism?
  - Finally, the prism is filled with cubes whose side lengths are  $\frac{1}{4}$  unit. How many  $\frac{1}{4}$ -unit cubes would it take to fill the prism?
4. A toy company is packaging its toys to be shipped. Each toy is placed inside a cube-shaped box with side lengths of  $3\frac{1}{2}$  in. These smaller boxes are then packed into a larger box with dimensions of 14 in.  $\times$  7 in.  $\times$   $3\frac{1}{2}$  in.
- What is the greatest number of toy boxes that can be packed into the larger box for shipping?
  - Use the number of toy boxes that can be shipped in the large box to determine the volume of the shipping box.
5. A rectangular prism has a volume of 34.224 cubic meters. The height of the box is 3.1 meters, and the length is 2.4 meters.
- Write an equation that relates the volume to the length, width, and height. Let  $w$  represent the width, in meters.
  - Solve the equation.