

# Volume Problems

1. A die measures 1.1 cm on all sides. A baby block measures 3 cm on all sides.

How many dice can you stack into a 20 cm x 20 cm x 12 cm cardboard box?

How many baby blocks?

2. You need: a measuring cup that measures in milliliters, water, a small ball, a tennis ball, and a drinking glass.

Figure out a method to find the volume of the balls. After all, you cannot pour water inside them.

The volumes are:

the small ball \_\_\_\_\_ ml, the tennis ball \_\_\_\_\_ ml, the drinking glass \_\_\_\_\_ ml.

Now compare the volumes:

The volume of the small ball is about \_\_\_\_\_% of the volume of the drinking glass.

The volume of the tennis ball is about \_\_\_\_\_% of the volume of the drinking glass.

3. You need: a toilet paper roll, a cylinder-shaped glass, a ruler.

Find the volume of the toilet paper roll and of the glass, in milliliters.

Which has more volume?

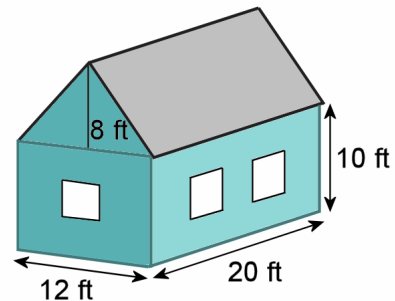
How many milliliters more is the volume of the larger object?

How many *percent* more is the volume of the larger object?

4. This is Grandma's cottage.

a. Find its total volume (in two parts).

b. The cottage has five windows, each being 3 ft x 4 ft, and one door, 4 ft x 8 ft. If Grandma wants to paint the cottage pink, find the total area she needs to paint. Remember to include the two end parts of the roof (the gable), but not the roof itself.



5. Mr. Johnson's bedroom measures 12 ft x 18 ft x 12 ft.

a. If he lowers the ceiling so that the height becomes 11 ft, how many percent decrease is that in the total volume of the room?

b. How many percent does the surface area decrease?