Cubic Foot
By Leighton McIntyre

Goal: To convert gallons to cubic feet

Problem

The water bills in Athens indicate your water consumption and charges in terms of cubic feet of water.

Compare a gallon container, such as a paint can, and a box or stick structure 12 inches on a side. Visually. Estimate or guess how many gallon in a cubic foot. Have students estimate from the visual comparison.

How many gallons in a cubic foot?
How many cubic inches in a gallon?
How many cubic feet of gasoline in a Celica tank with a capacity of 17 gallons?

If you take a gallon container and compare it to a cubic foot box, the estimate that you can make is that there are about 7 gallons in a cubic foot.

Looking at a sample water bill from Athens Clarke County should enable you to make just about the same estimation.

How many gallons in a cubic foot?

Using the sample water bill above we can see that the usage was $36753 - 35817 = 936$ cubic ft of water. On the same bill this is equivalent to usage of 7000 gallons of water. Using this information we can calculate that there are $7000/936 = 7.48$ gallons in a cubic foot.

How many cubic inches in a gallon?

There are 12 inches in one foot. This in one cubic foot there are $12 \times 12 \times 12 = 1728$ cubic inches.

Recall 1 cubic foot = 7.48 gallons
Thus there are \( \frac{1728}{7.48} = 231 \) cubic inches in one gallon

**How many cubic feet of gasoline in a Celica tank with a capacity of 17 gallons?**

Since there are 7.48 gallons in a cubic foot

Then 17 gallons have \( \frac{17}{7.48} = 2.28 \) cubic feet.