In this section, you will learn about ratios, unit costs, rates and proportions.

RATIO:
A comparison of two numbers or two quantities using division is called a **Ratio**. We use ratios in many different situations:

In a gas oil mixture, we must use 1 part oil for 10 parts of gas.

A certain plant food requires a mixture of 10 drops of plant food per every gallon of water.

We have three ways to represent ratios:

The ratio of 13 to 49 can be represented by :

$\frac{13}{49}$, 13 to 49, and 13:49.

Remember that a ratio is nothing more than a fraction. So we must always write the ratio in simplified form.

EXAMPLE: Express each phrase as a ratio in simplified form:
  a.) The ratio of 8 to 12.   b.) The ratio of 3.2 to 16.

  c.) The ratio of 8 ounces to 2 pounds.   d.) The ratio of 2 feet to 2 yards

EXAMPLE: Two numbers are in the ratio 4:7. Two-seventh of the larger exceeds three-fourth of the smaller by 8. Find the numbers.

EXAMPLE: In a college graduating class, 224 students out of 632 went on to graduate school. Write a fraction in simplified form to express the ratio of the number of students continuing their education to the number in the graduating class.

UNIT COSTS:
The unit cost of an item is the ratio of its cost to its quantity.

12 lbs of rice costs $8.99 or 2 lbs of rice costs $2.50. Which is the better buy?
8.99 for 12 pounds or 2.50 for 2 lbs? We need their unit costs:

$\frac{\$8.99}{12\,\text{lbs}} \approx \$0.75$ $\frac{\$2.50}{2\,\text{lbs}} = \$1.25$

75 cents per pound or $1.25 per pound.

The better buy would be 12 lbs of rice for $8.99.

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