

Ratio

A ratio is the comparison of two quantities which have the same units. Before you can understand “ratio,” you must know the meanings of quantities and units.

Quantities are numbers.

Units are used to measure.

- Examples of units used to measure lengths or distances are inch, foot, mile, and meter.
- Some units used to measure weight are ounces, pounds, tons, and grams.
- Some units used to measure liquid capacity are quarts, gallons, and liters.
- Some units of time are seconds, minutes, hours, and years.
- Other things such as shirts, dollars, and houses are units, too.

Example: 5 shirts

5, the quantity, tells how many shirts; the unit, shirt, tells what we’re counting.

A ratio can be shown three different ways. The ratio of 5 inches to 7 inches can be written:

a. $\frac{5}{7}$ as a fraction b. 5:7 with a colon c. 5 to 7 with the word “to”

The order of the numbers must be the same as is stated in the problem. Just as we get rid of common factors in a fraction, we simplify the numbers in a ratio by canceling the common factors *and the common units*.

Example: Write as a simplified ratio using all three methods.

a. 12 oz to 16 oz

$$\frac{16 \text{ oz}}{12 \text{ oz}} = \frac{4 \text{ oz}}{3 \text{ oz}}$$

4 oz : 3 oz

4 oz to 3 oz

REMEMBER the fraction $\frac{4}{3}$ means you have 4 parts (the numerator) but is only takes 3 parts (the denominator) to make 1 whole unit.

The ratio may be comparing 2 parts of something. EXAMPLE: In a class, 16 people live out of state and 12 people live in state. The ratio of those “out of state” to those “in state” is 16 to 12

or $\frac{16}{12} = \frac{4}{3}$