Solving Proportions

A **proportion** is an equation where the ratio (or rates) of two items are equal. In algebraic terms, if a is to b as c is to d, then $\frac{a}{b} = \frac{c}{d}$.

EXAMPLE: A recipe calls for 3.5 cups of flour to make 4 dozen cookies. How much flour is needed to make 5 dozen cookies?

SOLUTION: Let x be the amount of flour needed to make 5 dozen cookies. Then, we can create the ratio of amount of flour to number of dozens of cookies.

$$\frac{x \text{ cups of flour}}{5 \text{ dozens of cookies}} = \frac{3.5 \text{ cups of flour}}{4 \text{ dozen of cookies}}$$

To solve this equation for x, find the LCD and multiply by it on both sides. The LCD of 5 and 4 is 20. (We can consider "dozens of cookies" to be the unit instead of multiplying by an extra 12).

$$20 \cdot \frac{x \text{ cups of flour}}{5 \text{ dozens of cookies}} = 20 \cdot \frac{3.5 \text{ cups of flour}}{4 \text{ dozen of cookies}}$$

This gives us the equation

$$4x = 5(3.5)$$

which you can then solve for x to get $x = 4.375$ cups of flour.