Unit price

When we talk about unit price, what we're really talking about is the "price per unit" of a product (the price per pound of tomatoes or the price per quart of milk). This is the math that helps us compare the prices of things.

For example, when we're buying peanut butter at the grocery store and one jar costs $\$2.00$ for 1 pound and another jar costs $\$1.80$ for 12 ounces, we can use unit price to figure out which one is a better deal.

The way to figure that out is by finding either the price per ounce for both jars, or the price per pound for both jars. That way, we're comparing equivalent values. Whichever jar is cheaper per pound (or per ounce) will be the better value.

We're going to be using proportions to figure this out.

Example

Which jar of peanut butter is a better value?

Jar A costs $\$2.00$ for 1 pound

Jar B costs $\$1.80$ for 12 ounces

There are several ways we could approach this problem. Since we already have the price for 1 pound with Jar A, we'll find the price per pound for Jar B, and then we'll be able to compare prices directly. We want to set up a proportion, so we'll let our unknown x be the price per pound for Jar B.

$$\frac{\$1.80}{12 \text{ ounces}} = \frac{x}{1 \text{ pound}}$$

This proportion is saying "If 12 ounces costs $\$1.80$, at this same cost per unit, how much will 1 pound cost?" In order to solve this proportion, we need to use the same unit of weight on both sides. We know that there are 16 ounces in a pound, so on the right-hand side we'll substitute 16 ounces for 1 pound.

$$\frac{\$1.80}{12 \text{ ounces}} = \frac{x}{16 \text{ ounces}}$$

Now we'll multiply both sides of this equation by 16 ounces, which will cancel out the 16 ounces in the denominator on the right-hand side and leave just x in the numerator.

$$\frac{\$1.80}{12 \text{ ounces}} (16 \text{ ounces}) = x$$

$$\$1.80 \left(\frac{16}{12}\right) = x$$

To make the computation a little easier, we'll first reduce the fraction.

$$\$1.80 \left(\frac{16 \div 4}{12 \div 4}\right) = x$$

$$\$1.80 \left(\frac{4}{3}\right) = x$$

$$\frac{\$1.80(4)}{3} = x$$

$$\frac{\$7.20}{3} = x$$

$$\$2.40 = x$$

What this tells us is that Jar B costs $\$2.40$ per pound. Comparing this to Jar A, which costs $\$2.00$ per pound, we can say that Jar A is a better value than Jar B.