Conquer Canning Math

The Easy Way

Seed to Pantry
Grow * Preserve * Savor

Conquer Canning Math

Adjusting Jar/Container Sizes

Oh boy, look at that prolific zucchini patch! What are we going to do with so much zucchini? We've shredded it, grilled it, stir-fried it, and given bushels of it away. Our neighbors are no longer making eye contact and have resorted to locking their car doors to keep out the zucchini fairy. The only thing left is to turn them into zucchini pickles.

That's all fine and good, but our recipe makes 4 quart jars of pickles and we want to make pint jars. How do we change the jar size without going into math overload?

Think of it like this; if 1 quart = 2 pints, then how many pints do 4 quarts equal?

4 (# of quart jars your recipe makes) **x 2** (# of pints in each quart) = **8** pints

We'll use simple thinking to check our work:

Since we are going from big jars (quarts) to smaller jars (pints) it makes sense that we will need MORE jars.

Another way to figure this out is to use our old math operation process friends (or enemies, according to how you look at math!). In this example we will use ratios (don't let that word scare you!) to figure out how many jars we need.

1 quart is to 4 quarts as 2 pints (because 2 pints = 1 quart) is to **?** pints

$$\frac{\mathbf{1}}{\mathbf{4}} : \frac{\mathbf{2}}{?}$$

Here we cross multiply and divide by the remaining number, so

2 x 4 = 8

8 ÷ 1 = 8 so again we get 8 jars needed

Let's try another example. We are making grape jelly and the recipe makes 3 quart jars. A quart is a lot of jelly to have open at once, so we want to use half-pint jars instead. Using the same techniques as above:

Think: If 1 quart = 4 half-pints, then how many half-pints do 3 quarts equal?

Note: We know that 1 quart = 4 half-pints because 1 quart = 2 pints and 2 pints = 4 half-pints.

3 (# of quart jars our recipe makes) **x 4** (# of half pints in each quart) = **12** half-pints!

Using ratios again: 1 quart is to 3 quarts as 4 half pints are to **?**

$$\frac{\mathbf{1}}{\mathbf{3}} : \frac{\mathbf{4}}{?}$$

We will cross multiply and divide by the remaining number, so:

4 x 3 = 12

12 ÷ 1 = 12

Once again the answer is 12 half-pint jars.

What if we want to go the other way? Our canned tomato recipe calls for 6 pint jars but we want to use quart jars instead. It's basically the same process as above, only we think "backwards."

If 2 pints equal 1 quart then how many quarts do 6 pints equal?

6 (number of pints our recipe makes) **÷ 2** (number of pints in each quart) **= 3**

How do we know when we should divide instead of multiply? We'll use the simple thinking technique again:

We are going from small jars to large jars, so it makes sense that we will use fewer jars!

Tip:

When going from **larger** jars or containers to **smaller** jars or containers we multiply

Because we will use *more* jars or containers

When going from **smaller** jars or containers to **larger** jars or containers we divide

Because we will use *fewer* jars or containers

Let's try using the same ratio method as above:

6 pints are to 2 pints (because there are two pints in a quart) as how many quarts are to 1 quart

$$\frac{6}{2} : \frac{?}{1}$$

Remember to cross multiply and divide by the remaining number, thus:

6 x 1 = 6

6 ÷ 2 = 3

Tip:

Think of the ***relationship*** between jar sizes and don't let the numbers overwhelm you! Fractions and ratios are simply different ways to think of ***relationships*** – something I guarantee you do automatically every day. Maybe this is what mathematicians mean when they say everything can be expressed in numbers. ☺

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Adjusting Recipes

We've picked the berries. Our canning jars and lids are clean and ready to go. There's a new bag of sugar ready to open. We are all set to begin making Grandma's blackberry jam but there's a problem – the recipe calls for 6 cups of berries, 4 cups of sugar, and 2 Tbsp of lemon juice but we only have 5 cups of berries! How much sugar and lemon juice should we use with 5 cups of berries?

Some people might be tempted to use 3 cups of sugar, but that will throw the ratio off. Remember, sugar is used as a preserving agent here, so it's important to have the correct ratio. But it's no problem, because we can do the math quickly and easily.

We use the same technique as above, thinking about the ingredient relationships:

5 (cups of berries) are to 6 (cups of berries) as ? (cups of sugar) are to 4 (cups of sugar)

$$\frac{5}{6} : \frac{?}{4}$$

5 x 4 = 20

20 ÷ 6 = 3.33333 or 3 $^1/_3$ cups of sugar

Now, use our simple relationship thinking to check this: We are using fewer berries, so we know we will need to use less sugar also. 3 $^1/_3$ cups is less than 4 cups.

We use the same approach to determine how much lemon juice to use:

$$\frac{5}{6} : \frac{?}{2}$$

5 x 2 = 10

10 ÷ 6 = 1.6666 or 1 $^{2}/_{3}$

1 $^{2}/_{3}$ Tbsp = 1 Tbsp + 2 tsp of lemon juice

So, we will use 5 cups of berries, 3 $^{1}/_{3}$ cups of sugar and 1 $^{2}/_{3}$ Tbsp of lemon juice. Problem solved!