



The Canning Diva presents

CULINARY MATH & TOMATO CONVERSIONS



Using easy equations to convert fresh tomatoes to store-bought equivalents

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1. Equivalents

Commonly used terms and measurement equivalents to help you decode a recipe and convert ingredients



Abbreviations & Culinary Math Terms

- EP refers to Edible Portion after an ingredient has been prepared.
- AP refers to the ingredient At Purchase, or in its whole form.
- Yield Percentage (YP) derived from *The Book of Yields* which is a culinary reference providing how much usable (EP) you can expect from a purchased ingredient (AP).
- Metric System
 - milliliter: mL or ml
 - liter: L
- US Customary/Imperial System:
 - teaspoon: tsp or t
 - tablespoon: tbl, T, or Tbsp
 - fluid ounce: fl oz
 - cup: C
 - gallon: G or gal
 - pound: # or lb



Commonly Used Volume Equivalents

- 1 Tablespoon (T) = 3 teaspoons (t)
- 1 Tablespoon = 0.5 fluid ounce (fl oz)
- 1 fluid ounce = 29.59 milliliters (mL)
- 1 cup = 8 fluid ounces
- 1 cup = 16 Tablespoons
- 1 pint = 2 cups
- 1 quart = 2 pints
- 1 quart = 4 cups
- 1 gallon = 4 quarts
- 1 Liter = 33.8 fluid ounces
- 1 Liter = 1000 milliliters (mL)
- 1 ounce (oz) = 28.35 grams (g)
- 1 pound (# or lb) = 16 ounces
- 1 pound = 453.6 grams
- 1 kilogram (kg) = 2.205 pounds
- 1 kilogram = 1000 grams

Weight Equivalents

These relationships are constant.

Grams	to Ounces	to Pounds	to Kilograms
28.35 g	= 1 oz		
453.6 g	= 16 oz	= 1 #	= 0.4536 kg
1000 g	= 35.27 oz	= 2.205 #	= 1 kg

Moving across each row, you may find the equivalent for each weight measurement. For example, 1 pound is equivalent to 16 ounces or .4536 kilograms.

Volume Equivalents

These relationships are constant.

				1 T	= 3 t	= 0.5 fl oz		
				2 T		= 1 fl oz	= 29.59 mL	
			1 C	= 16 T	= 48 t	= 8 fl oz		
		1 pt	= 2 C			= 16 floz		
	1 qt	= 2 pt	= 4 C			= 32 fl oz		
						33.8 fl oz	= 1000 mL	= 1 L
1 G	= 4 qt	= 8 pt	= 16 C			= 128 fl oz		

Moving across each row, you may find the equivalent for each volume measurement. For example, 2 cups is equivalent to 1 pint or 16 fluid ounces.

2. Canned versus Fresh

Understanding (EP) and (AP)
so you may convert a canning
recipe properly





The End Result Differs

Depending on whether you peel, deseed, chop or leave the tomato whole, preparation of the fresh tomato yields a new result.

If you start with a purchased (AP) weight of 16 ounces of tomatoes, then cored, removed the skin and seeds, and chopped the tomato, the end result is a total of 12.55 ounces giving a yield after prep of 78.4% which is 5.9 ounces per cup edible portion (EP).





What Does This Mean?

Just because a recipe states we require "x" amount of weight of a particular ingredient, does not mean the recipe will yield that amount.

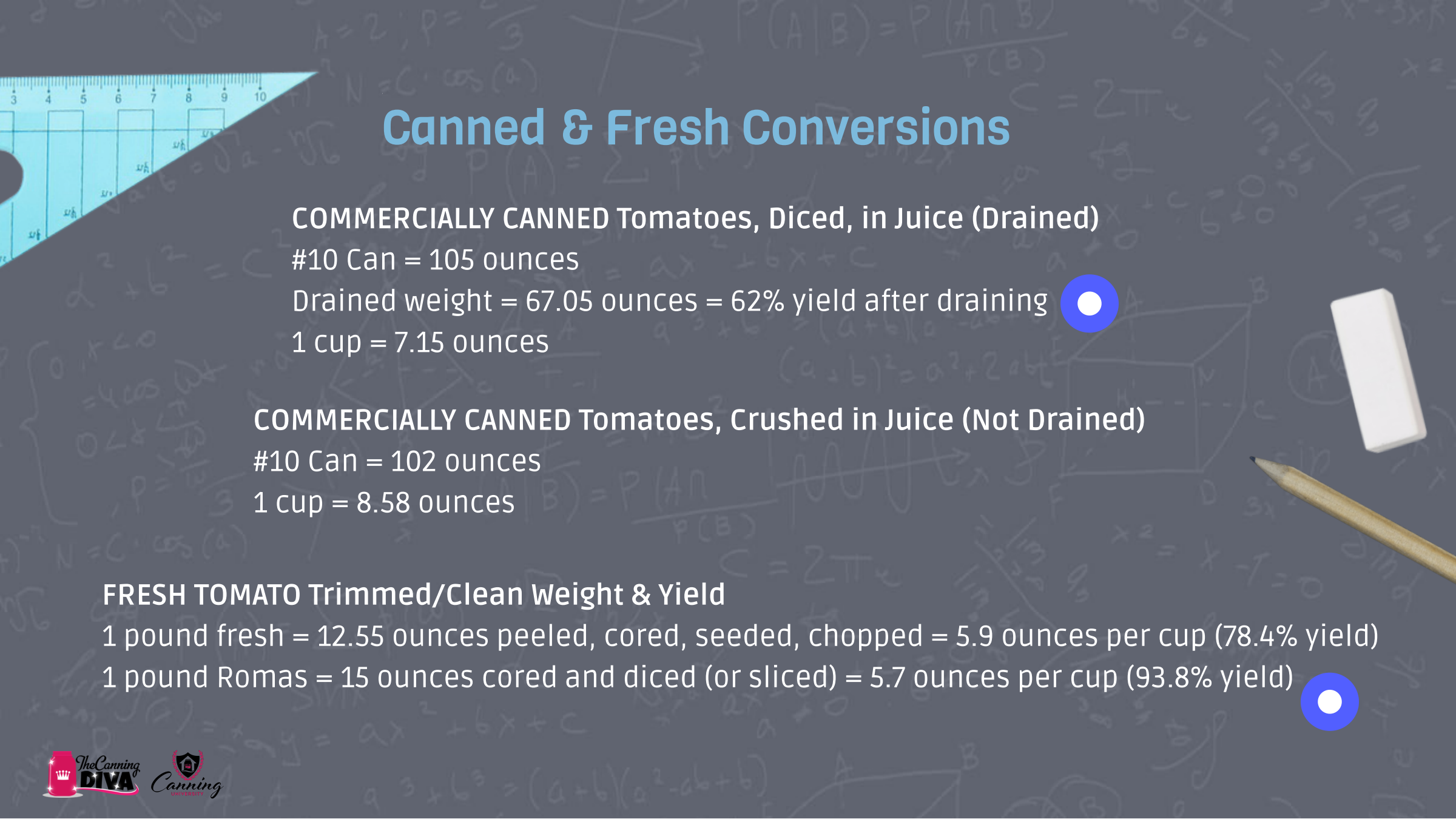
What we shop for in terms of whole ingredients is not the same as the end result after we prepare the food.

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Simple Tomato Conversion

A Quick Reference for
Canning Recipes



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Canned & Fresh Conversions

COMMERCIALLY CANNED Tomatoes, Diced, in Juice (Drained)

#10 Can = 105 ounces

Drained weight = 67.05 ounces = 62% yield after draining

1 cup = 7.15 ounces

COMMERCIALLY CANNED Tomatoes, Crushed in Juice (Not Drained)

#10 Can = 102 ounces

1 cup = 8.58 ounces

FRESH TOMATO Trimmed/Clean Weight & Yield

1 pound fresh = 12.55 ounces peeled, cored, seeded, chopped = 5.9 ounces per cup (78.4% yield)

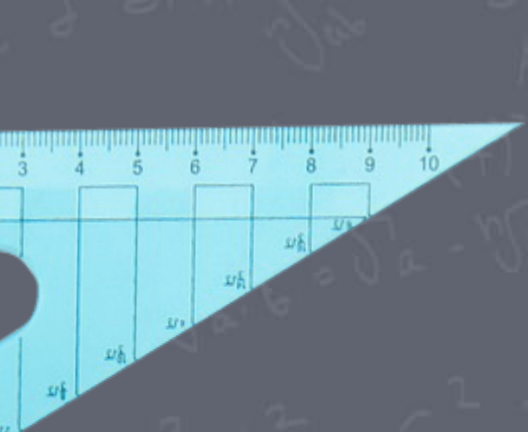
1 pound Romas = 15 ounces cored and diced (or sliced) = 5.7 ounces per cup (93.8% yield)

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Caluclating What To Buy

How many pounds of Roma tomatoes do I need to purchase for each of the following recipes?





Recipe A: Calculate kilograms into pounds.



$$\frac{kg}{1} \times \frac{\#}{1 kg} = \#$$

Covert 2.88 kilograms of fresh tomatoes to pounds, or the edible portion (EP):

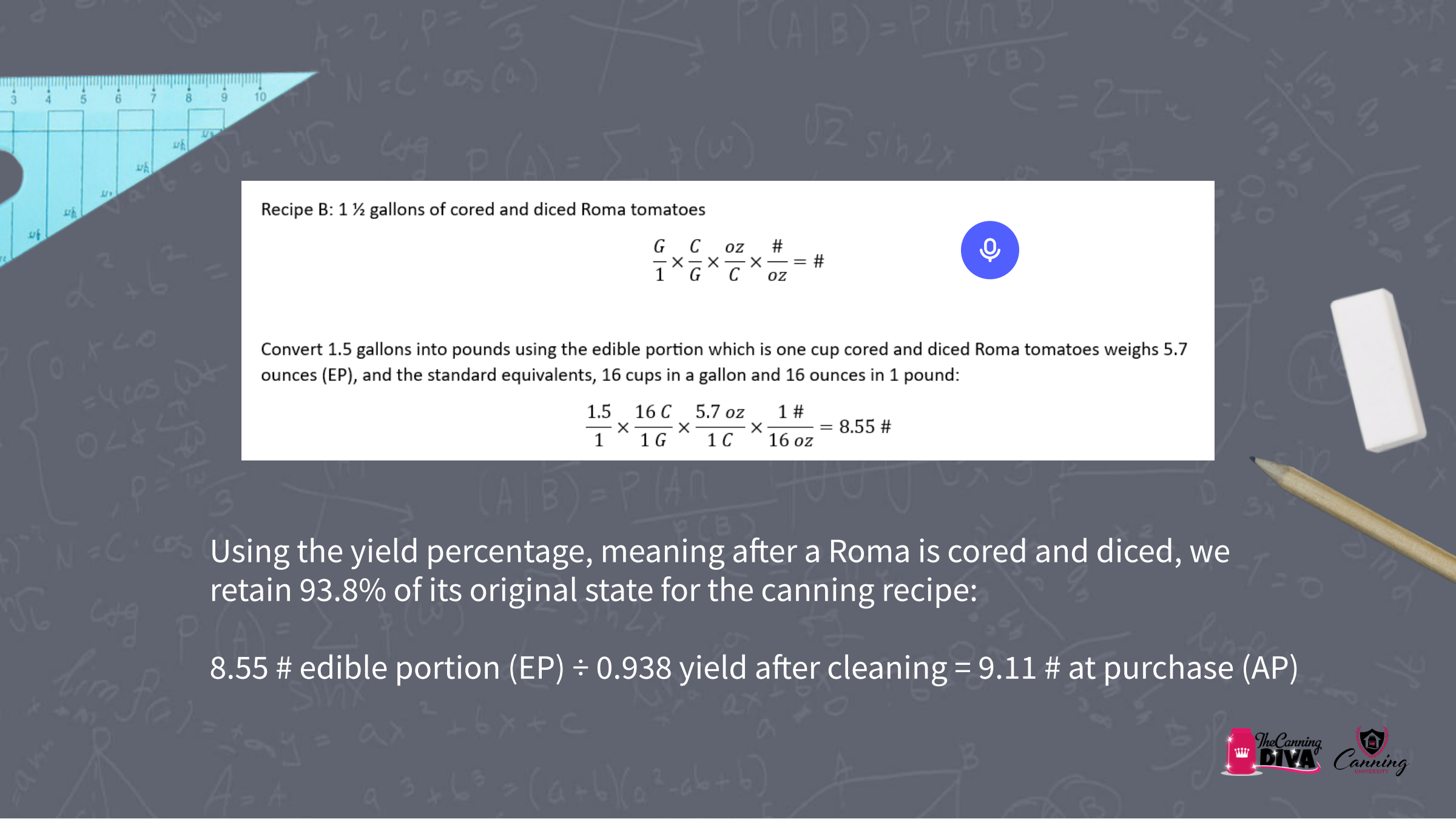
$$\frac{2.88 kg}{1} \times \frac{2.205 \#}{1 kg} = 6.353 \# (EP)$$



Next, we need to convert 6.353 pounds of fresh, prepped diced tomatoes to commercially canned diced tomatoes using the yield percentage to determine what to purchase.

A No. 10 can of diced tomatoes has a 62% yield after draining. So, how many canned ounces must be purchased to yield the 6.353 pounds required to make the recipe?

6.353# edible portion (EP) ÷ 0.62 yield after draining = 10.246 # at purchase (AP)



Recipe B: 1 ½ gallons of cored and diced Roma tomatoes

$$\frac{G}{1} \times \frac{C}{G} \times \frac{oz}{C} \times \frac{\#}{oz} = \#$$

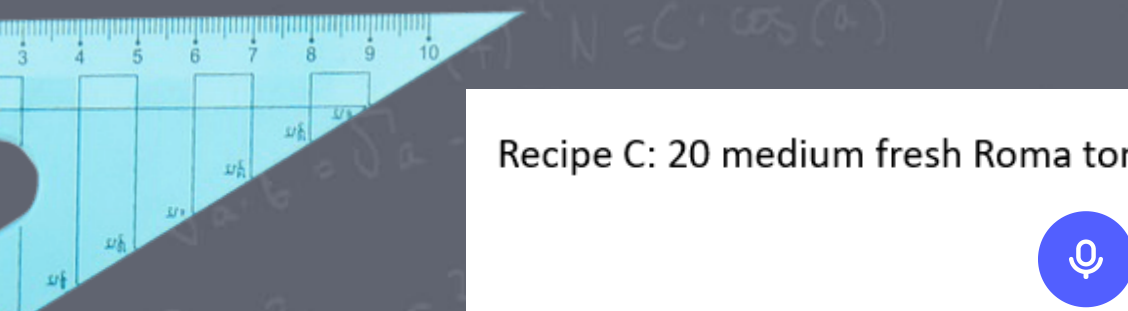


Convert 1.5 gallons into pounds using the edible portion which is one cup cored and diced Roma tomatoes weighs 5.7 ounces (EP), and the standard equivalents, 16 cups in a gallon and 16 ounces in 1 pound:

$$\frac{1.5}{1} \times \frac{16 C}{1 G} \times \frac{5.7 oz}{1 C} \times \frac{1 \#}{16 oz} = 8.55 \#$$

Using the yield percentage, meaning after a Roma is cored and diced, we retain 93.8% of its original state for the canning recipe:

8.55 # edible portion (EP) ÷ 0.938 yield after cleaning = 9.11 # at purchase (AP)



Recipe C: 20 medium fresh Roma tomatoes



$$\frac{\text{quantity}}{1} \times \frac{\text{weight}}{\text{tomato}} \times \frac{1 \#}{16 \text{ oz}} = \#$$

Each medium Roma tomato weighs 3 ounces.

$$\frac{20 \text{ Romas}}{1} \times \frac{3 \text{ oz}}{1 \text{ Roma}} \times \frac{1 \#}{16 \text{ oz}} = 3.75 \#$$




It is determined that purchasing 20 Roma tomatoes is about 3.75 pounds. If we must purchase 9.11 pounds as stated in Recipe B, we would need to purchase approximately 49 average, 3-ounce Roma tomatoes. Here's how:

$$9.11 \# \times 16 \text{ ounces/pound} = 145.76 \text{ ounces} \div 3 \text{ ounces} = 48.586 \text{ tomatoes (49 Romas)}$$

5. Easy Equation

Simple conversion of fresh
measurements to
commercially canned



To help you convert fresh ingredients to commercially canned equivalents in ounces for recipe creation, use the following formula:



$$\text{Commercially Canned Tomatoes (in ounces)} = \frac{\text{Weight of Fresh Ingredient}}{\text{Yield Percentage after Prep}}$$



HOW IT WORKS

Weight of Fresh Ingredient

This is the amount of the fresh ingredient you have (e.g., fresh tomatoes, onions, etc.).

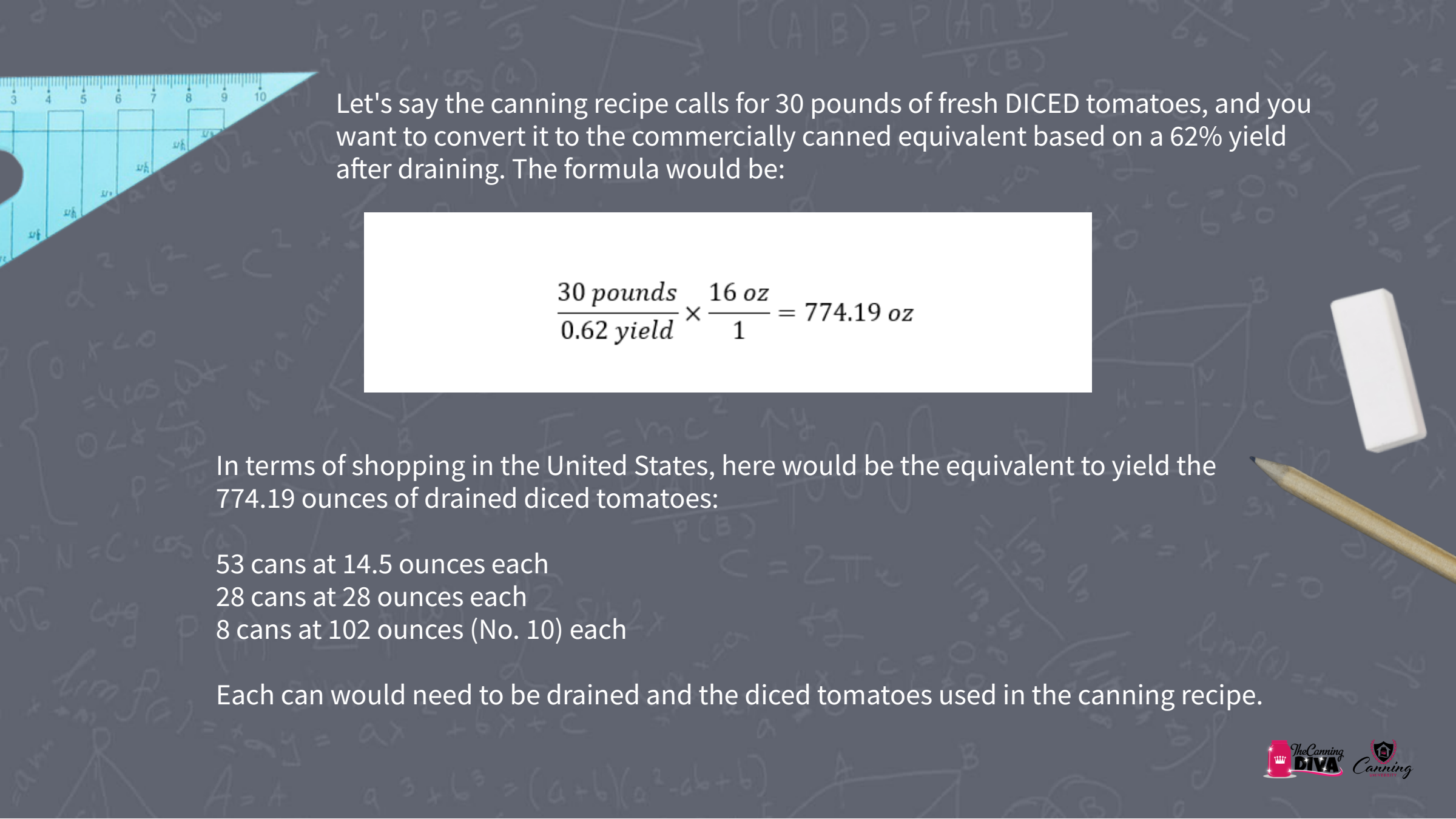
Yield Percentage

The amount of ingredient remaining after any prep. It is typically provided on commercially canned ingredient labels. If the label says "62% yield after draining," then the yield percentage is 0.62 in decimal form.

Commercially Canned Tomatoes

This is the amount of the commercially canned ingredient you would use in the recipe.



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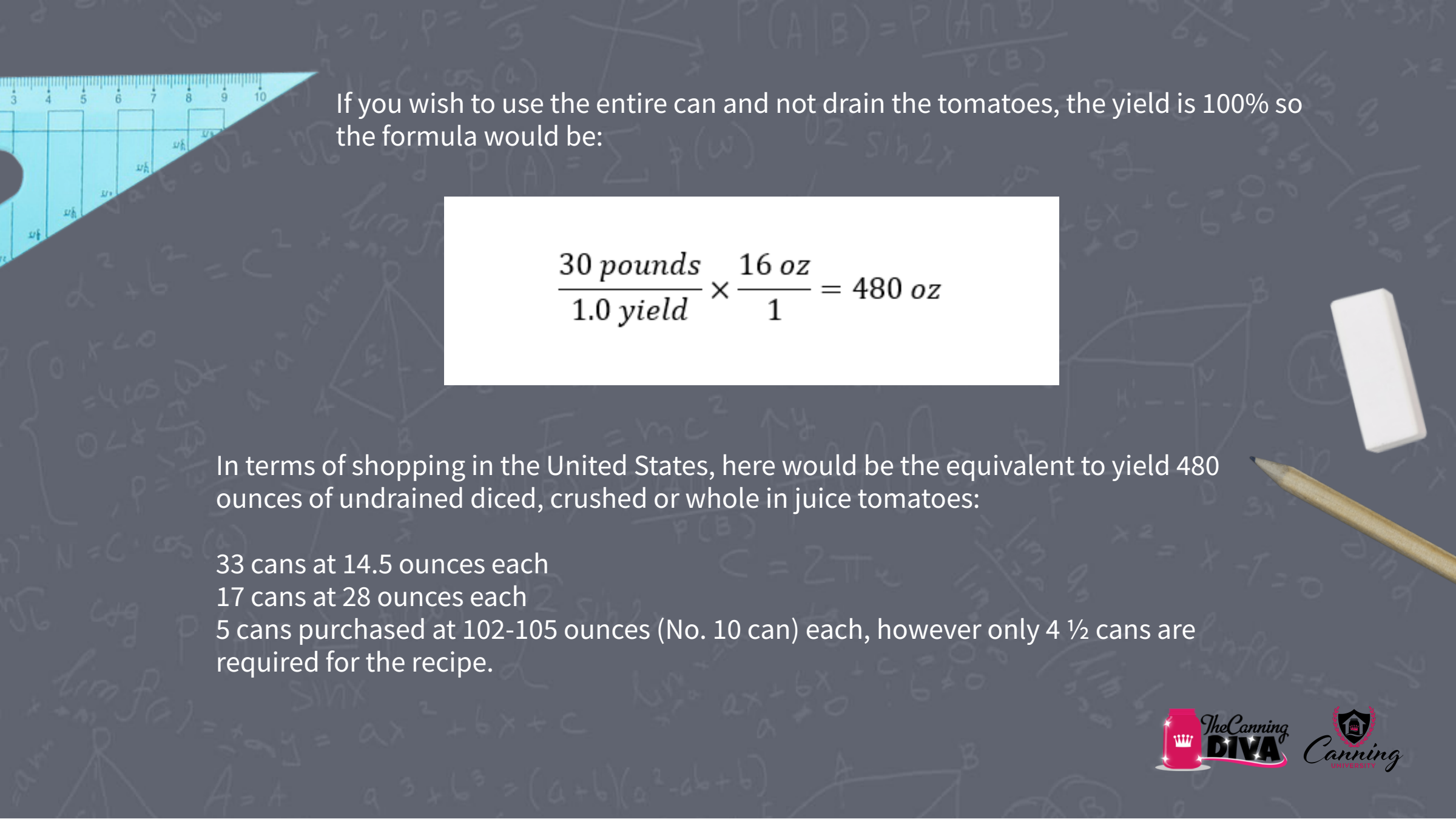
Let's say the canning recipe calls for 30 pounds of fresh DICED tomatoes, and you want to convert it to the commercially canned equivalent based on a 62% yield after draining. The formula would be:

$$\frac{30 \text{ pounds}}{0.62 \text{ yield}} \times \frac{16 \text{ oz}}{1} = 774.19 \text{ oz}$$

In terms of shopping in the United States, here would be the equivalent to yield the 774.19 ounces of drained diced tomatoes:

53 cans at 14.5 ounces each
28 cans at 28 ounces each
8 cans at 102 ounces (No. 10) each

Each can would need to be drained and the diced tomatoes used in the canning recipe.

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If you wish to use the entire can and not drain the tomatoes, the yield is 100% so the formula would be:

$$\frac{30 \text{ pounds}}{1.0 \text{ yield}} \times \frac{16 \text{ oz}}{1} = 480 \text{ oz}$$

In terms of shopping in the United States, here would be the equivalent to yield 480 ounces of undrained diced, crushed or whole in juice tomatoes:

33 cans at 14.5 ounces each

17 cans at 28 ounces each

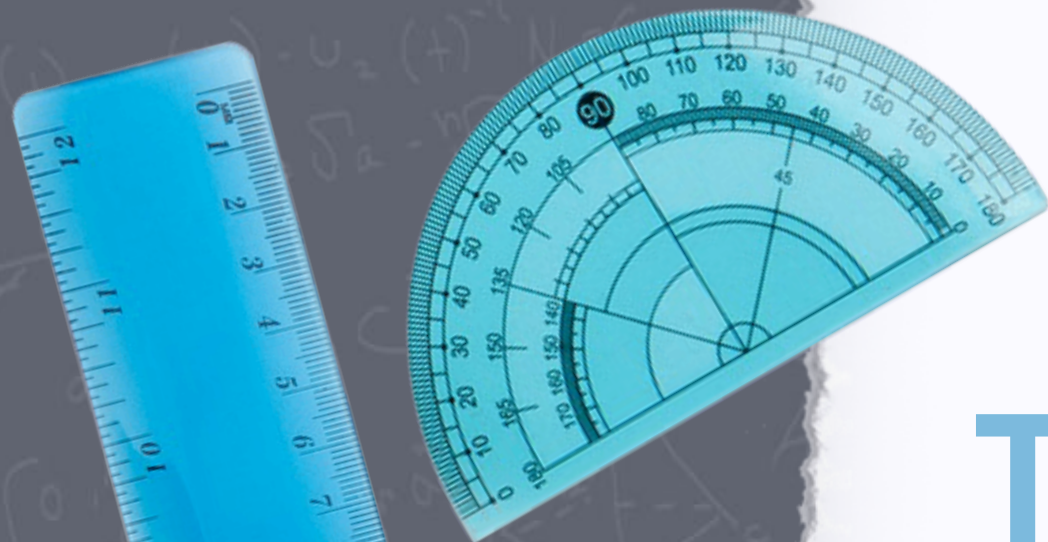
5 cans purchased at 102-105 ounces (No. 10 can) each, however only 4 ½ cans are required for the recipe.



Simple Conversions

- 3 small Roma tomatoes or 2 average Roma tomatoes = 1 cup diced
- 12 cherry tomatoes = 1 cup (9 ounces)
- 14.5 ounce can diced tomatoes = 1 pound fresh = 2 large tomatoes = 2 cups
- 28 ounce can diced tomatoes = 2 pounds fresh = will yield 3 1/3 cups





THANK YOU!

