

Can & Scoop Size Practice Calculations

Before jumping into calculations, you need to know the conversions between commonly used measures, like tablespoons, pints, quarts, etc. scoop numbers, and can numbers. See the table below to get started.

Table 1. General volume equivalents

Measure	Fluid Ounces	Equivalent
1 tablespoon (T)	0.5 oz	3 tsp
1 cup	8 oz	16 T
1 pint	16 oz	2 cups
1 quart	32 oz	2 pints
1 gallon	128 oz	4 quarts

For scoop numbers, the smaller the scoop size, the larger the scoop volume. For example, a #4 scoop = 8 fl oz, while #20 scoop is 1.6 fl oz. To convert between scoop size and scoop volume, divide the scoop number into 32. So, for a #4 scoop, 32 divided by 4 is 8 fl oz. To find out what scoop size is 4 fl oz, divide 32 by 4 fl oz, and you get a #8 scoop. When doing calculation problems, always double check what units you are given in the problem and what units are asked for in the answer.

$$\text{Scoop Volume} = \frac{32}{\text{scoop size}} \quad \text{Scoop Size} = \frac{32}{\text{scoop volume}}$$

Table 2. Scoop volume equivalents

Scoop Number	Equivalent	Cups	Fluid Ounces
# 4	16 T	1 cup	8 fl oz
# 5	12.8 T	0.8 cup	6.4 fl oz
# 6	10 2/3 T	2/3 cup	5.3 fl oz
# 8	8 T	½ cup	4 fl oz
# 10	6 2/5 T	2/5 cup	3.2 fl oz
# 12	5 1/3 T	1/3 cup	2.7 fl oz
# 16	4 T	¼ cup	2 fl oz
# 20	3 1/5 T	1/5 cup	1.6 fl oz

Table 3. Can number equivalents.

Can Number	Equivalent	Weight
300	1.75 cup	14 – 16 oz
303	2 cups	16 – 17 oz
2	2.5 cups	19 – 20 oz
3	5.75 cup	51 oz
10	3 qt	~6 lb 15 oz

For can sizes, Table 3 above provides an approximate volume for cans 300, 303, 2, 3, and 10. For calculations with cans, note both the size of the can and whether they are asking for a case. For example, #10 cans come in a case of 6. If the question asks for you to answer in units of cases, you'll always round up since you cannot order partial cases.

The most important part of food service calculations is writing out your work and using units. If you are a visual learner, you may find it helpful to draw pictures or “containers” to represent different quantities as well.

Calculation Questions

1. You have 3 gallons of pudding to portion out for lunch service. How many servings will you have if you use:
 - #8 scoop
 - #12 scoop
2. How many tablespoons are in a #10 can?
3. A recipe calls for 2 quarts of milk. You want to half the recipe. How many cups of milk will you need?
4. You are planning for a catering event that will serve chicken, broccoli, and mashed potatoes for a plated dinner. If you need to prepare 150 plates with mashed potatoes using a #8 scoop per serving, how many cups of mashed potatoes do you need to have prepared?
5. The cafeteria is doing a special summer ice cream celebration. Your supervisor tells you to scoop the ice cream using a #16 scoop. At the end of the event, you served a total of 255 people. How many gallons of ice cream did you go through for 255 servings?
6. In reviewing a purchase order, you see that you mistakenly received 2 cases of #3 cans instead of #2 cans. Each case has 6 cans. How much excess product do you have in quarts?
7. A recipe calls for 2 gallons of tomato sauce. How many #10 cans do you need to order? Round to the whole can.
8. A recipe calls for two #303 cans. How many #3 cans do you need if you are going to quadruple the recipe? Round to the nearest can.
9. You purchase two cases of #10 cans of sliced canned peaches. The yield after draining the peaches is 90%. How many cups of peaches do you have after draining? *If you haven't reviewed yield, AP, and EP yet – multiply the yield (0.90) by the total volume of the two cases of #10 cans.* Round to the nearest cup.
10. The kitchen is making apple pies for a harvest celebration. You need to purchase cans of apple pie filling to make 20 pies. One pie calls for 3 cups of filling. You are deciding between purchasing #303 cans or #10 cans. Both sizes come in a case of 6. A case of #303 cans is \$9 and a case of #10 cans is \$33. Which should you order to have the lowest price

1. You have 3 gallons of pudding to portion out for lunch service. How many servings will you have if you use:

- #8 scoop
- #12 scoop

Answer: 96 servings with #8 scoop and 144 servings with #12 scoop

$$\text{No. 8 Scoop Volume} = \frac{32}{8} = 4 \text{ oz (0.5 cup)}$$

$$\text{No. 12 Scoop Volume} = \frac{32}{12} = 2.\bar{6}7 \text{ oz } \left(\frac{1}{3} \text{ cup}\right)$$

#8 scoop = ½ cup (4 oz) and #12 scoop = 1/3 cup (~2.7 oz).

$$3 \text{ gallons} \times \frac{128 \text{ oz}}{1 \text{ gallon}} = 384 \text{ oz} \times \frac{1 \text{ cup}}{8 \text{ oz}} = 48 \text{ cups}$$

$$48 \text{ cups} \times \frac{\text{No. 8 scoop}}{0.5 \text{ cup}} = 96 \text{ servings}$$

$$48 \text{ cups} \times \frac{\text{No. 12 scoop}}{1/3 \text{ cup}} = 144 \text{ servings}$$

Tip: with 'third' fractions, type them into your calculator as (1/3) or (2/3) rather than the rounded decimal (0.33, 0.67, etc.) for more accurate calculations. The same tip applies to other odd-based fractions, like 1/5, 2/5.

2. How many tablespoons are in a #10 can?

Answer: 192 tablespoons

Your calculation may look different depending on your anchor conversion.

You could have used ounces, knowing that 1 qt = 32 oz and 1 T = 0.5 oz.

$$3 \text{ qts} \times \frac{32 \text{ oz}}{1 \text{ qt}} \times \frac{1 \text{ T}}{0.5 \text{ oz}} = 192 \text{ T}$$

Or you could calculate total ounces and step-through knowing that 1 cup = 16 T.

$$3 \text{ qts} \times \frac{32 \text{ oz}}{1 \text{ qt}} = 96 \text{ oz} \times \frac{1 \text{ cup}}{8 \text{ oz}} = 12 \text{ cups} \times \frac{16 \text{ T}}{1 \text{ cup}} = 192 \text{ T}$$

3. A recipe calls for 2 quarts of milk. You want to half the recipe. How many cups of milk will you need?

Answer: 4 cups

You can start by calculating the total cups needed and divide by half.

$$2 \text{ qts} \times \frac{32 \text{ oz}}{1 \text{ qt}} = 64 \text{ oz} \times \frac{1 \text{ cup}}{8 \text{ oz}} = 8 \text{ cups}$$

$$8 \text{ cups} \div 2 = 4 \text{ cups for halved recipe}$$

Or you can divide the 2 quarts in half, and calculate the halved cups needed.

$$1 \text{ qt} \times \frac{32 \text{ oz}}{1 \text{ qt}} = 32 \text{ oz} \times \frac{1 \text{ cup}}{8 \text{ oz}} = 4 \text{ cups}$$

4. You are planning for a catering event that will serve chicken, broccoli, and mashed potatoes for a plated dinner. If you need to prepare 150 plates with mashed potatoes using a #8 scoop per serving, how many cups of mashed potatoes do you need to have prepared?

Answer: 75 cups

$$\text{Scoop Volume} = \frac{32}{\text{scoop size}} = \frac{32}{8} = 4 \text{ fl oz} \times \frac{1 \text{ cup}}{8 \text{ fl oz}} = 0.5 \text{ cups}$$

$$\#8 \text{ scoop} = 0.5 \text{ cups per serving}$$

$$0.5 \text{ cups} \times 150 \text{ plates} = 75 \text{ cups mashed potatoes}$$

5. The cafeteria is doing a special summer ice cream celebration. Your supervisor tells you to scoop the ice cream using a #16 scoop. At the end of the event, you served a total of 255 people. How many gallons of ice cream did you go through for 255 servings?

Answer: About 4 gallons

If you converted scoop size to ounces to gallons, your calculation would look like this:

$$\text{Scoop Volume} = \frac{32}{\text{scoop size}} = \frac{32}{16} = 2 \text{ fl oz}$$

$$\#16 \text{ scoop} = 2 \text{ fl oz per serving}$$

$$2 \text{ fl oz} \times 255 \text{ servings} = 510 \text{ fl oz}$$

$$510 \text{ oz} \times \frac{1 \text{ gallon}}{128 \text{ oz}} = 3.98 \text{ gal}$$

If you converted scoop size to cups to ounces to gallons your calculation would look like below. If you've memorized how many cups are in a gallon, you may have skipped the ounce conversion.

$$\text{Scoop Volume} = \frac{32}{\text{scoop size}} = \frac{32}{16} = 2 \text{ fl oz} \times \frac{1 \text{ cup}}{8 \text{ fl oz}} = 0.25 \text{ cups}$$

$$\#16 \text{ scoop} = 0.25 \text{ cups per serving}$$

$$0.25 \text{ cups} \times 255 \text{ servings} = 63.75 \text{ cups}$$

$$63.75 \text{ cups} \times \frac{8 \text{ oz}}{1 \text{ cup}} \times \frac{1 \text{ gal}}{128 \text{ oz}} = 3.98 \text{ gal}$$

6. In reviewing a purchase order, you see that you mistakenly received 2 cases of #3 cans instead of #2 cans. Each case has 6 cans. How much excess product do you have in quarts?

Answer: 9.75 qts

$$\begin{aligned} \text{Received: Twelve No. 3 cans} &= 12 \times 5.75 \text{ cups} = 69 \text{ cups} \\ \text{Ordered: Twelve No. 2 cans} &= 12 \times 2.5 \text{ cups} = 30 \text{ cups} \\ 69 \text{ cups} - 30 \text{ cups} &= 39 \text{ excess cups of product} \end{aligned}$$

Check what unit the question is asking for. Quarts!

$$39 \text{ cups} \times \frac{8 \text{ oz}}{1 \text{ cup}} = 312 \text{ oz} \times \frac{1 \text{ qt}}{32 \text{ oz}} = 9.75 \text{ qts}$$

If you know that 1 qt = 4 cups:

$$39 \text{ cups} \times \frac{1 \text{ qt}}{4 \text{ cups}} = 9.75 \text{ qts}$$

7. A recipe calls for 2 gallons of tomato sauce. How many #10 cans do you need to order? Round to the whole can.

Answer: three #10 cans

You can start knowing that a No. 10 can is 3 qts.

$$\begin{aligned} \text{No. 10 can} &= 3 \text{ qts} \times \frac{1 \text{ gallon}}{4 \text{ qts}} = 0.75 \text{ gallons per No. 10 can} \\ 2 \text{ gallons needed} \div 0.75 \text{ gallons per can} &= 2.667 \text{ cans} \approx 3 \text{ cans needed} \end{aligned}$$

Or you could start by calculating the total amount of sauce needed.

$$2 \text{ gallons} \times \frac{4 \text{ qts}}{1 \text{ gallon}} = 8 \text{ qts} \times \frac{1 \text{ No. 10 can}}{3 \text{ qts}} = 2.667 \text{ cans; round up to 3 cans}$$

8. A recipe calls for two #303 cans. How many #3 cans do you need if you are going to quadruple the recipe? Round to the nearest can.

Answer: three #3 cans

Starting with the amount of product needed, calculate how many cups the recipe calls for and then quadruple it before converting to No. 3 cans.

$$2 \text{ No. 303 cans} \times \frac{2 \text{ cups}}{1 \text{ No. 303 can}} = 4 \text{ cups per recipe} \times 4 = 16 \text{ cups}$$

$$16 \text{ cups} \times \frac{1 \text{ No. 3 can}}{5.75 \text{ cups}} = 2.78 \text{ No. 3 cans} \approx 3 \text{ cans}$$

9. You purchase two cases of #10 cans of sliced canned peaches. The yield after draining the peaches is 90%. How many cups of peaches do you have after draining? *If you haven't reviewed yield, AP, and EP yet – multiply the yield (0.90) by the total volume of the two cases of #10 cans.* Round to the nearest cup.

Answer: 130 cups

The calculation below converts from 2 cases (12 cans total) of No. 10 cans, to quarts, to ounces, to cups.

$$\begin{aligned} 2 \text{ cases} = 12 \text{ No. 10 cans} &\times \frac{3 \text{ qts}}{1 \text{ No. 10 can}} = 36 \text{ qts} \times \frac{32 \text{ oz}}{1 \text{ qt}} = 1152 \text{ oz} \times \frac{1 \text{ cup}}{8 \text{ oz}} \\ &= 144 \text{ cups} \times 0.90 = 129.6 \text{ cups} \end{aligned}$$

If you converted directly from quarts to cups:

$$\begin{aligned} 2 \text{ cases} = 12 \text{ No. 10 cans} &\times \frac{3 \text{ qts}}{1 \text{ No. 10 can}} = 36 \text{ qts} \times \frac{4 \text{ cups}}{1 \text{ qt}} = 144 \text{ cups} \times 0.90 \\ &= 129.6 \text{ cups} \end{aligned}$$

If you converted directly from cans to cups:

$$2 \text{ cases} = 12 \text{ No. 10 cans} \times \frac{12 \text{ cups}}{1 \text{ No. 10 can}} = 144 \text{ cups} \times 0.90 = 129.6 \text{ cups} \cong 130 \text{ cups}$$

10. The kitchen is making apple pies for a harvest celebration. You need to purchase cans of apple pie filling to make 20 pies. One pie calls for 3 cups of filling. You are deciding between purchasing #303 cans or #10 cans. Both sizes come in a case of 6. A case of #303 cans is \$9 and a case of #10 cans is \$33. Which should you order to have the lowest price?

Answer: You will need to order 1 case of #10 cans at \$33, or 5 cases of #303 cans at \$45. The #10 cans are a better choice money-wise.

Calculation

Calculate how much total apple pie filling you will need.

$$20 \text{ pies} \times 3 \text{ cups per pie} = 60 \text{ cups of apple filling}$$

First, the #303 cans. Knowing that one #303 can is ~2 cups, you need 30 cans. Given 6 cases per can you need 5 cases.

$$60 \text{ cups filling} \times \frac{\text{one No. 303 can}}{2 \text{ cups filling}} = \frac{60}{2} = 30 \text{ No. 303 cans}$$

$$30 \text{ No. 303 cans} \times \frac{1 \text{ case}}{6 \text{ cans}} = 5 \text{ cases of No. 303 cans}$$

$$5 \text{ cases} \times \$9 = \$45 \text{ total}$$

Now, the #10 cans. First, convert 60 cups to quarts (1 qt = 32 oz = 4 cups), then convert to No. 10 cans (1 can = 3 qts).

$$60 \text{ cups filling} \times \frac{1 \text{ qt}}{4 \text{ cups}} = 15 \text{ qts} \times \frac{\text{one No. 10 can}}{3 \text{ qts filling}} \times = \frac{15}{3} = 5 \text{ No. 10 cans}$$

One case is 6 cans, so round up to 1 case.

$$1 \text{ case} \times \$33 = \$33$$