

Conversion Between US Customary Units & Metric Systems Sheet

Answer Key

A conversion factor is a way to represent the same quantity using different units of measurement with their corresponding numerical values. Often the units are abbreviated.

Write the abbreviation for each unit: (multiple possible answers separated by comma)

- | | | | |
|---------------|------------------|---------------|--------|
| 1) Teaspoon | t, tsp | 8) Milliliter | mL, ml |
| 2) Tablespoon | T, TB, Tbl, Tbsp | 9) Liter | L, l |
| 3) Cup | C, c | 10) Gram | g |
| 4) Quart | qt | 11) Milligram | mg |
| 5) Gallon | gal | 12) Kilogram | kg |
| 6) Ounce | oz | 13) Pint | pt |
| 7) Pound | lb | | |

Kitchen math often requires converting quantities. The following examples show how to use conversion factors in equations. The following tables provide the conversion factors to convert from metric to US customary units or US customary units to metric.

Example conversion:

- 236.9ml (1 cup) beet juice 100% juice, no sugar added
- 28.3g (2 tbsp) gelatin

To Convert Cups into Milliliters

$$2 \text{ cup} \times \frac{0.236588236 \text{ liter}}{\text{cup}} \times \frac{1000 \text{ milliliter}}{\text{liter}} = 473.8 \text{ ml}$$

To Convert Tablespoons into Grams

$$4 \text{ tablespoons} \times \frac{14.15 \text{ gram}}{\text{tablespoon}} = 56.6 \text{ g}$$

Correct Conversion for recipe

To Convert Cups into Milliliters

$$1 \text{ cup} \times \frac{0.236588236 \text{ liter}}{\text{Cup}} \times \frac{1000 \text{ milliliter}}{\text{liter}} = 236.9 \text{ mL}$$

To Convert Tablespoons into Grams

$$2 \text{ tablespoons} \times \frac{14.15 \text{ gram}}{\text{tablespoon}} = 28.3 \text{ g}$$

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Tables for Conversion Factors

Table 1. From Metric to US Customary Units

To Obtain	Multiply	Conversion Factor	Conversion Unit
Teaspoons	Milliliters	0.202884136	Milliliters/Teaspoons
Tablespoons	Milliliters	0.0676280454	Milliliters/Tablespoons
Tablespoons	Grams	0.0782368	Grams/Tablespoons
Cups	Liters	4.22675284	Liters/Cups
Quarts	Liters	1.05668821	Liters/Quarts
Gallons	Liters	0.2641720524	Liters/Gallons
Ounces	Grams	0.03527396195	Grams/Ounces
Pounds	Kilograms	2.204622622	Kilograms/Pounds

Table 2. From US Customary Units to Metric

To Obtain	Multiply	Conversion Factor	Conversion Unit
Milliliters	Fluid Ounces	29.57352956	Ounces/Milliliters
Milliliters	Teaspoons	4.92892159	Teaspoons/Milliliters
Milliliters	Tablespoons	14.7867648	Tablespoons/Milliliters
Milliliters	Cups	236.588	Cups/Milliliters
Liters	Cups	0.236588236	Cups/Liters
Liters	Quarts	0.946352946	Quarts/Liters
Liters	Gallons	3.785411784	Galloons/Liters
Grams	Tablespoons	14.15	Tablespoons/Grams
Grams	Ounces	28.34952313	Ounces/Grams
Kilograms	Pounds	0.45	Pounds/Kilograms

Table 3. Metric Units of Mass and Volume

Unit	Abbreviation	Meaning
mega-	M	10^6
kilo-	k	10^3
hecto-	h	10^2
deca-	dk	10^1
deci-	d	10^{-1}
centi-	c	10^{-2}
milli-	m	10^{-3}
micro-	μ	10^{-6}
nano-	n	10^{-9}

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Practice by converting: (the quantity using the conversion factor and unit in the table; round to the nearest tenth. For example, 591.4706 mL is rounded to 591 mL)

1. 20 teaspoons of a liquid to **milliliters**. 98.58 mL
2. 5 milliliters of a liquid to **teaspoons**. 1.01 tsp
3. 5 ounces of a powder to **grams**. 141.75 g
4. 2 grams of powder to **ounces**. 0.07 oz
5. 2 cups of a liquid into **milliliters**. 473.18 mL
6. 5 grams to obtain **tablespoons**. 0.39 tbsp
7. 10 liquid tablespoons to **grams**. 141.50 g
8. 1 pound to **kilograms**. 0.45 kg
9. 1 kilogram to **pounds**. 2.20 lb
10. 1 liter to **cups**. 4.23 C

Excel Spread Sheet

Formula=(From Column*To Column) Units cross-multiply

From	Unit	Conversion Factor To Obtain	Conversion Unit	To	Unit
20	tsp	4.92892159	mL/tsp	98.58	mL
5	mL	0.202884136	tsp/mL	1.01	tsp
5	oz	28.34952313	g/oz	141.75	g
2	g	0.035273962	oz/g	0.07	oz
2	C	236.588	mL/C	473.18	mL
5	g	0.0782368	tbsp/g	0.39	tbsp
10	tbsp	14.15	g/tbsp	141.50	g
1	lb	0.45	kg/lb	0.45	kg
1	kg	2.204622622	lb/kg	2.20	lb
1	L	4.22675284	C/L	4.23	C