**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 cup X 0.236588236 liter X 1000 millilter = 473.8 ml

 cup liter

**To Convert Tablespoons into Grams**

4 tablespoons X 14.15 gram = 56.6 g

 tablespoon

**Correct Conversion for recipe**

**To Convert Cups into Milliliters**

1 cup X 0.236588236 liter X 1000 millilter = 236.9 mL

 Cup liter

**To Convert Tablespoons into Grams**

2 tablespoons X 14.15 gram = 28.3 g

 tablespoon

**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 |

|  |  |  |  |
| --- | --- | --- | --- |
| **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 2. From US Customary Units to Metric

Table 3. Metric Units of Mass and Volume

|  |  |  |
| --- | --- | --- |
| **Unit** | **Abbreviation** | **Meaning** |
| mega- | M | 106 |
| kilo- | k | 103 |
| hecto- | h | 102 |
| deca- | dk | 101 |
| deci- | d | 10-1 |
| centi- | c | 10-2 |
| milli- | m | 10-3 |
| micro- | μ | 10-6 |
| nano- | n | 10-9 |

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 |