

MEASUREMENT, PERIMETER, AND CIRCUMFERENCE

Measurement refers to the way objects are measured. There are two systems used to measure objects, the U.S. **Customary system** and the metric system. The U.S. Customary system measures length in inches, feet, yards and miles. The **metric system** is a base ten system and measures length in kilometers, meters, centimeters and millimeters.

Accuracy and precision refer to using the correct label for a given object or situation. When measuring, accuracy and precision are very important.

Perimeter is the measurement of the distance around a figure. It is measured in units and can be measured by inches, feet, blocks, meters, centimeters, etc. The perimeter of any figure, simple or complex, can be found by adding the lengths of all the sides of the figure, simple or complex.

The **circumference** of a circle is the distance around the circle. The circumference of a circle can be found by multiplying the diameter of the circle by pi (approximately 3.14).

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How to use measurement, perimeter and circumference

When **measuring**, either the U.S. Customary system or metric system is used. Within each system, there are different ways to convert from one unit to another. With the U. S. Customary system, in order to convert units of length, the following conversions must be used.

U.S. Customary system

12 inches = 1 foot
3 feet = 1 yard
5280 feet = 1 mile

Metric system

10 millimeters = 1 centimeter
100 centimeters = 1 meter
1000 meters = 1 kilometer

To measure **liquids**, the U.S. Customary system uses cups, pints, quarts, and gallons. The metric system uses kiloliters, liters, and milliliter.

U.S. Customary system

1 cup = 8 fl. ounces
2 cups = 1 pint
2 pints = 1 quart
4 quarts = 1 gallon

Metric system

1000 milliliters = 1 liter
1000 liters = 1 kiloliter

For example, to change 6 cups to quarts, the 6 cups must first be changed into pints by using the equation, $2 \text{ cups}/1 \text{ pint} = 6 \text{ cups}/x \text{ pints}$ to get 3 pints. The 3 pints can now be changed into quarts using the following equation, $2 \text{ pints}/1 \text{ quart} = 3 \text{ pints}/x \text{ quarts}$ to get 1.5 quarts. So 6 cups is equal to 1.5 quarts.

Changing units with the metric system is easier because it is a base ten system. This means that the units are all related based on ten. The units are:

To convert
meters.

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milli
001
.25

Perimeter is the measurement of the distance around a figure. To get the perimeter of a rectangle with a length of 4 and a width of 5, add the length and the width and multiply times 2, to take into account all sides. If a figure is shown the sides can just simply be added together. Perimeter can be found for any figure, whether it is a square, triangle, hexagon, pentagon, or octagon. If the perimeter is given, the missing side can also be found.

The **circumference** is the distance around the circle. If the diameter of the circle is known, the circumference can also be found using the formula $C = \pi \cdot d$. If the radius is given, the diameter can be found by doubling the radius and then the circumference formula can be used. If the circumference is given, the diameter can be found using the same formula.

Try This!

1. Convert the following:

12 feet to inches _____

120 meters to millimeters _____

5 cups to ounces _____

1 gallon to cups _____

2500 milliliters to liters _____

654 _____



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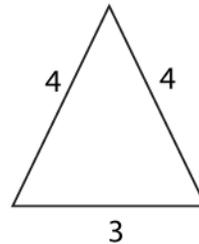
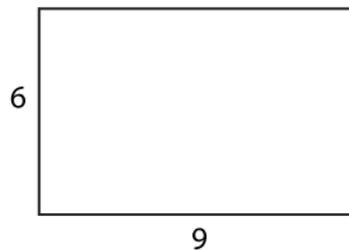
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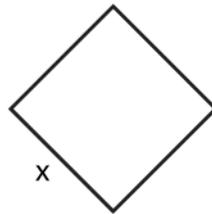
2. How many _____

_____ items?

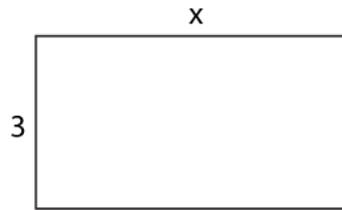
3. What is the **perimeter** of the following shapes:



4. What is the missing side of the following shapes?



$P = 48$ units



$P = 22$ units

5. What is the **circumference** if $C = \pi \cdot d$ and $\pi = 3.14$?

$d = 10$

$d = 4$

$r = 5$

6. What is

$C = 6.28$ units

$C = 18.84$ units



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