Name _____

Measurement Benchmarks

You can use benchmarks to estimate measurements.

The chart shows benchmarks for customary units of measurement.

Benchmarks for Some Customary Units					
└1 ft ┘ about 1 foot	└1 yd ┘ about 1 yard	CUP about 1 cup	about 1 gallon	about 1 ounce	about 1 pound

Here are some more examples of estimating with customary units.

• The width of a professional football is about __1 foot__.

• A large fish bowl holds about __1 gallon__ of water.

• A box of cereal weighs about __1 pound__.

The chart shows benchmarks for metric units of measurement.

Benchmarks for Some Metric Units					
about 1 centimeter	about 1 meter	about 1 milliliter	about 1 liter	about 1 gram	about 1 kilogram

Here are some more examples of estimating with metric units.

• The width of a large paper clip is about __1 centimeter__.

• A pitcher holds about __1 liter__ of juice.

• Three laps around a track is about __1 kilometer__.

Use benchmarks to choose the customary unit you would use to measure each.

1. length of a school bus

2. weight of a computer

_____

_____

Use benchmarks to choose the metric unit you would use to measure each.

3. the amount of liquid a bottle of detergent holds

4. distance between two cities

_____
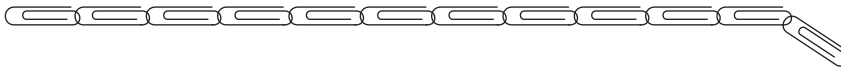
_____

Customary Units of Length

A ruler is used to measure length. A ruler that is 1 foot long shows 12 inches in 1 foot. A ruler that is 3 feet long is called a yardstick. There are 3 feet in 1 yard.

How does the size of a foot compare to the size of an inch?

Step 1 A small paper clip is about 1 inch long. Below is a drawing of a chain of paper clips that is about 1 foot long. Number each paper clip, starting with 1.

Step 2 Complete this sentence.

In the chain of paper clips shown, there are __12__ paper clips.

Step 3 Compare the size of 1 inch to the size of 1 foot.

There are __12__ inches in __1__ foot.

So, 1 foot is __12__ times as long as 1 inch.

Complete.

1. 5 feet = _____ inches

2. 3 yards = _____ feet

3. 5 yards = _____ feet

4. 4 feet = _____ inches

5. 6 feet = _____ inches
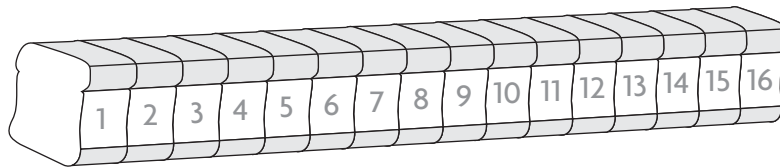
6. 8 yards = _____ feet

Customary Units of Weight

Ounces and **pounds** are customary units of weight. A **ton** is a unit of weight that is equal to 2,000 pounds.

A slice of bread weighs about 1 ounce. Some loaves of bread weigh about 1 pound.

How does the size of 1 ounce compare to the size of 1 pound?

Step 1 You know a slice of bread weighs about 1 ounce. Below is a drawing of a loaf of bread that weighs about 1 pound. Number each slice of bread, starting with 1.

Step 2 Complete this sentence.

In the loaf of bread shown above, there are __16__ slices of bread.

Step 3 Compare the size of 1 ounce to the size of 1 pound.

There are __16__ ounces in __1__ pound.

So, 1 pound is __16__ times as heavy as 1 ounce.

Complete.

1. 2 pounds = _____ ounces

    Think: 2 × 16 = 32

2. 2 tons = _____ pounds

3. 7 pounds = _____ ounces

4. 4 pounds = _____ ounces

5. 3 tons = _____ pounds

6. 10 pounds = _____ ounces

Customary Units of Liquid Volume

Liquid volume is the measure of the space a liquid occupies. Some basic units for measuring liquid volume are **gallons, half gallons, quarts, pints, cups,** and **fluid ounces**. The table at the right shows the relationships among some units of liquid volume.

1 cup = 8 fluid ounces
1 pint = 2 cups
1 quart = 2 pints
1 half gallon = 2 quarts
1 gallon = 4 quarts

How does the size of a gallon compare to the size of a pint?
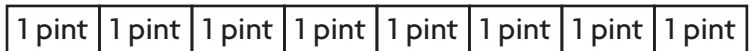
Step 1 Use the information in the table. Draw a bar to represent 1 gallon.

1 gallon

Step 2 The table shows that 1 gallon is equal to 4 quarts. Draw a bar to show 4 quarts.

1 quart	1 quart	1 quart	1 quart

Step 3 The table shows that 1 quart is equal to 2 pints. Draw a bar to show 2 pints for each of the 4 quarts.

1 pint	1 pint	1 pint	1 pint	1 pint	1 pint	1 pint	1 pint

Step 4 Compare the size of 1 gallon to the size of 1 pint.

There are ___8___ pints in ___1___ gallon.

So, 1 gallon is ___8___ times as much as 1 pint.

Complete. Draw a model to help.

1. 2 quarts = _____ pints

2. 1 gallon = _____ cups

3. 1 pint = _____ fluid ounces

4. 3 pints = _____ cups
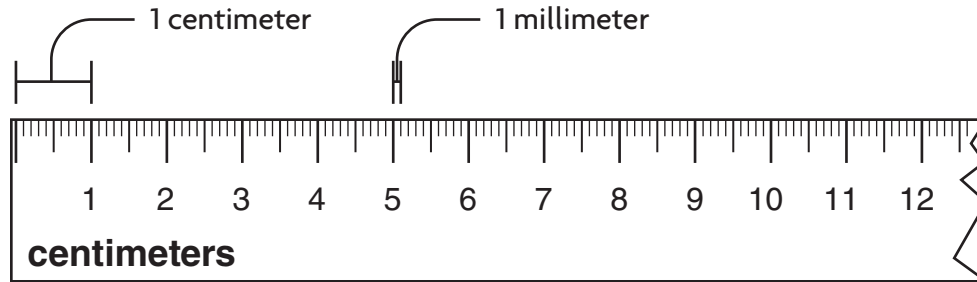
5. 3 quarts = _____ cups

6. 1 half gallon = _____ pints

Metric Units of Length

Meters (m), **decimeters** (dm), centimeters (cm), and **millimeters** (mm) are all metric units of length. You can use a ruler and a meterstick to find out how these units are related.
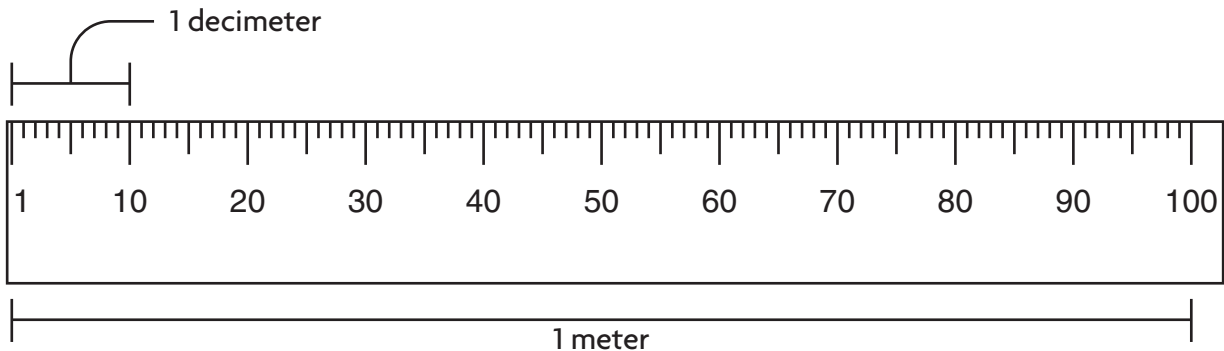
Materials: ruler, meterstick

Step 1 Look at a metric ruler. Most look like the one below.

1 centimeter   1 millimeter

centimeters   1   2   3   4   5   6   7   8   9   10   11   12

The short marks between each centimeter mark show millimeters.
1 centimeter has the same length as a group of 10 millimeters.

Step 2 Look at a meterstick. Most look like the one below.

1 decimeter

1   10   20   30   40   50   60   70   80   90   100

1 meter

1 decimeter has the same length as a group of 10 centimeters.

Step 3 Use the ruler and the meterstick to compare metric units of length.

1 centimeter = __10__ millimeters   1 decimeter = __10__ centimeters

1 meter = __10__ decimeters   1 meter = __100__ centimeters

Complete.

1. 3 meters = _____ decimeters

2. 5 meters = _____ centimeters

3. 4 centimeters = _____ millimeters

4. 9 decimeters = _____ centimeters