







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	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

\_\_\_\_\_

\_\_\_\_\_

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## 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

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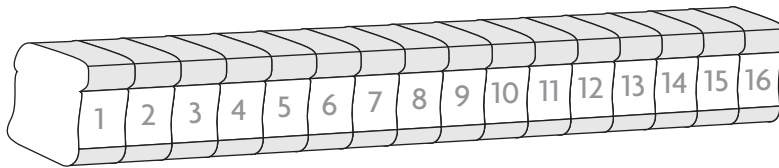
## Customary Units of Weight

**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

2. 2 tons = \_\_\_\_\_ pounds

Think:  $2 \times 16 = 32$

3. 7 pounds = \_\_\_\_\_ ounces

4. 4 pounds = \_\_\_\_\_ ounces

5. 3 tons = \_\_\_\_\_ pounds

6. 10 pounds = \_\_\_\_\_ ounces

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## 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.

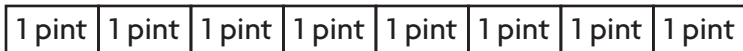
Draw a bar to represent 1 gallon.



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



**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.



**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

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## Line Plots

Howard gave a piece of paper with several survey questions to his friends. Then he made a list to show how long it took for his friends to answer the survey. Howard wants to know how many surveys took longer than  $\frac{2}{12}$  hour.

### Time for Survey Answers (in hours)

$\frac{1}{12}$   $\frac{3}{12}$   $\frac{1}{12}$   $\frac{2}{12}$   $\frac{6}{12}$   $\frac{3}{12}$   $\frac{5}{12}$

**Make a line plot to show the data.**

**Step 1** Order the data from least to greatest.

$\frac{1}{12}$   $\frac{1}{12}$   $\frac{2}{12}$   $\frac{3}{12}$   $\frac{3}{12}$   $\frac{5}{12}$   $\frac{6}{12}$

**Step 2** Make a tally table of the data.

Survey	
Time (in hours)	Tally
$\frac{1}{12}$	
$\frac{2}{12}$	
$\frac{3}{12}$	
$\frac{5}{12}$	
$\frac{6}{12}$	

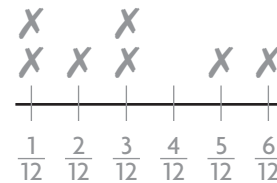
**Step 3** Label the fractions of an hour on the number line from least to greatest. Notice that  $\frac{4}{12}$  is included even though it is not in the data.

**Step 4** Plot an X above the number line for each piece of data. Write a title for the line plot.

**Step 5** Count the number of Xs that represent data points greater than  $\frac{2}{12}$  hour.

There are 4 data points greater than  $\frac{2}{12}$  hour.

So, 4 surveys took more than  $\frac{2}{12}$  hour.



**Use the line plot above for 1 and 2.**

- How many of the surveys that Howard gave to his friends were answered? \_\_\_\_\_
- What is the difference in hours between the longest time and the shortest time that it took Howard's friends to answer the survey?