

Convert Customary Measuring Units

Units of length	Units of weight	Units of volume
$1,760 \rightarrow$ mile mi $3 \rightarrow$ yard yd $12 \rightarrow$ foot ft $12 \rightarrow$ inch in. 1 mile = 5,280 feet	$2,000 \rightarrow$ (short) ton T $16 \rightarrow$ pound lb $16 \rightarrow$ ounce oz	$4 \rightarrow$ gallon gal $2 \rightarrow$ quart qt $2 \rightarrow$ pint pt $2 \rightarrow$ cup C $8 \rightarrow$ ounce fl. oz.

When you convert between units, you either multiply or divide by the conversion factor. But which?

If the unit that you end with is *smaller* than the unit that you start with, then there should be *more* of them, and the number will get *bigger*. Use multiplication.

Conversely, if the unit that you end with is *bigger* than the unit that you started with, then there should be *fewer* of them, and the number will get *smaller*. Divide.

Example 1. Convert 11 ounces to pounds.

Ounces are *smaller units* than pounds, so there should be *more* of them. In fact, 11 ounces is less than 1 pound. Obviously, we have to divide: $11 \div 16 = 0.6875$. We get $11 \text{ oz} \approx 0.69 \text{ lb}$.

Instead of a decimal, you could give this answer as a fraction very simply: $11 \text{ oz} = \frac{11}{16} \text{ lb}$.

Example 2. Convert 56,000 inches to miles.

Miles are a lot bigger than inches, so we expect to end up with fewer of them. In other words, we expect the number 56,000 to get *smaller*, so we will need to divide.

You can convert from inches to miles in two steps: first from inches to feet, then from feet to miles. The unit keeps getting bigger, so we keep dividing to get fewer of them.

$56,000 \div 12 \div 5,280 = 0.88383838\dots$ So, 56,000 inches ≈ 0.88 miles.

1. Which conversion is correct—the upper or the lower?

a. $2.46 \text{ gal} = 2.46 \times 4 \text{ qt} = 9.84 \text{ qt}$ $2.46 \text{ gal} = \frac{2.46}{4} \text{ qt} = 0.615 \text{ qt}$	b. $11 \text{ oz} = 11 \times 16 \text{ lb} = 176 \text{ lb}$ $11 \text{ oz} = \frac{11}{16} \text{ lb} = 0.6875 \text{ lb}$
c. $450 \text{ ft} = 450 \times 5,280 \text{ mi} = 2,376,000 \text{ mi}$ $450 \text{ ft} = \frac{450}{5,280} \text{ mi} \approx 0.085 \text{ mi}$	d. $12.6 \text{ ft} = 12.6 \times 12 \text{ in} = 151.2 \text{ in}$ $12.6 \text{ ft} = \frac{12.6}{12} \text{ in} = 1.05 \text{ in}$

2. Convert to the given unit. Round your answers to two decimals, if needed.



a. $564 \text{ ft} = \underline{\hspace{2cm}} \text{ mi}$	c. $3,400 \text{ yd} = \underline{\hspace{2cm}} \text{ mi}$	e. $0.28 \text{ mi} = \underline{\hspace{2cm}} \text{ ft}$
b. $45,000 \text{ ft} = \underline{\hspace{2cm}} \text{ mi}$	d. $7.8 \text{ mi} = \underline{\hspace{2cm}} \text{ ft}$	f. $10.17 \text{ mi} = \underline{\hspace{2cm}} \text{ yd}$



The calculator is allowed in all problems in this lesson.



3. Convert to the given unit. Round your answers to two decimals, if needed.

a. 3 in = _____ ft	c. 14.7 ft = _____ in	e. 281 in = _____ ft
b. 21 in = _____ ft	d. 0.8 ft = _____ in	f. 7 1/3 ft = _____ in

4. Convert to the given unit. Round your answers to two decimals, if needed.

a. 5 oz = _____ lb	c. 3.6 lb = _____ oz	e. 127 oz = _____ lb
b. 35 oz = _____ lb	d. 0.391 lb = _____ oz	f. 6 3/4 lb = _____ oz

5. Convert to the given unit. Round your answers to two decimals, if needed.

a. 6.4 gal = _____ qt	d. 0.56 qt = _____ fl. oz.	g. 0.054 T = _____ lb
b. 78 fl. oz. = _____ qt	e. 560 qt = _____ gal	h. 1,200 lb = _____ T
c. 2.3 qt = _____ fl. oz.	f. 3.2 T = _____ lb	i. 6,750 lb = _____ T

Example 3. Convert 6 lb 15 oz into ounces.

Simply change the 6 lb into ounces first, then add the 15 ounces.

Example 4. Convert 372 ounces into pounds and ounces.

For the pounds, figure out how many 16-ounce increments there are in 372. That is done by dividing $372 \div 16$. If you use long division, you will have a remainder, and the remainder tells you the individual ounces that are “left over.” If you use a calculator, you will get a decimal number: $372 \div 16 = 23.25$. The whole pounds are 23.

For the ounces, you can take the decimal part, 0.25, and figure out how many ounces is 0.25 lb. Another way is to calculate $23 \times 16 = 368$, and since that is 4 less than 372, there are four ounces.

In summary, $372 \text{ oz} = 23 \text{ lb } 4 \text{ oz}$.

6. Convert to the given unit. Round your answers to two decimals, if needed.

a. 2 ft 6 in = _____ in	c. 162 in = _____ ft _____ in	e. 254 in = _____ ft _____ in
b. 7 ft 11 in = _____ in	d. 79 in = _____ ft _____ in	f. 1,028 in = _____ ft _____ in

7. Convert to the given unit. Round your answers to two decimals, if needed.

a. 6 lb 9 oz = _____ oz	c. 86 oz = _____ lb _____ oz	e. 483 oz = _____ lb _____ oz
b. 11 lb 12 oz = _____ oz	d. 145 oz = _____ lb _____ oz	f. 591 oz = _____ lb _____ oz