

# Weights and Measures

## Linear Measure—

1000 mils = 1 inch  
 12 inches = 1 foot  
 3 feet = 1 yard  
 1760 yards or 5280 feet = 1 mile  
 16½ feet or 5½ yards = 1 rod  
 (Sometimes called pole or perch).

## Square Measure—

100 square feet = 1 square  
 (Used for roofing, etc.)  
 30¼ square yards = 1 square rod  
 160 square rods = 1 acre  
 640 acres = 1 square mile

## Liquid Measure—

4 gills = 1 pint  
 2 pints = 1 quart  
 4 quarts = 1 gallon  
 1 U. S. gallon = 231 cubic inches, 3.785 liters  
 1 British Imperial gallon = 277.41 cubic inches = 1.2 U. S. gallons  
 7.48 U. S. gallons = 1 cubic foot

## Dry Measure—U. S.

2 pints = 1 quart  
 8 quarts = 1 peck  
 4 pecks = 1 bushel  
 1 Standard U. S. bushel = 2,150.42 cubic inches = 1.2445 cubic feet  
 1 British Imperial bushel = 2,218.19 cubic inches = 1.2837 cubic feet

## Board Measure—

One board foot is a piece of wood 12 inches square by 1 inch thick, or 144 cubic inches. 1 cubic foot, therefore, equals 12 board feet.

## Shipping Measure—

Register ton is used to measure internal capacity of ships. 100 cubic feet = 1 register ton.

Shipping ton, for measurement of cargo:

40 cubic feet =  $\begin{cases} 1 \text{ U. S. shipping ton} \\ 32.143 \text{ U. S. bushels} \\ 31.16 \text{ Imperial bushels} \end{cases}$   
 42 cubic feet =  $\begin{cases} 1 \text{ British shipping ton} \\ 33.75 \text{ U. S. bushels} \\ 32.719 \text{ Imperial bushels} \end{cases}$

## Measures of Weight—Avoirdupois

16 drachms or 437.5 grains = 1 ounce (oz.)  
 16 ounces or 7000 grains = 1 pound (lb.)  
 2000 pounds = 1 net or short ton  
 2240 pounds = 1 gross or long ton  
 2204.6 pounds = 1 metric ton

## Specific Gravity—

The specific gravity of a substance is its weight as compared with the weight of an equal bulk of pure water.

For making specific gravity determinations the temperature of the water is usually taken at 62 degrees Fahrenheit when 1 cubic foot of water weighs 62.355 pounds. Water is at its greatest density at 39.2 degrees Fahrenheit or 4 degrees Centigrade.

## Temperature—

The following equation will be found convenient for transforming temperature from one system to another:  
 Let F = degrees Fahrenheit; C = degrees Centigrade;  
 R = degrees Reamur.

$$\frac{F-32}{180} = \frac{C}{100} = \frac{R}{80}$$

## METRIC EQUIVALENTS

### LINEAR MEASURE

1 centimeter = 0.3937 in.      1 in. = 2.54 centimeters.  
 1 decimeter = 3.937 in. = 0.328 feet.      } 1 ft. = 3.048 decimeters.  
 1 meter = 39.37 in. = 1.0936 yards. 1 yard = 0.9144 meter.  
 1 dekameter = 1.9884 rods.      1 rod = 0.5029 dekameter.  
 1 kilometer = 0.62137 mile.      1 mile = 1.6093 kilometers.

### SQUARE MEASURE

1 sq. centimeter = 0.1550 sq. in.      } 1 sq. inch = 6.452 square centimeters.  
 1 sq. decimeter = 0.1076 sq. ft.      } 1 sq. foot = 9.2903 square decimeters.  
 1 sq. meter = 1.196 sq. yd.      1 sq. yd. = 0.8361 sq. meter.  
 1 are = 3.954 sq. rods.      1 sq. rod = 0.2529 are.  
 1 hektar = 2.47 acres.      1 acre = 0.4047 hektar.  
 1 sq. kilometer = 0.386 sq. mile.      1 sq. mile = 2.59 sq. kilometer.

### MEASURE OF VOLUME

1 cu. centimeter = 0.061 cu. in.      } 1 cu. inch = 16.39 cu. centimeters.  
 1 cu. decimeter = 0.0353 cu. ft.      } 1 cu. foot = 28.317 cu. decimeters.  
 1 cu. meter } = { 1.308 cu. yard      1 cu. yard = 0.7646 cu. meter  
 1 ster      }      { 0.2759 cord      1 cord = 3.624 sters.  
 1 liter = { 0.908 qt. dry.      1 qt. dry = 1.101 liters.  
           { 1.0567 qt. liquid.      1 qt. liquid = 0.9463 liter.  
 1 dekaliter = { 2.6417 gallons      1 gallon = 0.3785 dekaliter.  
                   { .135 pecks.      1 peck = 0.881 dekaliter.  
 1 hektoliter = 2.8375 bushels.      1 bushel = 0.3524 hektoliter.

### WEIGHTS

1 gram = 0.03527 ounce.      1 ounce = 28.35 grams.  
 1 kilogram = 2.2046 pounds.      1 pound = 0.4536 kilogram.  
 1 metric ton = 1.1023 English ton.      } 1 English ton = 0.9072 metric ton.

### APPROXIMATE METRIC EQUIVALENTS

1 decimeter = 4 inches.      1 liter =  $\begin{cases} 1.06 \text{ quart liquid.} \\ 0.9 \text{ quart dry.} \end{cases}$   
 1 meter = 1.1 yards.      1 hektoliter = 2⅔ bushels.  
 1 kilometer = ⅝ of mile.      1 kilogram = 2½ pounds.  
 1 hektar = 2½ acres.      1 ster. or cu. meter = ¼ of a cord. 1 metric ton = 2200 lbs.