Metric Units of Length

The basic unit of length in the metric system is the meter. A meter is slightly longer than a yard. It is approximately 39.37 inches long. Like the decimal system, the metric system uses powers of ten to define units.

Metric System of Measurement

Prefix	Meaning	Metric Unit of Length
kilo	1000	1 kilometer (km) = 1000 meters (m)
hecto	100	1 hectometer (hm) = 100 m
deka	10	1 dekameter (dam) = 10 m
		1 meter (m) = 1 m
deci	1/10	1 decimeter (dm) = 1/10 or 0.1 m
centi	1/100	1 centimeter (cm) = 1/100 or 0.01 m
milli	1/1000	1 millimeter (mm) = 1/1000 or 0.001 m

The most commonly used measurements of length in the metric system are the meter, millimeter, centimeter, and kilometer. Since all units of length are powers of 10 of the meter, converting from one unit of length to another is as simple as moving the decimal point.

Some conversion factors between US & Metric

Length

1 m ≈ 1.09 yd	2.54 cm ≈ 1 in
1 m ≈ 3.28 ft	.30 m ≈ 1 ft
1 km ≈ .62 mi	1.61 km ≈ 1 mi

Capacity

1 L ≈ 1.06 qt	3.79 L ≈ 1 gal
1 L ≈ .26 gal	.95 L ≈ 1 qt
	29.57 mL ≈1 fl oz

Weight (Mass)

1 kg ≈ 2.20 lb	.45 kg ≈ 1 lb
1 g ≈ .04 oz	28.35 g ≈ 1 oz

A detailed list can be found at
http://www.wsdot.wa.gov/reference/metrics/factors.htm

Physical Concepts (Formulae are listed on the last page.)

Perimeter: the distance around a plane figure called the **perimeter** or **circumference**. Perimeter is always measured in units. Formulas are listed on the last page.

Area: Area is measured in square units. A square unit is a square one unit on each side. When finding the area of figures, check to make sure that all measurements are the same units before calculations are made. Formulas are listed on the last page.

Volume: Volume measures the number of cubic units that fill the space of a solid. The volume of a box or can is the amount of space inside. The volume of a solid is the number of cubic units in the solid. Formulas are listed on the last page.

Surface Area: Surface Area is the area of each side of a solid. For a cube, box or similar, you need to find the area of the top, the bottom and each of the 4 sides.

Weight: the amount or quantity of heaviness of an object; the force that gravitation exerts upon a body, equal to the mass of the body times the local acceleration of gravity. Your weight on the Moon is less than on Earth. – units: ounces, pounds, stones(UK)

Mass: the quantity of matter of an object. The mass of an object does not change. Your mass on the Moon is the same as on Earth. – units: gram, kg, …

Capacity: the volume that a container can hold. - units: cup, pint, quart, gallon, liter, milliliter, …
1 cc = 1 cubic centimeter of water at 4 degree **Celsius** = 1 gram = 1 ml = 1 milliliter

Temperature: a measure of the warmth or coldness of an object or substance with reference to some standard value. – units: Fahrenheit, Celsius, Kelvin(not a common one).

F → C: $C = \frac{5}{9}(F - 32)$ C → F: $F = \frac{9}{5}C + 32$

Definitions are from www.dictionary.com

Geometric Formulas

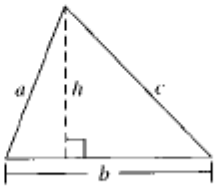
Rectangle

Perimeter: $P \approx 2l + 2w$
Area: $A \approx lw$

Square

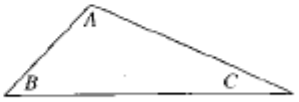
Perimeter: $P = 4s$
Area: $A = s^2$

Triangle



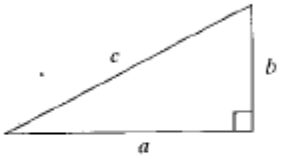
Perimeter: $P = a + b + c$
Area: $A = \frac{1}{2}bh$

Sum of Angles of Triangle



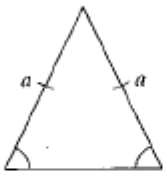
$A + B + C = 180°$
The sum of the measures of the three angles is 180°.

Pythagorean Theorem (for right triangles)



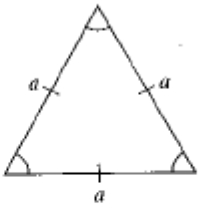
$(a)^2 + (b)^2 = (c)^2$
One 90° (right) angle

Isosceles Triangle



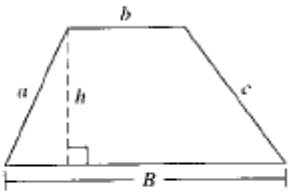
Triangle has:
two equal sides and

Equilateral Triangle



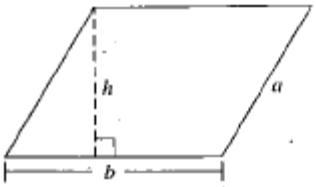
Triangle has:
three equal sides and

Trapezoid



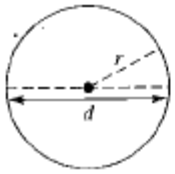
Perimeter:
$P = a + b + c + B$

Parallelogram



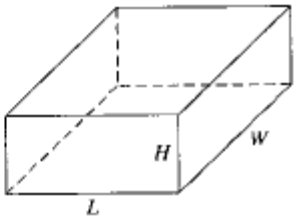
Perimeter: $P = 2a + 2b$
Area: $A = bh$

Circle



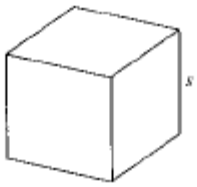
Circumference:
$C = \pi d$
$C = 2\pi r$
Area: $A = \pi r^2$

Rectangular Solid



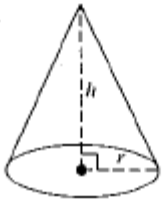
Volume: $V = LWH$
Surface Area:
$S = 2LW + 2HL + 2HW$

Cube



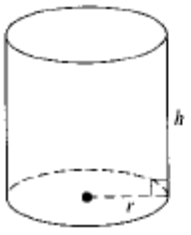
Volume: $V = s^3$
Surface Area: $S = 6s^2$

Cone



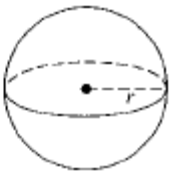
Volume: $V = \frac{1}{3}\pi r^2 h$

Right Circular Cylinder



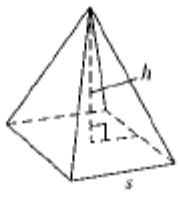
Volume: $V = \pi r^2 h$
Surface Area:
$S = 2\pi r^2 + 2\pi rh$

Sphere



Volume: $V = \frac{4}{3}\pi r^3$
Surface Area: $S = 4\pi r^2$

Square-Based Pyramid



Volume: $V = \frac{1}{3} \cdot s^2 \cdot h$