Technical

Mathematical Conversions

Areas and Volume

Circles

To find circumference - Multiply the diameter by 3.1416; or, divide diameter by 0.3183.

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To find radius - Multiply the circumference by 0.15915; or divide circumference by 6.28318; or, divide diameter by 2.

To find the side of a square to be inscribed in a circle - Multiply diameter by 0.7071; or, multiply the circumference by 0.2251; or, divide the circumference by 4.4428.

To find the side of a square to equal the area of a circle - Multiply the diameter by 0.8862; or, divide diameter by 1,1284; or, multiply the circumference by 0.2821; or, divide circumference by 3.545.

To find the area of a circle - Multiply the circumference by one-quarter of the diameter; or, multiply the square of the diameter by 0.7854; or, multiply the square of the circumference by 0.7958; or, multiply the square of one-half the diameter by 3.1416.

Doubling the diameter of a circle increases the area 4 times.

Squares

A side multiplied by 1.412 = the diameter of a circle which will circumscribe circle.

A side multiplied by 4.443 = the circumference of its circumscribing the given square.

A side multiplied by 1.1284 = the diameter of a circle equal in area to that given square.

A side multiplied by 3.545 = circumference of an equal circle.
To find diagonal of a square - multiply side by 1.4142.

Measurements From Other Geometrical Forms

To find the area of a ellipse - multiply the product of its axes by 0.7854; or, multiply the product of its semi-axes by 3.14159.

Contents of a cylinder = area of end X length

Contents of a wedge = area of triangular base X altitude.

Surface of a cylinder = length X circumference plus area of both ends.

Surface of a sphere = diameter squared X 3.1416; or. diameter X circumference.

Contents of a sphere = diameter cubed X 0.5236

Contents of a pyramid or cone, right or oblique, regular or irregular = area of base X one-third of the altitude.

Area of a triangle = base X one-half the altitude.

Area of parallelogram = base X altitude.

Area of a trapezoid = altitude X one-half the sum of parallel sides.

To find distance across the corners of hexagons - multiply the distance across the flats by 1.1547.

Conversion Factors

1 gal. water = 8.3 lb.
1 hp = 745.2 watts
1 BTU = .252 kg calories = 0.2930 watt hours
1 BTU per lb. = 1.8 cal per gram.
1 kw-hr = 3412 BTU per hour
1 kw-hr will evaporate 3.5 lb. of water at 212˚F
1 kw-hr will raise 22.75 lb. of water from 62˚F to 212˚F
1 gal. = 231 cu.in. = 3.785 lites = .1337 cu.ft.
1 cu.ft. = 1728 cu.in = .03704 cu.yd. = 7.481 gal.

To find the equivalent, in terms of a unit in the customary system, of a given number of metric units, multiply or divide their number (as indicated) by the factor shown. Thus: 10 millimeters are equivalent to 10 x 0.03937 inches or to 10 ÷ 25.4 inches.)

Millimeters x .03937 = inches; or, ÷ 25.4 inches
Centimeters x .3937 = inches; or, ÷ 2.54 inches
Meters x 39.37 = inches
Meters x 3.28 = feet
Kilometers x 3280.8 = feet
Square meters x 10.764 = square feet
Cubic centimeters ÷ 16.387 = cubic inches
Cubic centimeters ÷ 3.70 = fluid drams (U.S.P.)
Cubic centimeters ÷ 29.57 = fluid ounces (U.S.P.)
Cubic centimeters x 3.531 x 10^{-5} = cubic feet
Cubic meters x 35.314 = cubic feet
Liters x 61.025 = cubic inches
Liters x 33.81 = fluid ounces (U.S.P.)
Liters x .2642 = gallons (231 cubic inches)
Liters÷ 3.785 = gallons (231 cubic inches)
Liters÷ 28.317 = cubic feet
Grams x 15.432 = grains
Grams (water) ÷ 29.57 = fluid ounces
Grams ÷ 28.35 = ounces avoirdupois
Grams per cubic centimeter ÷ 27.7 = lbs. per cubic inch
Kilograms x 2.2046 = pounds
Kilograms x 35.3 - ounces avoirdupois
Kilograms per square centimeter x 14.223 = pounds per square inch
Kilo per meter x .672 = pounds per foot
Kilo per cubic meter x .062 = pounds per foot
Kilowatts x 1.34 = h. p. (33,000 foot pounds per minute)
Watts÷ 746 = horse power
Centigrade x 1.8 + 32 = degrees fahrenheit