

Geometric Formulas

TWO DIMENSIONAL

Square: Length of one side: s

$$\text{Perimeter: } P = 4s$$

$$\text{Area: } A = s^2$$

Rectangle: Length: l ; width: w

$$\text{Perimeter: } P = 2l + 2w$$

$$\text{Area: } A = l \cdot w$$

Triangles: Lengths of sides: a, b, c ; base: b ; height: h

$$\text{Perimeter: } P = a + b + c$$

$$\text{Area: } A = (1/2)bh$$

Pythagorean Theorem

(for right triangles only, c is the hypotenuse):

$$a^2 + b^2 = c^2$$

Circle: Radius: r

$$\text{Diameter: } d = 2r$$

$$\text{Circumference } C = 2\pi r = \pi d$$

$$\text{Area: } A = \pi r^2$$

THREE DIMENSIONAL

Rectangular Solids: Length: l ; width: w ; height: h

$$\text{Volume: } V = lwh$$

$$\text{Surface area: } S = 2lw + 2lh + 2wh$$

Sphere: Radius: r

$$\text{Volume: } V = (4/3)\pi r^3$$

$$\text{Surface area: } S = 4\pi r^2$$

Right Circular Cylinder: Radius of base: r ; height: h

$$\text{Volume: } V = \pi r^2 h$$

$$\text{Surface area: } S = 2\pi rh + 2\pi r^2$$

Right Circular Cone: Radius of base: r ; height: h ;
slant height: l

$$\text{Volume: } V = (1/3)\pi r^2 h$$

$$\text{Surface area: } S = \pi rl + \pi r^2$$

Unit Conversion Relationships

$$1 \text{ in} = 2.54 \text{ cm} = 0.0254 \text{ m}$$

$$1 \text{ ft} = 30.5 \text{ cm} = 0.305 \text{ m}$$

$$1 \text{ yd} = 91.4 \text{ cm} = 0.914 \text{ m}$$

$$1 \text{ mi} = 1609 \text{ m} = 1.609 \text{ km}$$

$$1 \text{ qt} = 946 \text{ ml} = 0.946 \text{ l}$$

$$1 \text{ oz} = 28,350 \text{ mg} = 28.35 \text{ g}$$

$$1 \text{ lb} = 453.6 \text{ g} = 0.4536 \text{ kg}$$

$$1 \text{ tn} = 907 \text{ kg} = 0.907 \text{ metric tn}$$

$$1 \text{ light year} = 9.46 \cdot 10^{12} \text{ km or } 5.88 \text{ trillion miles}$$

Metric Prefixes for Powers of 10

atto-	a	10^{-18}
femto-	f	10^{-15}
pico-	p	10^{-12}
nano-	n	10^{-9}
micro-	μ	10^{-6}
milli-	m	10^{-3}
centi-	c	10^{-2}
deci-	d	10^{-1}
	(unit)	10^0
deka-	da	10^1
hecto-	h	10^2
kilo-	k	10^3
mega-	M	10^6
giga-	G	10^9
tera-	T	10^{12}
peta-	P	10^{15}
exa-	E	10^{18}

Thus millimeter is abbreviated mm; kilometer km; and megameter Mm. Abbreviations are usually not used for deci, deka, and hecto.