

Formula Sheet

Abbreviations

cfs	cubic feet per second (ft ³ /sec)
ft	feet
gpd	gallons per day
gpm	gallons per minute
hr	hour
in	inches
in ²	square inches (sq. in.)
lb	pounds

mL	milliliter
mg/L	milligrams per liter
MG	million gallons
MGD	million gallons per day
min	minutes
ppm	parts per million
psi	pounds per square inch
sec	seconds

Conversion Factors

Area

$$1 \text{ ft}^2 = 144 \text{ in}^2$$

Volume

$$1 \text{ ft}^3 = 7.48 \text{ gal}$$

$$1 \text{ yd}^3 = 27 \text{ ft}^3$$

Weight

$$1 \text{ gallon of water} = 8.34 \text{ lbs}$$

Concentration

$$1 \text{ ppm} = 1 \text{ mg/L}$$

Flow rate

$$1 \text{ MGD} = 1.55 \text{ cfs} = 694.4 \text{ gpm}$$

$$1 \text{ gpm} = 60 \text{ gal/hr} = 1440 \text{ gpd}$$

Pressure

$$1.0 \text{ psi} = 2.31 \text{ feet of water}$$

$$1.0 \text{ foot of water} = 0.433 \text{ psi}$$

Basic Hydraulics Formulas

$$\text{Detention Time} = \frac{\text{Tank Capacity}}{\text{Flow Rate}}$$

Dosage and Concentration Formulas

$$\text{Dosage (lbs)} = \text{Concentration (mg/L)} \times \text{Volume (MG)} \times 8.34$$

$$C_1 \times V_1 = C_2 \times V_2$$

where, C_1 = beginning concentration

V_1 = beginning volume

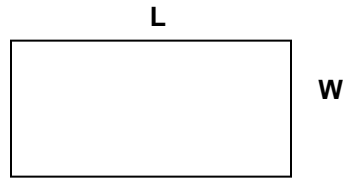
C_2 = diluted concentration

V_2 = diluted volume

Area

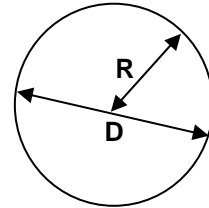
Square or Rectangle

$$A = L \times W$$



Circle

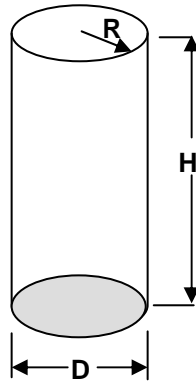
$$A = \pi R^2 \text{ or } A = 0.785 D^2$$



Where $\pi = 3.14$

Volume

Cylinder



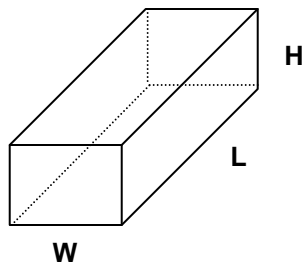
$$V = 0.785 D^2 H$$

or

$$V = \pi R^2 H$$

Where $\pi = 3.14$

Cube



$$V = L \times W \times H$$