



Certified Pool/Spa Operator® Course Pool Calculations

AMOUNT CONVERSIONS

- a) Ounces to Pounds Ounces ÷ 16 = Pounds
b) Fluid Ounces to Gallons Fluid Ounces ÷ 128 = Gallons

DISTANCE CONVERSIONS

- a) Yards to Feet Yards X 3 = Feet
b) Meters to Feet Meters X 3.28 = Feet

SURFACE AREA

- a) Rectangle or Square Length X Width = Surface Area in Sq. Ft.
b) Circle Radius X Radius X 3.14 = Surface Area in Sq. Ft.

AVERAGE DEPTH

For constant slope bottom pools Shallow depth + deep depth ÷ 2 = Average depth

POOL VOLUME

- a) Rectangle or Square Surface Area (SA) X Depth (D) X 7.5 = Gallons of water
b) Circle Surface Area (SA) X Depth (D) X 7.5 = Gallons of water

GALLONS LOST IN ONE INCH

Surface Area (SA) X 0.0833 (D) X 7.5 = Gallons of water

CALCULATING COMBINED CHLORINE (CHLORAMINES)

Total Chlorine – Free Chlorine = Combined Chlorine (Chloramines)

TURNOVER RATE

Pool Volume ÷ Flow Rate ÷ 60 = Turnover Rate (TOR) in hours

FLOW RATE REQUIRED FOR TURNOVER RATE

Pool Volume ÷ Turnover Rate ÷ 60 = Flow Rate in gpm (gallons per minute)

FLOW RATE BASED ON FILTER SIZE AND FILTERING RATE

Filter Surface Area X Filtering Rate = Flow rate in gallons per minute (GPM)

FILTER SIZE REQUIRED (FILTER SURFACE AREA)

Flow Rate ÷ Filter Media Rate (FMR) = Square feet of filter surface area required

SPA WATER DUMPING

Recommended: Dump when Total Dissolved Solids (TDS) rises 1500 ppm above start up reading
OR:

Spa Volume ÷ 3 ÷ Avg. # of users daily = Number of days until water should be dumped

HEATER SIZING

Volume x 8.33 x Degrees raised (change) = BTU's needed to achieve temperature rise

TOTAL DYNAMIC HEAD

Multiply Pump PRESSURE gauge reading by 2.31 = feet of head on pressure side

Multiply Pump VACUUM gauge reading by 1.13 = feet of head on vacuum side

ADD THESE TWO RESULTS TOGETHER; RESULT IS TOTAL DYNAMIC HEAD OF SYSTEM