

## Swimming Pool and Spa Calculations Worksheet

Name of Facility: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_

Facility Representative: \_\_\_\_\_

Telephone Number: \_\_\_\_\_ Fax Number: \_\_\_\_\_

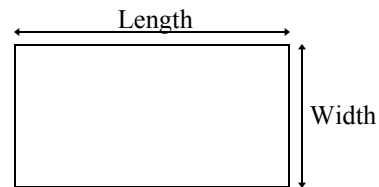
Type of Unit:  Swimming Pool  Spa  Falling Entry Pool  Wading Pool

Other: \_\_\_\_\_

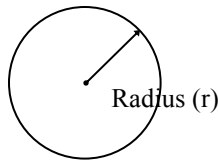
Certified Pool Operator: \_\_\_\_\_ Telephone Number: \_\_\_\_\_

### Surface Area:

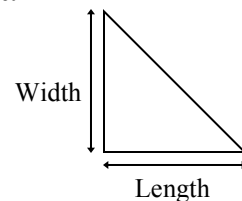
$$\begin{aligned} \text{Rectangle/Square} &= \text{Length (ft.)} \times \text{Width (ft.)} \\ &= \text{_____ ft.} \times \text{_____ ft.} \\ \text{Area} &= \text{_____ ft.}^2 \end{aligned}$$



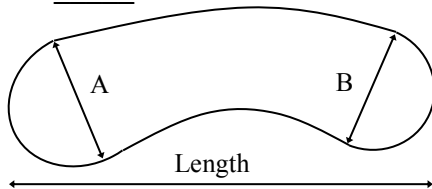
$$\begin{aligned} \text{Circle} &= \pi r^2 \\ &= 3.14 \times \text{Radius (ft.)} \times \text{Radius (ft.)} \\ &= 3.14 \times \text{_____ ft.} \times \text{_____ ft.} \\ \text{Area} &= \text{_____ ft.}^2 \end{aligned}$$



$$\begin{aligned} \text{Triangle} &= \text{Length (ft.)} \times \text{Width (ft.)} \div 2 \\ &= \text{_____ ft.} \times \text{_____ ft.} \div 2 \\ \text{Area} &= \text{_____ ft.}^2 \end{aligned}$$



$$\begin{aligned} \text{Abstract} &= 0.45(\text{A (ft.)} + \text{B (ft.)}) \times \text{Length (ft.)} \\ &= 0.45(\text{_____ ft.} + \text{_____ ft.}) \times \text{_____ ft.} \\ \text{Area} &= \text{_____ ft.}^2 \end{aligned}$$



For multi-sided units, divide the pool into known shapes and calculate the area for each individual shape. Then add the answers together to get the total surface area.

### Depth:

$$\begin{aligned} \text{Average Depth} &= (\text{Shallow Depth (ft.)} + \text{Deep Depth (ft.)}) \div 2 \\ &= (\text{_____ ft.} + \text{_____ ft.}) \div 2 \end{aligned}$$

$$\text{Average Depth} = \text{_____ ft.}$$

For units with more than one area (example - a diving well with a constant depth, two different sloped sections, etc.) perform the calculations for each.

## Volume:

$$\text{Volume} = \text{Surface Area (ft.}^2\text{)} \times \text{Average Depth (ft.)} \times 7.48 \text{ (gal./ft.}^3\text{)}$$

$$= \underline{\hspace{2cm}} \text{ ft.}^2 \times \underline{\hspace{2cm}} \text{ ft.} \times 7.48 \text{ gal./ft.}^3$$

$$\text{Volume} = \underline{\hspace{2cm}} \text{ gallons}$$

For units with more than one area (examples - a diving well with a constant depth, two different sloped sections, etc.) perform the Average Depth calculation for each. Then, perform the Volume calculation for each section and add the answers together to get the total volume of the unit.

## Turnover Rate:

$$\text{Turnover Rate (hr.)} = \text{Volume (gal.)} \div \text{Flow Rate (gal./min.)} \div 60 \text{ (min./hr.)}$$

$$= \underline{\hspace{2cm}} \text{ gal.} \div \underline{\hspace{2cm}} \text{ gal./min.} \div 60 \text{ min./hr.}$$

$$\text{Turnover Rate} = \underline{\hspace{2cm}} \text{ hours}$$

The Flow Rate is a measurement that can be taken directly from the flow meter, which is located on the piping near the pump and/or filter. Please be sure to note this measurement in "Gallons Per Minute" as most flow meters offer multiple units of measure.

## Maximum Bather Load:

$$\text{Bather Load} = \text{Surface Area (for each section)} \div \text{Health Code Bather Capacity (see chart)}$$

$$= \underline{\hspace{2cm}} \text{ ft.}^2 \div \underline{\hspace{2cm}} \text{ ft.}^2/\text{bather}$$

$$\text{Bather Load} = \underline{\hspace{2cm}} \text{ bathers}$$

For pools with two or more areas (deep end, shallow end, diving well, etc.) perform the calculations for each area and add the answers together to get the total number of bathers.

## Health Code Bather Capacity:

	Shallow Area	Deep Area	Diving Area	Entry Area (slides, etc.)
<b>Pool</b> (surface area of the deck less than the surface area of the pool)	18 ft. <sup>2</sup> per bather	20 ft. <sup>2</sup> per bather	300 ft. <sup>2</sup> per bather	150 ft. <sup>2</sup> per bather
<b>Pool</b> (surface area of the deck equal to, or up to twice the surface area of the pool)	15 ft. <sup>2</sup> per bather	18 ft. <sup>2</sup> per bather	300 ft. <sup>2</sup> per bather	150 ft. <sup>2</sup> per bather
<b>Pool</b> (surface area of the deck greater than twice the surface area of the pool)	12 ft. <sup>2</sup> per bather	15 ft. <sup>2</sup> per bather	300 ft. <sup>2</sup> per bather	150 ft. <sup>2</sup> per bather
<b>Spa</b>	9 ft. <sup>2</sup> per bather	N/A	N/A	N/A

\_\_\_\_\_  
Certified Operator (print name)

\_\_\_\_\_  
Certification Type and Number

\_\_\_\_\_  
Certified Operator (signature)

\_\_\_\_\_  
Date