

## NCICLB Exam Formula & Conversion Sheet v24.11.2

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### Formula #1

$$\text{Precipitation Rate} = \frac{96.3 \times \text{gpm}}{\text{Area \{sq. ft.\}}}$$

### Formula #2

$$\begin{aligned} \text{Precipitation Rate} \\ = \frac{231 \times \text{gph}}{\text{emitter spacing} \times \text{tubing spacing \{sq. in.\}}} \end{aligned}$$

### Formula #3

$$\text{Precipitation Rate} = \frac{1.605 \times \text{gph}}{\text{Area \{sq. ft.\}}}$$

### Formula #4

$$\text{Daily Water Need} = \text{Daily ET}_O \times K_c$$

### Formula #5

$$\text{Run Time} = \frac{\text{Daily Water Need}}{\text{Precipitation Rate}} \times 60$$

### Formula #6

$$\text{Irrigation Frequency} = \frac{\text{Available Water} \times \text{Root Zone} \times \text{MAD}}{\text{ET}_O \times K_c}$$

### Formula #7

$$\text{Max. Syst. Capacity} = \frac{0.0104 \times \text{ET}_O \times \text{Area} \times K_c}{\text{DU} \times \text{Hrs.}}$$

### Formula #8

$$\text{Max. Area of Coverage} = \frac{\text{gpm} \times \text{DU} \times \text{hours}}{0.0104 \times \text{ET}_O \times K_c}$$

### Formula #9

$$\text{psi} = \text{feet of head} \times 0.433$$

### Formula #10

$$\text{feet of head} = \frac{\text{psi}}{0.433}$$

### Formula #11

$$\text{Selling Price} = \frac{\text{Costs}}{1 - \text{profit \% (decimal)}}$$

### Formula #12

$$\text{Profit Margin} = \frac{\text{Sales Price} - \text{Costs}}{\text{Sales Price}}$$

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(continued)

### Formula #13

**Estimated Line Source Zone GPH Base on Irrigated Area**

$$= \frac{\text{Irrigated Area \{sq. ft.\} x 144 inches}}{\text{Emitter Spacing \{in.\} x Tubing Spacing \{in.\}}} \times \text{Emitter gph} \div 60$$

### Formula #14

**Estimated Line Source Zone GPH Based on Total Length**

$$= \frac{\text{Total Tubing Length \{ft.\} x 144 x emitter gph}}{\text{Emitter Spacing \{in.\}}} \div 60$$

### Formula #15

**Total Feet of Line Source Tubing within Area**

$$= \frac{\text{Irrigated Area \{sq. ft.\} x 12 inches}}{\text{Minimum Row Spacing \{in.\}}}$$

### Formula #16

**Maximum Feet of Line Source Tubing Based on Flow**

$$= \frac{\text{Max Zone gpm Available x 60}}{\text{Emitter gph}} \times \frac{\text{Emitter Spacing \{in.\}}}{12 \text{ inches}}$$

### Formula #17

**Number of Line Source Emitters within a Zone**

$$= \frac{\text{Total Tubing Length \{ft.\} x 12 inches}}{\text{Emitter Spacing \{in.\}}}$$

### Formula #18

$$\text{Point Source Run Time \{minutes/week\}} = \frac{\text{Water Need of Plant \{gal./wk.\}}}{\text{Total gph per Plant}} \times 60$$

### Conversions

**Gallons per acre-inch = 27,154**

**Gallons per square foot-inch = 0.6234**

**Gallons per cubic foot = 7.48**