STORAGE WORKSHEET REVIEW

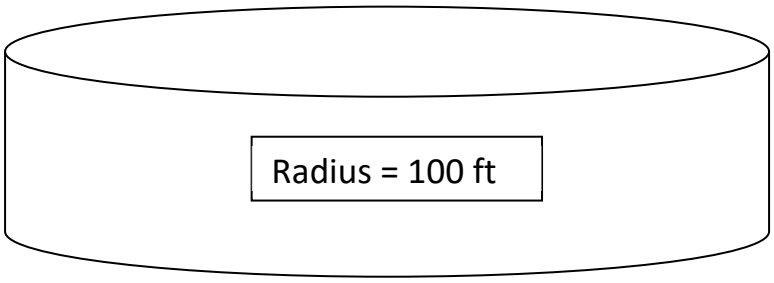
1. The monthly irrigation requirement is 4 inches. If the irrigated property is 2 acres, what is the total volume of water needed?

    a. In gallons?

2. Average lake evaporation for Lubbock, Texas in June is 8.14 inches. What is the total volume of water evaporated assuming a pond with a surface area of 50,000 square feet?

    a. In gallons?

3. A circular-shaped, in-ground, lined storage pond is constructed to temporarily store treated domestic wastewater. The treated wastewater will be pumped as needed for irrigation of a commercial property. The total irrigated area is approximately 1 acre. What will be the <u>weekly</u> drawdown (in inches) during the peak water use month (assuming on rainfall)?



Surface area (sqft) = 3.14 x Radius (ft) x Radius (ft)

Monthly Irrigation Requirement and Lake Evaporation Data

Month	Irrigation Requirement (inches)	Lake Evaporation (inches)
Jan	1.42	2.57
Feb	1.56	3.17
Mar	2.80	5.15
Apr	3.30	6.60
May	3.20	6.80
Jun	3.80	8.14
Jul	4.21	9.02
Aug	3.91	7.90
Sep	2.17	6.18
Oct	1.57	5.32
Nov	1.53	3.90
Dec	1.29	2.83

a. Step 1: Calculate weekly peak irrigation requirement (inches).

Hint: Monthly peak irrigation divided by 4.

b. Step 2: Convert weekly peak irrigation requirement from inches to cubic feet.

$$\text{Gallons} = \text{Inches x acres x } 43{,}560 \text{ x } 0.6234$$

$$\text{Cubic feet} = \text{Gallons} \div 7.48$$

c. Step 3: Calculate surface area of circular pond (square feet).

$$\text{Surface area} = 3.14 \text{ x } 3.14 \text{ x Radius (ft)}$$

d. Step 4: Calculate weekly drawdown (in feet) from irrigation use (weekly peak irrigation requirement in cubic feet divided by surface area of circular pond in square feet).

$$\text{Weekly drawdown (feet)} = \frac{\text{Weekly peak water requirement (cubic feet)}}{\text{Surface area of pond (square feet)}}$$

e. Step 5: Convert weekly drawdown from irrigation use from feet to inches.

$$\text{Weekly drawdown (inches)} = \text{Weekly drawdown (feet)} \text{ x } 12$$

f. Step 6: Add weekly peak evaporation to weekly drawdown from irrigation use.

$$\text{Weekly peak evaporation from pond (inches)} = \frac{\text{Monthly peak evaporation (inches)}}{4}$$