Key

Precipitation Rate

Area/Flow Method

1. Station 1 on an irrigation system applies water over a rectangular area 50 feet wide by 100 feet long. Station 1 is set to run 30 minutes and the following meter readings were taken. What is the estimated precipitation rate (in inches per hour) for station 1?

   Initial meter reading: 3580 gallons
   Final meter reading: 4600 gallons

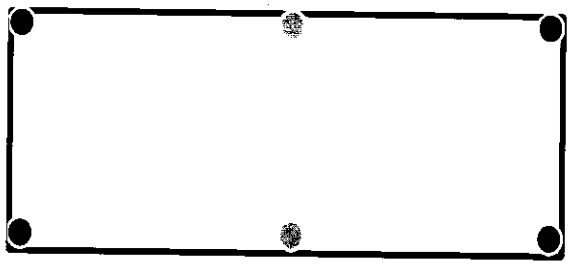
$$GPM = \frac{\text{Final Reading} - \text{Initial Reading}}{\text{runtime}} = \frac{4600 - 3580}{30} = 34 \text{ GPM}$$

$$\text{Area} = L \times W = 100' \times 50' = 5000 \text{ ft}^2$$

$$PR = \frac{96.25 \times GPM}{\text{Area}} = \frac{96.25 \times 34 \text{ gpm}}{5000 \text{ ft}^2} = 0.65 \text{ in/hr}$$

2. Determine the precipitation rate (in inches per hour) for station 2.

Station 2



30 feet

60 feet

Total Area

$A = L \times W$

$= 60' \times 30'$

$= 1800 \text{ ft}^2$

- Half-circle = 4 GPM
- Quarter circle = 2 GPM

Total Flow

4 heads × 2 gpm = 8 gpm
2 heads × 4 gpm = 8 gpm
Total = 16 gpm

$$PR = \frac{96.25 \times GPM}{\text{Area}} = \frac{96.25 \times 16 \text{ gpm}}{1800 \text{ ft}^2} = 0.86 \text{ in/hr}$$