

## ANSWERS PAGE 1

## Site Work

Calculate the number of pan loads needed:

$$75,000yd^3 \times \frac{1 \text{ pan load}}{16yd^3} = 4,687.5 \text{ pan loads}$$

Calculate how many days it would take to complete the work with 1 pan:

$$4,687.5 \text{ pan loads} \times \frac{1 \text{ day}}{12 \text{ pan loads}} = 390.62 \text{ days}$$

Divide by 60 to find the number of pans (x) needed:

$$\frac{390.62 \text{ days}}{60 \text{ days}} = x$$

$$x = 6.51$$

Answer:

*7 pans are needed*

## Pouring a Concrete Slab

Convert the thickness of the slab in inches to feet:

$$4in \times \frac{1ft}{12in} = .3333ft$$

Find the volume of the slab in cubic feet:

$$30ft \times 40ft \times .3333ft = 399.96ft^3$$

Convert cubic feet to cubic yards:

$$399.96ft^3 \times \frac{1yd^3}{27ft^3} = 14.8133yd^3$$

Add 5% overage:

$$14.8133yd^3 \times 1.05 = 15.55yd^3$$

Answer:

$$15.55yd^3$$

## Turn on the Lights

Subtract the distance between the walls and the lights from the total length of the room:

$$l = 50ft - 2 \times 11.5ft$$

$$l = 27ft$$

Divide by two to find the distance between each light:

$$x = \frac{27ft}{2}$$

$$x = 13.5ft$$

Answer:

*The lights are 13.5ft, or 13ft 6in apart.*

## ANSWERS PAGE 2

### How Much Water?

Calculate how much water, in cubic inches, the bucket will hold:

$$x = 5 \text{ gal} \times \frac{231 \text{ in}^3}{1 \text{ gal}}$$

$$x = 1155 \text{ in}^3$$

Find the area of a circle that is 2 inches in diameter (like the pipe):

$$A = \pi r^2 \quad r = 1 \text{ in}$$

$$A = 3.14159 \text{ in}^2$$

Divide the bucket capacity by the circle area to find the maximum length of the pipe:

$$x = \frac{1155 \text{ in}^3}{3.14 \text{ in}^2}$$

$$x = 367.6 \text{ in}$$

Answer:

$$367.6, \text{ or about } 30 \text{ ft } 7 \text{ in}$$

### Here Comes the Sun

PART 1:

$$x = 3,675,000 \text{ kWh/yr} \times \frac{1 \text{ kw}}{1,750 \text{ kWh/yr}}$$

**Part 1 Answer:**

*The District will need 2,100 kw of solar power.*

PART 2:

$$x = 2,100 \text{ kw} \times \frac{5 \text{ acres}}{1,000 \text{ kw}}$$

**Part 2 Answer:**

*The District will need 10.5 acres.*

PART 3:

$$x = 3,675,000 \text{ kWh} \left( \frac{\$0.085}{1 \text{ kWh}} - \frac{\$0.05}{1 \text{ kWh}} \right)$$

**Part 3 Answer:**

*The District will save \$128,625.00.*