

- f. What is area and how does it differ from volume?
- g. What is the formula to determine the area of a circle?

Problems to solve:

Problem #1: Profit (total income – total expenses)

This floral shop specializes in selling bonsai planters. In one week they sold 125 bonsai planters to customers that came into the store and another 85 were sold over the internet. Their sales price is \$25.99. They add an additional \$5.99 for shipping and handling on all internet sales. Their cost for the bonsai's is broken down into the following:

- a. bonsai dishes --- \$1.89 each
- b. bonsai plants -- \$2.47 each
- c. soil mixture -- \$.60 each
- d. misc materials -- \$.30 each
- e. labor – takes 30 minutes to make a dish – pay workers \$9.00 per hour
- f. S & H -- \$5.99 for online sales only
- g. Building rent -- \$450 per week – includes electricity, heat, insurance, etc.

Given this information, what was their profit for one week in this bonsai business?

Income =

Expenses =

Profit =

Problem #2 -- profit

This floral business on a monthly business sells the following:

- a. 100 dozen roses at \$19.99 per dozen
- b. 500 potted plants at \$ 5.99 each
- c. 250 floral arrangements at \$13.99 each

Their expenses for the above average (expenses includes building costs, labor, and materials) 60% of the retail sales price.

Given this information, what was their profit for one month in this business?

Problem #3: profit

This floral shop sold and delivered an arrangement for \$27.99. There was a delivery fee of \$3.00 (not taxable). Their cost for the arrangement is broken down into the following:

- container --- \$2.19 each
- plants -- \$3.47 each
- soil mixture -- \$.60 each
- misc materials -- \$.30 each
- labor – takes 30 minutes to make an arrangement – pay workers \$7.00 per hour
- delivery takes 20 minutes – pay worker \$7.00 per hour

Given this information, what was their profit for this arrangement?

Also, if sales tax is 6%, what did they charge the customer for this arrangement?

Problem #4: determining volume

Philip owns a landscape business that specializes in hard wood mulches. He knows that during delivery and in the process of mulching, that the mulch will settle down (compact) $\frac{1}{3}$ of what is required. Therefore, $\frac{1}{3}$ more mulch is needed to what is calculated as the volume for a particular area. For this problem, a client has a garden bed that is 18 feet wide and 42 feet long. It needs to be mulched to a depth of 6 inches. The red mulch that this client desires is now selling for \$32 per yard (includes delivery). What will be this customer's bill (including the 6% sales tax) to mulch that one garden? (remember to include for compaction).

Problem #5: determining area

In this problem, a customer of Jon's Landscape would like to have pavers placed into his driveway instead of pouring concrete. The pavers are 4 inches wide, 8 inches long, and 3 inches thick. The driveway is 18 feet wide and 48 feet long. If the pavers sell for \$.56 each, how much will this customer spend on just the pavers? (do not include any sales tax or delivery fee).

Problem #6: determining volume

Ms. Jones has plants between her house and the sidewalk. The area is rectangular in shape, 5 feet wide and 40 feet long. In her backyard, she has round-shaped bed with a diameter of 8 feet. She filled the beds with 8 inches of topsoil. How many total yards of topsoil did she use to fill the two plant beds?

Problem #7:

Mr. Lundberg owns and operates a landscape business in which he has a crew headed by Douglas who will apply liquid chemicals to lawns to treat for crabgrass. It is recommended that the crabgrass herbicide be mixed at the rate of 2 ounces per 50 gallons of water. The application rate (of the herbicide & water) is two (2) gallons per 100 square feet of lawn area. If Michelle Dohlman has a lawn that is 230 feet wide and 180 feet long, how many ounces of crabgrass herbicide will be needed?

Problem #8: slope

Tim has a lawn that is 60 feet long. The elevation at the starting point is 3 feet more than the ending point. What is the slope of this lawn?

Problem #9: fertilizer and area

Suppose you purchase a 50 pound bag of 10 - 6- 4 fertilizer to apply to a lawn. The bag indicates that it will cover 1500 square feet of area. The lawn you will apply this to is 80 feet by 140 feet. How many bags will it take?

Problem #10: insecticide usage and area

An insecticide is applied in the ratio of 1 quart per acre. How much would be used on a plot 150 feet by 220 feet? (1 acre = 43,560 square feet)

Problem #11:

You need to fertilize a lawn with a 10 – 10 – 10 fertilizer. The lawn dimensions are 60 feet by 80 feet. If the label of the fertilizer recommends an application of 3.0 pounds of nitrogen for 1000 square feet, how many pounds of fertilizer do you need to apply?

Problem #12: cuttings

You need to propagate English Ivy plants for the coming season. Based on the past years sales, you estimate you need to have 4,100 plants. Knowing that 8% of the cuttings will not root, how many cuttings should you take?

Problem #13: germination rate and area

You wish to apply 3 pounds of live grass seed per 1000 square feet of lawn space. The grass seed you bought has a 90% germination rate. How many pounds of the seed must be applied to meet your goal? (your lawn is 110 feet wide and 140 feet long).

Problem #14: fertilizer and area

You wish to apply 3 pounds of nitrogen per 1000 square feet of lawns you maintain using a 25-10-15 fertilizer. You have 60 pounds of this fertilizer on hand. How many square feet of lawn can you fertilize with the amount of fertilizer you have on hand?

Problem #15: fertilizer and area

Suppose you purchase a 50 pound bag of 16 - 6- 4 fertilizer to apply to a greenhouse flowerbeds. The bag indicates that it will cover 1000 square feet of area. The flowerbeds you will apply this to are 80 feet by 160 feet. If each bag sells for \$9.39 each (without tax), how much will it cost to fertilize these flowerbeds?

Problem #16: volume

A rectangular reflecting pool 12 feet by 16 feet has been removed from a garden site. The 3-foot deep hole that is left must be filled and leveled with soil and then have roses planted at a later time. How many cubic yards of soil will it take?

Problem #17: determining interest

Cindy is the owner and operator of her own floral shop. This past year she borrowed \$10,000 to remodel and expand the building. Her interest rate for the loan was 6%. If she is able to pay-off the loan in 6 months, how much interest did she re-pay?

Problem #18: ordering

Danny specializes in raising poinsettias. He recently received an order for 500 poinsettias to be delivered to a large shopping mall later this year for \$10.00 each. He knows that 90% of all the poinsettias that he purchases will actually survive (10 percent will die and he will need to order extras to fill his order). In order to deliver 500 live poinsettias to his client that he purchases for \$ 4.00 each, how much will his profit be?