



2022 Floriculture Problem Solving

1. As an outgrowth of your high school horticulture program your FFA chapter has decided to establish a school vegetable garden to produce vegetables to donate to a local food bank. Your plans are to construct raised beds. Your chapter is going to build 12 beds. Each bed will be 10 feet long by 5 feet in width. Each bed will be constructed using 2" X 10" treated boards. How many cubic yards of soil will be needed to fill the 12 beds?
 - A. 499.8 cubic yards
 - B. 18.5 cubic yards
 - C. 240 cubic yards
 - D. 55.5 cubic yards

Answer: 5' wide X 10' long X .833' deep=41.65 cubic feet X 12 beds=499.8 cubic feet. 499.8 cubic feet divided by 27 (cubic feet per cubic yard)=18.5 cubic yards

Correct answer is B

Standards:

ABS.01.01.01.b	CRP.08.02.01.c
CS.01.01.01.b	CRP.08.02.02.c
CS.02.01.02.c	CRP.08.03.01.c
CRP.02.02.01.c	CRP.08.03.02.c
CRP.03.01.02.b	PS.01.02.01.c
CRP.08.01.02.b	PS.03.02.02.b

2. Your horticulture teacher ask you to figure how much osmocote, as a slow release fertilizer, you will need to apply to the containers that your program is growing as fall mums. You are given the table below to use in your calculation. You have planted sixty 6.5 inch standard pots and 30 eight inch mum pots with fall mums. You are told that the application rate needs to be at a medium level for the 6.5 inch pots and at the high level for the 8 inch mum pans. How many pounds of osmocote should be applied?

Application Rates Per Container (Grams)

CONTAINER SIZE	LOW	MEDIUM	HIGH
6 inch azalea	3	7	11
6.5 inch azalea	3	8	13
6.5 inch standard	4	9	13
8 inch azalea	6	14	22
8 inch mum pan	6	15	23
9 inch mum pan	10	23	36
10 inch basket	11	26	39

Conventional Measurers:

1 tsp. = 5 grams	1/3 cup = 95 grams	28 grams = 1 ounce
1 tbsp. = 16 grams	1/2 cup = 142 grams	454 grams = 1 pound
1/4 cup = 71 grams	1 cup = 285 grams	

- A. 1.0 pound
- B. 1.98 pounds
- C. 2.71 pounds
- D. 3.2 pounds

Answer: Sixty 6.5 inch standard pots at medium rate: $60 \times 9 \text{ grams/pot} = 540 \text{ grams}$

Thirty 8 inch mum pans at high rate: $30 \times 23 \text{ grams/pot} = 690 \text{ grams}$

$540 + 690 = 1,230 \text{ grams}$ divided by $454 \text{ grams/pound} = 2.71 \text{ pounds}$

Standards:	CRP.02.02.01.c	CRP.08.02.02.c
ABS.01.01.01.b	CRP.03.01.02.b	CRP.08.03.01.c
CS.01.01.01.b	CRP.08.01.02.b	CRP.08.03.02.c
CS.02.01.02.c	CRP.08.02.01.c	



3. You are employed by a local retail flower shop. Your employer sends you to the wholesale florist to pick up an order that you emailed to the wholesaler. When you arrive the order is ready and it is loaded into the flower shop vehicle that you drove to pick up the order. You look at the invoice presented to you and you make sure everything is correct. The total amount of the order is indicated at the bottom of the invoice. The terms of payment are also on the bottom of the order. There is no charge for pick up but there is a 5% delivery charge. There is a 2% charge for debit or credit payments. The sales tax where the wholesale and the retail flower shop is located is 7%. Your employer sent with you a signed check for payment. The total amount of the products you are taking back to the flower shop totaled \$1,427.35. What is the amount of money you write the check for to pay for the order you picked up?
- A. \$1,527.26
B. \$1,427.35
C. \$1,498.62
D. \$1,555.81

Answer: The correct answer is B: \$1,427.35. Since you are paying with a check there is no debit or credit charge. You also do not owe a delivery charge since you are picking the order up. Sales tax is only paid at the retail level so you do not owe any sales tax at the wholesale florist.

Standards:	CRP.03.01.02.b	CRP.08.03.02.c
ABS.01.01.01.b	CRP.08.01.02.b	CS.01.01.02.b
CS.01.01.01.b	CRP.08.02.01.c	CRP.03.02.02.c
CS.02.01.02.c	CRP.08.02.02.c	
CRP.02.02.01.c	CRP.08.03.01.c	

4. You are working in a greenhouse and need to mix fertilizer for a 75 gallon fertilizer tank. The tank has a fertilizer injector to mix the concentrated fertilizer into the water when the plants are watered/fertilized. You want to mix fertilizer for the tank at a 1:100 dilution rate at 250 parts per million. You must decide how much fertilizer to mix for the concentrated solution going into the tank. How much fertilizer to do you mix in the 75 gallon tank? Use the chart below to arrive at your answer.

Dilution Rate	Parts Per Million Nitrogen						
	25	50	75	100	200	300	400
	Ounces Per Gallon						
1:200	3.33	6.43	9.65	12.85	25.70	38.60	51.40
1:100	1.61	3.22	4.82	6.43	12.85	19.27	25.70
1:15	.25	.50	.75	1.00	2.00	3.00	4.00

- A. 60.23 pounds
- B. 90.33 pounds
- C. 75.28 pounds
- D. 30.14 pounds

Answer: You need to find out the correct ounces per gallon at the 250 PPM rate. Do a simple ratio: 12.85 ounces is to 200 PPM as X ounces would be to 250 PPM

This would figure out to be 16.06 ounces at the 250 PPM

16.06 ounces/gallon X 75 gallons=1204.50 ounces divided by 16 ounces/gallon =75.28 pounds

Correct answer is C

Standards:

ABS.01.01.01.b

CRP.03.01.02.b

CRP.08.03.01.c

CS.01.01.01.b

CRP.08.01.02.b

CRP.08.03.02.c

CS.02.01.02.c

CRP.08.02.01.c

PS.01.03.06.c

CRP.02.02.01.c

CRP.08.02.02.c



5. You are ordering potting soil for your greenhouse's spring crops. Your plans are to purchase potting soil by the bag. You need enough potting soil to fill the following number of containers:

75 10" baskets without saucers

35 8" baskets with saucers

325 10" baskets with saucers

250 4" square pots

725 6" azalea pots

320 8" azalea pots

220 1203 inserts

115 1204 inserts

Use the following table to arrive at the number of bags of potting soil must be ordered.

Container	Pots per 2.8 cu bag
6" Standard	42
8" Standard	20
6" Azalea	53
8" Azalea	22
4" Square pot	130
4" Geranium pot	170
8" Bulb Pan	29
10" Decorative Pot	12
10" Bowl	21
8" Basket/no saucer	28
10" Basket/no saucer	15
8" Basket/saucer	26
10" Basket/saucer	14
1203 Inserts	20
1204 Inserts	21

Answers:

A. 89 Bags

B. 82 Bags

C. 77 Bags

D. 69 Bags

Answer: $75/15=5$

$35/26=1.35$

$325/14=23.21$

$250/130=1.92$

$725/53=13.68$

$320/22=14.55$

$220/20=11$

$115/21=5.48$ Total=76.19

Standards:

ABS.01.01.01.b

CS.01.01.01.b

CS.02.01.02.c

CRP.02.02.01.c

CRP.03.01.02.b

CRP.08.01.02.b

CRP.08.02.01.c

CRP.08.02.02.c

CRP.08.03.01.c

CRP.08.03.02.c

6. You work for a greenhouse operation. There are five 28 feet X 72 feet greenhouses in you operation. You need to mix some Mavrik pesticide to spray in the greenhouses for control of thrips. You read the label directions and it tells you that this pesticide is labeled for indoor use in greenhouses to control this particular pest. The directions also tell you to mix 3 teaspoons of Mavrik per five gallons of water. You have a 100 gallon sprayer that you will use to apply the pesticide. You also read that 100 gallons of spray will usually cover 20,000 square feet. Of the following answers which one is correct for how many gallons of spray to mix for the five greenhouses and how much pesticide do you mix in the tank to spray:

- A. 50 gallons of spray mix and 5 ounces of Mavrik
- B. 100 gallons of spray mix and 5 ounces of Mavrik
- C. 100 gallons of spray mix and 10 ounces of Mavrik
- D. 50 gallons of spray mix and 10 ounces of Mavrik

Answer: 28×72 greenhouses = 2,016 sq ft X 5 greenhouses = 10,080 sq ft

which will take 50 gallons of spray mix.

3 teaspoons per 5 gallons = 30 teaspoons per 50 gallons

30 teaspoons = 10 tablespoons = 5 ounces of Mavrik per 50 gallons

Correct answer is A

Standards:

ABS.01.01.01.b

CRP.08.01.02.b

CS.01.01.01.b

CRP.08.02.01.c

CS.02.01.02.c

CRP.08.02.02.c

CRP.02.02.01.c

CRP.08.03.01.c

CRP.03.01.02.b

CRP.08.03.02.c

7. You are employed by a retail flower shop. You have completed a vase arrangement for delivery to a customer. You are finalizing the invoice to give to the customer when the flower arrangement is delivered later in the day. Your flower shop prepares invoices for the cost of the flowers at 2.5 times markup of the wholesale cost of the flowers. The vase cost is \$7.00. You determine that the wholesale cost of the flowers and foliage used in the arrangement is \$49.00. There is a \$20 delivery charge and sales tax you have to charge is 6.5%. What is the total amount of the invoice that will be given to the customer when the flower arrangement is delivered?

- A. \$79.64
- B. \$149.50
- C. \$137.92
- D. \$157.92

Answer: $\$49 \times 2.5 \text{ times markup} = \122.50

$\$122.50 + \$7.00 \text{ (vase)} = \$129.50$

$\$129.50 \times 6.5\% \text{ sales tax} = \8.42

$\$129.50 + \$8.42 + \$20.00 = \157.92

Correct Answer is D

Standards:

ABS.01.01.01.b

CRP.03.01.02.b

CRP.08.03.01.c

CS.01.01.01.b

CRP.08.01.02.b

CRP.08.03.02.c

CS.02.01.02.c

CRP.08.02.01.c

CS.01.01.02.b

CRP.02.02.01.c

CRP.08.02.02.c

CRP.03.02.02.c

8. In a greenhouse there is a drip line irrigation tube running the length of the entire growing bench. There are six of these growing benches in the greenhouse. The benches are 66 feet long. On each of these irrigation lines there are inline drip emitters installed every 6 inches. Each emitter is a $\frac{1}{2}$ GPH rate emitter.

If you turn the water valve on that controls the water flow to all six greenhouse bench drip lines, how much water will be used for the plants in 30 minutes?

- A. 198 gallons
- B. 396 gallons
- C. 33 gallons
- D. 132 gallons

Answer: 66' line=792 inches divided by emitter every 6'=132 emitters per line

132 emitters X 6 lines=792 emitters in the greenhouse

792 emitters X $\frac{1}{4}$ gallon per emitter per 30 minutes=198 gallons of water

Correct answer is A

Standards:

ABS.01.01.01.b

CRP.08.01.02.b

CS.01.01.01.b

CRP.08.02.01.c

CS.02.01.02.c

CRP.08.02.02.c

CRP.02.02.01.c

CRP.08.03.01.c

CRP.03.01.02.b

CRP.08.03.02.c

9. Your school greenhouse has 625 pots of poinsettias in 8" azalea pots. You are planning on wrapping the poinsettias with foil and putting a bow on the pot when they are ready for sale to the public. You need to buy the ribbon for the bows and dressing the pots. You calculate that it will take 9 feet of ribbon to make the bow and dress the pot. You are going to use #40 ribbon and it is available in 100 yard rolls. How many rolls of ribbon do you need to purchase to get your poinsettias ready for the customers?

- A. 17 rolls
- B. 12 rolls
- C. 23 rolls
- D. 19 rolls

Answer: $625 \text{ pots} \times 9 \text{ feet/pot} = 5,625 \text{ feet}$ divided by 3 = 1,875 yards of ribbon
1,875 yards divided by 100 yards to a roll = 18.75 rolls or 19 rolls.

Correct answer is D

Standards:

ABS.01.01.01.b

CRP.08.01.02.b

CS.01.01.01.b

CRP.08.02.01.c

CS.02.01.02.c

CRP.08.02.02.c

CRP.02.02.01.c

CRP.08.03.01.c

CRP.03.01.02.b

CRP.08.03.02.c

10. In a 20 pound bag of soluble fertilizer with a 24-8-16 analysis which is the correct answer of how much actual pounds of nutrients are contained in the bag?

- A. 3.2 pounds of N, 1.6 pounds of P, 4.8 pounds of K
- B. 4.8 pounds of N, 1.6 pounds of P, 3.2 pounds of K
- C. 1.6 pounds of N, 4.8 pounds of P, 3.2 pounds of K
- D. 24 pounds of N, 8 pounds of P, 16 pounds of K

Answer: Nitrogen: $20 \times .24 = 4.8$

Phosphorus: $20 \times .08 = 1.6$

Potassium: $20 \times .16 = 3.2$

The correct answer is B

Standards:

ABS.01.01.01.b

CS.01.01.01.b

CS.02.01.02.c

CRP.02.02.01.c

CRP.03.01.02.b

CRP.08.01.02.b

CRP.08.02.01.c

CRP.08.02.02.c

CRP.08.03.01.c

CRP.08.03.02.c