

**2019 Minnesota FFA Floriculture CDE
Problem Solving Exam**

Directions: Select the best answer for each question and mark your selection on the scantron provided. Mark answers in the Exam 2 section located in the lower right hand side on the front of your scantron.

Problem Solving #1 Reading Label

(Use the front side of the reference sheet for the Cycocel Growth Regulator Information Page 4)

1. As a greenhouse employee you are mixing cycocel to drench potted plants at a very high rate. You are mixing in a 55 gallon container. How many ounces of cycocel do you mix in the 55 gallons?

- A. 84.85 ounces
- B. 89.65 ounces
- C. 91.35 ounces
- D. 99.45 ounces

Problem Solving #2 Retail Pricing

2. Makayla works for a florist and is completing an order for a birthday arrangement. She used the materials listed below. What will the customer be charged assuming a 60% markup, 6.3% tax, and a \$12 delivery charge? There is no tax on the delivery charge.

Qty. Used	Item Description	Cost
1	Glass Vase	\$3.95 each
2.5 yards	Ribbon bow	\$0.60 per yard
1 bundle	Leatherleaf Fern	\$3.50 per bundle
5 stems	Oriental Lily	\$2.25 per stem
6 stems	Rose	\$1.25 per stem
3 stems	Mums	\$.35 per stem
1 stem	Baby's Breath	\$.25 per stem

- A. \$51.22
- B. \$57.72
- C. \$61.32
- D. \$65.72

Problem Solving #3 Fertilizer calculation

3. You want to mix up a 20-10-20 fertilizer concentrate in a 25-gallon tank that will be injected into the irrigation line through a Dosatron proportioner at a rate of 1:100. You will apply 150 ppm N to the crop. How much fertilizer do you weigh out for this concentrate tank, in pounds? 1 lb. has 16 oz.

- A. 0.63 lbs. 20-10-20 fertilizer in 25-gallons Use rule of 75
- B. 15.6 lbs. 20-10-20 fertilizer in 25-gallons ppm N = oz. fertilizer (A)
- C. 62.5 lbs. 20-10-20 fertilizer in 25-gallons 75 X N% in fertilizer 100 gal/single strength
- D. 250 lbs. 20-10-20 fertilizer in 25-gallons

(A)(from above) X dilution rate X 25 gal/100 gal = oz. 20-10-20 fertilizer needed Convert to lbs.

Problem Solving #4 Calculating Media

4. How many 3.8 Ft³ bags of compressed potting soil will it take to fill the following containers? Round total to the nearest whole bag.

350 - 12" Hanging Baskets 250 - 6" Standard Pots 550 - 4" Standard Pots

	Number of Pots Filled		
	1 CU FT	2.8 CU FT LOOSE	3.8 CU FT COMPRESSED
Standard 3"	123	346	864
Standard 4"	62	173	432
Standard 6"	15	43	108
Hanging Basket 10"	5	15	37
Hanging Basket 12"	3	9	22

- A. 12
B. 16
C. 20
D. 24

Problem Solving #5 Production

Haley wants to operate a plant rental business for special events as her SAE. To begin her business she has determined that she will have the following expenses:

- 10 Peace Lilies\$15 each
15 Ficus\$12 each
10 Ferns\$12 each
12 Nephytis\$9 each
3 cases (12 cans/case) Leaf Shine\$39 per case

5. If Haley averages 25 plants per month rental with all plants rented at the same price, how much would that rental price need to be per plant per month to cover all expenses for the year in addition to making \$50 profit per month?

- A. \$4.25
B. \$4.50
C. \$4.75
D. \$5.00

Problem Solving #6 Treatments

6. You have a 100 foot long greenhouse with an end-wall area of 275 square feet. You have decided to fumigate utilizing Methiocarb PT 1700 aerosol canisters. If each canister will treat a maximum of 2,500 cubic feet, how many canisters are required for a single treatment?

- A. 7 canisters
B. 9 canisters
C. 11 canisters
D. 13 canisters

Problem Solving #7 Disorders

7. This pest causes speckling damage on the leaves of the plant. It also produces webbing between the leaves of plant. Symptoms of injury by this pest include flecking, discoloration (bronzing) and scorching of leaves. Injury can lead to leaf loss and even plant death. Which pest would this be?

- A. Aphids
- B. Slugs
- C. Fungus gnats
- D. Spider mites

Problem Solving #8 Disorders

8. This pest is white in color and feeds by sucking plant juices which weakens the plant and causes the plant's leaves to turn yellow, wilt and drop. The insects also produce honeydew, a sticky substance that increases sooty mold growth on plants and attracts feeding ants. The webbing around some is the female laying eggs or an already formed egg mass. Which pest would this be?

- A. Aphids
- B. Scale
- C. Mealybug
- D. Whitefly

Problem Solving #9 Plant Selection

9. You are making a flower arrangement. You want to add filler to the arrangement that is lacking texture. You feel that a filler plant that provides unique foliage would improve the arrangement's design.

Which filler plant would be the best choice for this scenario?

- A. Baby's breath
- B. Silver dollar eucalyptus
- C. Snapdragon
- D. Statice

Problem Solving #10 Flower Design

Use the pictures of the flower designs that are on the back side of the reference sheet you used to answer question #1 to answer this question.

10. Using your knowledge of flower design. Choose the statement that is most correct when looking at the two flower design pictures.

- A. Design A has more balance and a more clearly defined focal point than Design B
- B. Design A has more balance and a less clearly defined focal point than Design B
- C. Design A has less balance and a more clearly defined focal point than Design B
- D. Design A has less balance and a less clearly defined focal point than Design B

DRENCH APPLICATIONS:

CYCOCEL can be applied as a drench to the growing medium. It is taken up by the plant through the roots and transported to the stem tips where it is active. Drench applications do not cause leaf yellowing and provide longer and more uniform control of stem elongation. In a drench treatment, it is the total amount of **CYCOCEL** active ingredient applied to each container that determines the reduction in stem elongation. Therefore, users must insure that both the amount of solution applied to each container and the concentration of **CYCOCEL** in ppm are correct.

Drenches should be applied so that the potting medium is uniformly saturated or non uniform heights will result when there are multiple plants in a container. Apply the drench to a moist medium and not when crops need irrigation. A good procedure is to irrigate crops one day and apply the **CYCOCEL** plant growth regulator drench the next day.

CYCOCEL application rates for drench treatments range from 2,000 to 3,000 ppm of **CYCOCEL**. Users should do trials to determine the optimum rates under their particular conditions. The following table gives suggested volumes of dilute **CYCOCEL** solution to be applied to different size containers. Volumes listed in **Table 2** are considered adequate for container production media.

MIXING INSTRUCTIONS:

TABLE 1. PREPARATION OF CYCOCEL SOLUTIONS FOR SPRAY AND DRENCH APPLICATIONS

Concentration (ppm)*	CYCOCEL (fl oz/gal)	CYCOCEL (mL/gal)	CYCOCEL (mL/L)
200	0.22	6.4	1.7
460	0.50	14.7	3.9
800	0.87	25.7	6.8
1,000	1.08	32.1	8.4
1,250	1.36	40.1	10.6
1,500	1.63	48.1	12.7
2,000	2.17	64.2	16.9
3,000	3.25	96.3	25.4

*ppm calculations based on total **CYCOCEL**.

TABLE 2. CYCOCEL PLANT GROWTH REGULANT - DILUTE SOLUTION PER CONTAINER SIZE FOR DRENCH APPLICATIONS

Pot diameter (inches)	Fluid ounces of dilute solution per pot	Number of pots treated with 1 gal of solution
2 1/4 to 3	2	64.0
4	3	42.5
5	4	32.0
6	6	21.5
8	8	16.0

CYCOCEL/B-NINE* TANK MIX SPRAY APPLICATION:

A tank mix combination of **B-Nine** plus **CYCOCEL** has been shown to provide optimum retardation with minimizing marginal chlorosis. The tank mix can be targeted to those plants less responsive to **CYCOCEL** alone. Users should recognize that this tank mix of **CYCOCEL** and **B-Nine** is more active than using either chemical alone.

- Users of the tank mix should follow the guidelines given on the labels of both products. Users must test the use of the tank mix on a small scale before general use.
- The tank mix is to be applied only as a foliar spray.
- Optimum rates of each product will vary depending on the crop, and the individual production situation as described for using **CYCOCEL** alone.
- The application rate for **CYCOCEL** and **B-Nine** can be altered to adjust the degree of height reduction desired resulting from a spray treatment of the tank mix.
- In general, the highest **CYCOCEL** rate that does not cause excessive leaf yellowing can be used, and then the **B-Nine** rate can be raised or lowered to adjust the activity of the tank mix application.

TABLE 3. The following table provides general guidelines for recommended rates based on the desired level of activity of the tank mix.

ACTIVITY LEVEL	CYCOCEL (PPM)	B-NINE (PPM)
Very High	1,500	5,000
High	1,200	2,500
Medium	1,000	1,200
Low	600	800

RESTRICTIONS AND LIMITATIONS

GREENHOUSE USE:

- **DO NOT** apply more than 6 applications of **CYCOCEL** plant growth regulant per production crop cycle (including any **B-Nine** tank mix combinations).
- **DO NOT** exceed 3,000 ppm in a single spray and 3,000 ppm in a single drench application.
- Restricted-Entry Interval (REI): **12 hours.**
- **DO NOT** apply to plants that are experiencing stress or other production limitations or undesirable plant injury may occur.
- **DO NOT** apply through any type of irrigation equipment.
- **DO NOT** apply to plants grown for feed or food purposes.

SHADEHOUSE OR CONTAINER NURSERY USE:

- **DO NOT** apply more than 3 applications of **CYCOCEL** plant growth regulant per production crop cycle (including any **B-Nine** tank mix combinations).
- Apply only as a foliar spray. **DO NOT** apply as a drench application.
- Restricted-Entry Interval (REI): **12 hours.**
- Mechanical (tractor) groundboom, multi-nozzle sprayer applications are not allowed.
- Hand-ward applications to container nursery pots on gravel or landscape barrier fabric production beds cannot exceed one (1) acre of plants per day, per mixer/loader/applicator.
- **DO NOT** apply to plants that are experiencing stress or other production limitations or undesirable plant injury may occur.
- **DO NOT** apply through any type of irrigation equipment.
- **DO NOT** apply to plants grown for feed or food purposes.

Reference sheet



Question 10

Design A

Design B

2019 MN FFA Floriculture Problem Solving Key

1. B. 89.65 oz.

In the Table 3: Very High = 1500 parts per million

In Table 1: 1500 ppm = 1.63 fl. Oz./gal

1.63X 55 gallons= 89.65 ounces

2. C. \$61.32

Total cost of materials is \$29.00.

\$29.00 x 1.60 (markup) is \$46.40

\$46.40 x .063 (tax) = \$2.92

\$46.40 + \$2.92 + \$12 (delivery fee) = \$61.32

3. B. 15.6 lbs.

Use rule of 75

$$\frac{150 \text{ ppm N}}{75 \times 0.2 \text{ (N\% in fertilizer)}} = \frac{\text{oz. fertilizer (A)}}{10 \text{ oz.}} \times 100 \text{ gal/single strength}$$

$$10 \text{ oz.} \times 100 \times 25 / 100 = 250 \text{ oz.} \quad 250 / 16 \text{ oz./lb.} = 15.6 \text{ lbs.}$$

(A) (from above) X dilution rate X 25 gal/100 gal = oz. 20-10-20 fertilizer needed Convert to lbs.

4. C. 20 bales

350 -12" Hanging Baskets 350/22=15.9

300 - 6" Standard Pots 300/108=2.8

600 - 4" Standard Pots 600/432=1.4

15.9+2.8+1.4= 20.1 bales which rounds to 20 bales

5. A. \$4.25

10 Peace Lilies \$15 each \$150

15 Ficus \$12 each \$180

10 Ferns \$12 each \$120

12 Nephytis \$9 each \$108

3 cases (12 cans/case) Leaf Shine \$39 per case \$117

Total Expenses \$675

\$675/12 months=\$56.25 per month in expenses

\$56.25 + \$50 (desired profit) = \$106.25

\$106.25/25 rented plants = \$4.25

6. B. 11 canisters
- Find the volume of the greenhouse. $100 \text{ feet long} \times 275 \text{ square feet} = 27,500 \text{ cubic feet}$
 - With each canister covering up to $2,500 \text{ cubic feet}$, determine the number of canisters needed for this greenhouse. $27,500 \text{ cubic feet divided by } 2,500 \text{ cubic feet/canister} = 11 \text{ canisters are needed.}$
7. D. Spider mites
8. C. Mealybug
9. B. Silver dollar eucalyptus
10. A. Design a has more balance and a more clearly defined focal point

Floriculture: Making and Packing a Corsage Rubric

Contestant Team Number _____ Contestant Chapter _____

Individual Number _____ Individual Name _____

	Excellent	Good	Needs Improvement	Member score
Wiring, taping and/or gluing	17-25 points	9-16 points	0-8 points	
Use of Ribbon	14-20 points	5-9 points	0-4 points	
Design	21-30 points	11-20 points	0-10	
Wear-ability	10-15 points	5-9 points	0-4 points	
Packing	7-10 points	4-6 points	0-3 points	

Areas for improvement

- _____ glue showing _____ too large
- _____ bare wire exposed _____ too small
- _____ loose taping _____ flowers stick out too far
- _____ needs focal point _____ Distracting color harmony
- _____ open areas (holes) _____ Unfinished ribbon edges
- _____ Color needs to be more evenly distributed _____ needs more depth