

# Math Quiz

by David Wehner

Below is a math quiz that was recently given to students in turfgrass management at the University of Illinois that you may want to try. It was a closed book quiz. The GCSAA has indicated that the math section of the certification exam is usually the one that causes the most problems for superintendents. This quiz has problems similar to those covered in the GCSAA booklet "The Mathematics of Turfgrass Management." The pesticide problems are similar to those that are covered on the State of Illinois applicator and operator certification exams. Next month's issue of **The Bull Sheet** will show how to work the problems and provide the answers.

1. How much 16-3-8 should be purchased to fertilize 2.5 acres of greens at a rate of 0.75 pounds of N per 1000 square feet. (5 points)

2. A superintendent with 20 acres of fairways is going to use a N fertilization program at a rate of 3 pounds of N per 1000 for the season. Half of the nitrogen will come from a slow release (SCU, 22-5-10) N source while the other half will come from urea. How much elemental K will be applied per 1000 square feet? (7 points)

3. The herbicide 2,4-D is frequently used at a rate of 1 pound active ingredient per acre to control dandelion. How much of a 4EC formulation of 2,4-D should a superintendent dump in to a 200 gallon spray tank if the sprayer is delivering 35 gallons of spray per acre? (6 points)

4. Your golf course, with 20 acres of fairways and 5 acres of greens and tees, has been placed on a restricted watering schedule by the local municipality. The allotment for June 1 to June 28 for the course is 275,000 cubic feet of water. You plan to apply 1 inch of water per week to the greens and tees. How much water, expressed in inches, can you apply to the fairways? (1 cubic ft=7.48 gallons, 1 acre inch=27,154 gallons) (10 points)

5. The Turf Products catalog lists several formulations of Dursban, an insecticide. The 4E formulation sells for \$540.75 for a 5 gallon container. The 50WP formulation sells for \$192.50 per case (12 pounds). Which is the more cost effective and what is the difference in price? (8 points)

6. Your sprayer, the one with the 200 gallon tank that delivers 35 gallons per acre, has nozzles with 20 inch spacings and is operated at 3 mph. The pressure gauge broke, and before you could replace it, you found signs of pythium disease on the course. You decide to use the sprayer without the pressure gauge. You collect 8 ounces of water from one of the nozzles in 10 seconds. Assuming that the sprayer will be operated at the same speed as before, what is the rate of spray delivery expressed in gallons per acre? Do you need to adjust the pressure down or up to get back to the 35 gallons per acre rate? (6 points)

$$\text{GPA} = \frac{5940 \times \text{GPM}}{\text{mph} \times \text{W}}$$

7. You decide to spray Embark around the base of the trees on the golf course using a hand held pump sprayer that holds 2 gallons of water. The label states "Apply 4 fluid ounces of Embark per 1000 square feet with a pump type sprayer..." Your mechanic has equipped the sprayer so that the spray tip is a fixed distance from the ground and this distance results in a 10" wide spray band. Your spray technician, walking at a normal pace, tests out the sprayer and covers a 100 foot distance using 16 ounces of spray. How many ounces of Embark should you put in the sprayer for each tank load of solution? (8 points)



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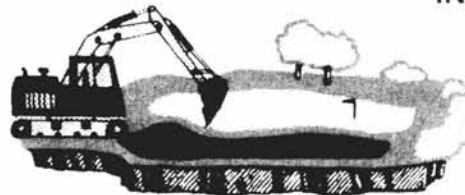
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