

OH 120 Fertilizer Lab

Fertilizers - Rates, Areas and Amounts

Objectives:

1. Students will be able to calculate square footage of turf and shrub bed areas for fertilizer applications or determine diameter at breast height of trees for fertilizer applications.
2. Students will be able to calculate the amount of fertilizer to apply using a variety of common fertilizers
3. Students will be able to calibrate a fertilizer spreader to determine proper setting for application

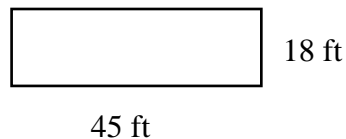
1. Calculating areas

Area Formulas:

Square or Rectangles: $\text{Area} = L \times W$

Where: Area is in square feet
 L = length of one side in feet
 W = length of perpendicular side in feet

Example :

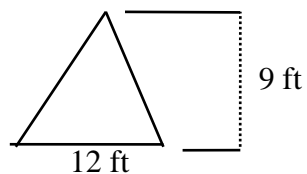


$$\begin{aligned}\text{Area} &= 45 \times 18 \\ \text{Area} &= 810 \text{ sq. ft.}\end{aligned}$$

Triangles $\text{Area} = \frac{B \times H}{2}$

Where: Area is in square feet
 B = length of base in feet
 H = height of triangle in feet

Example :



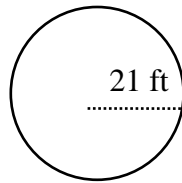
$$\text{Area} = \frac{12 \times 9}{2}$$

$$\text{Area} = 54 \text{ sq. ft.}$$

Circles Area = πr^2

Where: Area is in square feet
 $\pi = 3.1416$
r = radius of the circle in feet

Example :



$$\text{Area} = 3.1416 \times 21 \times 21$$

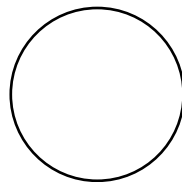
$$\text{Area} = 1385 \text{ sq. ft.}$$

Calculating Tree Trunk Diameter (Diameter at Breast Height or DBH)

$$d = \frac{c}{\pi}$$

Where: d = diameter in inches
 $\pi = 3.1416$
c = circumference of trunk in inches

Example :



45 inch circumference

$$d = 3.1416 \times 45$$

$$d = 141.4 \text{ inches}$$

Example: The applicator intends to cover the turf area 2 times (once in each direction) and wants to apply 1.25 lb of Actual Nitrogen per 1000 sq. ft. using Ammonium Sulfate. In the test he has applied 4 lbs of Ammonium Sulfate 21-0-0 over the test area. In the test area the spreader being calibrated was pushed for 50 feet and the pattern of the spreader was 12 feet wide. How much fertilizer was actually applied and how much needed to be applied at the recommended rate?

$$r = \frac{P \times W \times Ar}{At}$$

$$r = \frac{2 \times 2 \times 1000}{(12 \times 50)}$$

$$r = \frac{4000}{600}$$

$$r = 6.66 \text{ lbs per } 1000 \text{ sq. ft.}$$

Desired Rate:

$$A = \frac{R}{N}$$

A = Amount of Fertilizer

R = recommended Rate of Application

N = Percent of Nutrient (decimal)

$$A = \frac{1.25}{.21}$$

$$A = 5.95 \text{ lbs per } 1000 \text{ sq ft.}$$

From this calculation you can see the spreader is applying more than the desired rate. The applicator must reset the spreader to a smaller opening and test the application again.