Conversions

Units

1 acre = 43,560 square feet
1 mile = 5,280 feet
1 gallon = 4 quarts = 8 pints = 16 cups = 128 fluid ounces
1 quart = 2 pints = 4 cups = 32 fluid ounces
1 pint = 2 cups = 16 fluid ounces
1 tablespoon = 3 teaspoons = 0.5 fluid ounces
1 pound = 16 ounces
1 gallon = 231 cubic inches

Weights

1 ounce = 28.35 grams
16 ounces = 1 pound = 453.59 grams
1 gallon of water = 8.34 pounds = 3.785 liters = 3.78 kilograms

Liquid Measures

1 fluid ow1ce = 2 tablespoons = 29.573 milliliters
16 fluid ounces = 1 pint = 0.4 73 liters
2 pints = 1 quart = 0.946 liters
8 pints = 4 quarts = 1 gallon = 3.785 liters

Lengths

1 foot = 30.48 centimeters
3 feet = 1 yard = 0.9144 meters
16 1/2 feet = 1 rod = 5.029 meters
5280 feet = 320 rods = 1 mile = 1.6 kilometers

Areas

1 square foot = 929.03 square centimeters
9 square feet = 1 square yard = 0.836 square meters
43560 square feet = 160 square rods = 1 acre = 0.405 hectares

Speeds

1.466 feet per second = 88 feet per minute = 1 miles per hour (mph) = 1.6 kilometers per hour (kph)

Volumes

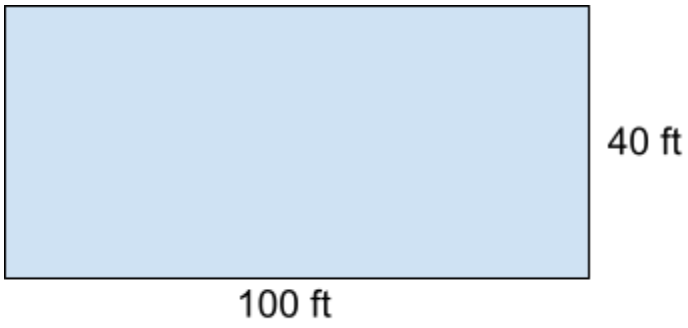
27 cubic feet = 1 cubic yard == 0.765 cubic meters
1 cubic foot = 7.5 gallons = 28.317 cubic decimeters

Area and Volume Calculations

Area of Squares or Rectangles

$A = L(W)$

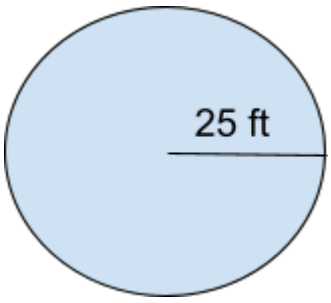
The area of a rectangle is found by multiplying the length (L) times the width (W).
Area = (Length) x (Width)
Example: (100 feet) x (40 feet) = 4000 square feet



Area of Circles

$A = \pi r^2$

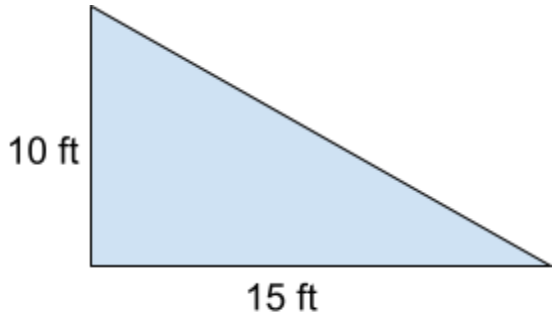
The area of a circle is Pi (3.14) times the radius squared, or the radius (radius is equal to one-half of the diameter), times the radius, times 3.14.
Area = (radius x radius) x 3.14
Example: (25 x 25) x 3.14 = 1962.5 square feet



Area of Triangles

$A = \frac{1}{2}B(H)$

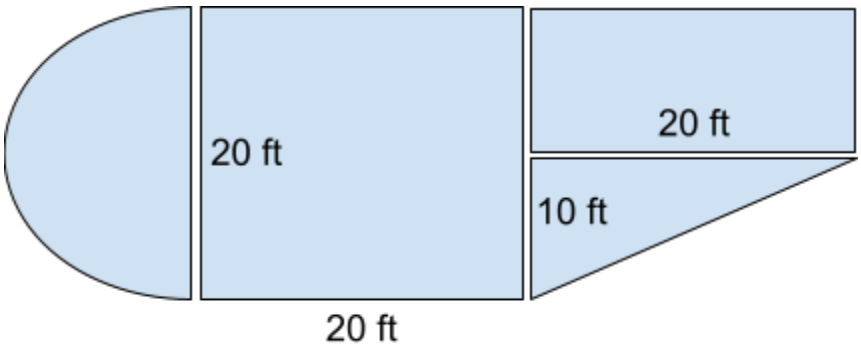
The area of a triangle is one-half of the base of the triangle times the height of the triangle.
Area = ½ Base x Height
Example: ½ of 15 feet x 10 feet = 75 square feet



Area of Irregular Shapes

Irregularly shaped areas can often be reduced to a combination of rectangles, circles, and triangles. Calculate the area of each shape and add the values together to obtain the total area.

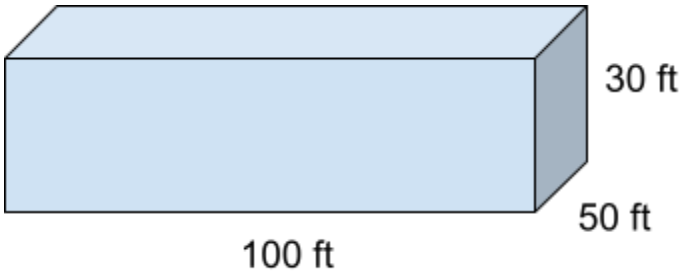
Example: Calculate the area of the rectangle, the triangle, the square, and the half circle.



Volume of Cube and Box Shapes

$V = (L)(W)(H)$

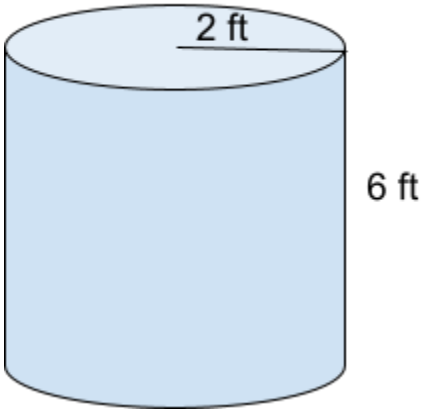
The volume of a cube or box is found by multiplying the Length, times the Width, times the Height.
Volume = (Length) x (Width) x (Height)
Example: (100 feet) x (50 feet) x (30 feet) = 150,000 cubic feet



Volume of Cylindrical Shapes

$V = \pi r^2 (L)$

The volume of a cylinder is found by calculating the area of the circular end (see formula for finding the area of a circle) and multiplying this area by the length, or height, of the cylinder.
Volume = 3.14 x (radius x radius) x Length or Height
Example: 3.14 x (2 feet x 2 feet) x 6 feet = 75.36 cubic feet



Pesticide Calibration Formulas

Pesticide Terminology

The ***active ingredients*** of a pesticide are the chemicals in a formulation that control the target pests. The ***formulation*** is the pesticide product as sold, usually a mixture of concentrated active ingredients and an inert material. Restricted use pesticides are purchased in formulations requiring ***dilution*** prior to application. Formulations are diluted with inert substances such as water. The percentage of active ingredients in a pesticide formulation directly affects dilution and application rates. As an example, suppose you have two pesticides; Pesticide A = 50% active ingredients and Pesticide B = 100% active ingredients. Twice as much Pesticide A formulation is required to equal the formulation of Pesticide B.

How to Determine the Total Amount of Pesticide Formulation Required

$$(Recommended\ Dilution)(Final\ Liquid\ Amount)\ =\ Pesticide\ Amount$$

To calculate the total amount of pesticide formulation needed per spray tank or container, multiply the recommended dilution (ounces/pints/cups/teaspoons/tablespoons/etc.) of pesticide liquid and the total number of gallons to be mixed in the tank.
(Recommended Dilution Amount) x (Number of Gallons Mixed) = Required Amount of Pesticide Formulation example:
(3 ounces per gallon) x (75 gallons) = 225 ounces of pesticide

Calculate the Amount of Pesticide Formulation Applied Per Acre

$$(Quantity\ of\ Pesticide\ Formulation\ per\ Gallon)\ x\ (Gallons\ Used\ per\ Acre)\ =\ Total\ per\ Acre\ Used$$

The total amount of pesticide formulation applied per acre is calculated by multiplying the quantity of formulation (ounces/pounds/pints/cups/teaspoons/tablespoons/etc.) mixed per gallon times the number of gallons applied per acre.
(Quantity of Formulation Per Gallon) x (Gallons Sprayed Per Acre) = Formulation Applied Per Acre
Example: (1/2 pound per gallon) x (12 gallons per acre) = 6 pounds per acre

Calculate the Gallons of Pesticide Mixture Applied Per Acre

$$Gallons\ Applied/Acres\ Applied\ =\ Gallons\ Applied\ per\ Acre$$

The total amount of pesticide mixture applied per acre is calculated by dividing the number of gallons applied by the number of acres applied.
Example: 200 gallons applied/10 acres applied = 20 gallons of pesticide formulation applied per acre

Calculate Pesticide Application Rates in Gallons per Minute

Formula 1. $GPM = \frac{(GPA)(MPH)(Nozzle\ Spacing)}{5940}$

Formula 2. $GPM = \frac{(GPTSF)(MPH)(Spray\ Width)}{136}$

Gallons per Minute (GPM)
Gallons per Acre (GPA)
Gallons per Thousand Square Feet (GPTSF)
Miles per Hour (MPH)

Pesticide spray applications are commonly calibrated using the amount of liquid applied to an area of land. The calculations are based on the amount of liquid, or volume of liquid, delivered during a given period of time and the ground area applied during an identical period of time. Volume can be measured by collecting spray nozzle output during a short period of time, such as 15, 20, or 30 seconds. The area covered is based on the effective spray width of the application and the travel speed. Application formulas are set up to provide a value that corresponds to the sizing information of nozzle manufacturers.

Calculate Travel Speed for Pesticide Equipment in Miles Per Hour

$$MPH = \frac{Distance\ in\ Feet(60)}{Time\ in\ Seconds(88)}$$

Miles per Hour (MPH)

Example: $\frac{100ft\ x\ 60}{50\ sec\ x\ 88} = 1.36mph$