BACKPACK CALIBRATION - PER ACREAGE
NO MATH VERSION

Step 1. Measure and mark a calibration plot that is exactly 18.5 feet wide X 18.5 feet long
Step 2. Spray the calibration plot uniformly with water, noting the number of seconds required, do this three times and average. Spray at your normal or usual pace.

Time Required = _____Seconds

Step 3. Spray into a bucket for the same number of seconds.
Step 4. Measure the number of ounces of water in the bucket.

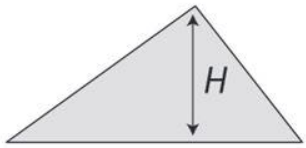
Volume Sprayed = _____ Ounces

Step 5. The number of ounces collected from the bucket is equal to the number of gallons per acre the sprayer is delivering.

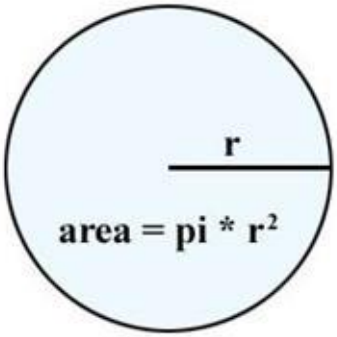
Gallons Per Acre (GPA) = __

Additional Equations:

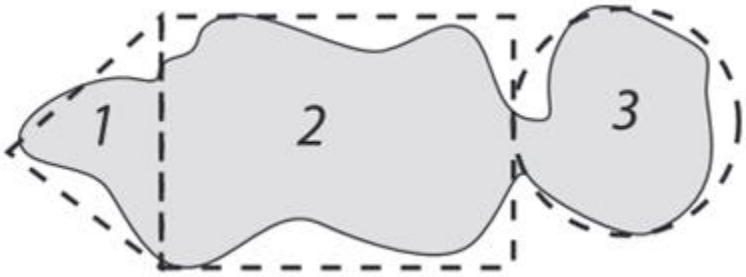
Area = Length × Width



$\text{Area} = \frac{\text{Base} \times \text{Height}}{2}$



a = area of the circle
r = radius of the circle
pi = Π, approximately 3.1415927
A = Acres or 43.560 sq ft
Acres = (Pi *radius²)/43560



An irregularly shaped area can be divided into one or more geometric figures. Calculate the area of each figure and then combine for the total area.

Converting the time (seconds) needed to walk 100 feet to miles per hour (mph).

$$\text{MPH} = \frac{\text{distance (ft)} \times 60}{\text{time (sec)} \times 88}$$

SEC/100 ft	MPH
68	1
45	1.5
34	2
27	2.5
23	3
19	3.5
17	4
15	4.5
14	5

Abbreviations:	Common Conversions
CC= cubic centimeter	5 CC = 1 TSP 4 QT = 1 GAL
ML=milliliter	30 CC = 1 FL OZ 128 FL OZ = 1 GAL
TSP=teaspoon,	1 CC = 1 ML 2 PTS = 1 QT
TBS= tablespoons	15 ML =1 TBSP 2 CUPS = 1 PT
FL OZ=fluid ounces.	236.5 ML = 1 CUP 8 FL OZ = 1 CUP
PT=pint	473 ML = 1 PT 3 TSP = 1 TBSP
QT=quart	946 ML = 1 QT 2 TBSP =1 FL OZ
GAL=gallon	3,785 ML = 1 GAL 6 TSP = 1 FL OZ

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CONVERSION CHARTS

Volume (GPA)	Recommended Herbicide Rate per Acre				
	1 pint	1 quart	2 quarts	3 quarts	4 quarts
20	5 tsp	10 tsp	3.25 fl oz	4.75 fl oz	6.33 fl oz
30	3 tsp	6 tsp	2 fl oz	3.25 fl oz	4.25 fl oz
40	2.33 tsp	4.75 tsp	1.66 fl oz	2.33 fl oz	3.25 fl oz
50	2 tsp	3.75 tsp	1.25 fl oz	2 fl oz	2.5 fl oz
60	1.66 tsp	3.25 tsp	6.33 tsp	1.66 fl oz	2 fl oz
70	1.33 tsp	2.75 tsp	5.5 tsp	1.33 fl oz	1.75 fl oz
80	1.25 tsp	2.33 tsp	4.75 tsp	7.25 tsp	9.5 tsp
90	1 tsp	2 tsp	2.25 tsp	6.33 tsp	8.5 tsp
100	1 tsp	2 tsp	3.75 tsp	5.75 tsp	7.66 tsp

Liquid measure	
1 cc	0.20 teaspoons
1 cc	0.03 ounces
1 teaspoon	0.17 ounces
1 tablespoon	0.5 ounces
3 teaspoons	1 tablespoon
1 pint	16 ounces or 32 tablespoons
2 tablespoons	1 ounce
1 cup	8 ounces
1 pint	16 ounces
1 quart	32 ounces
1 gallon	128 ounces
4 quarts	2 pints
Dry measure	
4 ounces	1/4 pound
16 ounces	1 pound
1 kilogram	2.2 pounds or 35.2 ounces

BOOM TYPE/TRACTOR MOUNT SPRAYERS

1. Find an area that best represents the average topography for the area to be sprayed. Measure it and mark off the calibration distance that coincides with your nozzle spacing or your band width.
Calibration distance = _____ feet
2. Walk or drive across the area, maintaining an even speed. If using a tractor-mounted sprayer, notice what the engine RPM is, plus what gear, and write it down so that you use the same speed during calibration and application.
_____ RPMs _____ gear
3. Record the number of seconds it takes to travel the calibration distance and write it down.
_____ seconds
4. Fill your sprayer, engage the pump and adjust the pressure regulator to the boom pressure you want (between 15 and 50 psi for pesticides).
Collect all the water from one nozzle for the same number of seconds you have written above.
With a 20-inch nozzle spacing, if it took 35 seconds to travel 204 feet, collect the discharge of one nozzle for 35 seconds.
The number of fluid ounces collected equals the gallons per acre (GPA) of output of that nozzle. (20 ounces collected equals 20 GPA)
5. Repeat Step 4 two more times, collecting water from a different nozzle each time. The average number of ounces collected from each of the three nozzles is equal to the gallons of water applied per acre for that boom. Also remember to maintain the same pressure and travel speed when spraying.
6. Divide the capacity of the tank by the number of gallons of water applied per acre (GPA) to find out the area (in acres) you can cover with a tankful of spray.
200 gal./tank divided by 20 GPA = 10 acres covered/tank
7. To find out how much control product you need to add to the spray tank, multiply the application rate of the product per acre by the acres covered per tank. Then add that amount of pesticide to your sprayer tank.
2 qts per acre x 10 acres/tank = 20 qts., or 5 gal./tank

HANDGUN CALIBRATION

1. Application Rate The standard rate is measured in the amount of liquid applied per unit area, usually in gallons per 1,000 sq. ft. Several factors can affect this rate: equipment, spray delivery system, product, target, growing conditions and operational considerations. Your goal is to apply the proper rate consistently in a uniform practice.
2. Swath Width For lawns, this ranges from three to 10 feet. You can use a series of collection cups or a spray tray to measure the swath width you want. A standardized height, as well as movement with certain handheld spray delivery systems, will assure that a constant swath width is maintained. An effective swath is the total swath width minus the amount of swath overlap.
3. Walking Speed Once you've established the dimensions of your calibration course, here's how to find out the right walking speed for application. Just time your trainee while covering the course with the effective spray width. Or if you need to find out the speed in miles per hour, use the following formula:
4. Calibration and Flow Rate Use this basic formula:
(Calibration course x Flow = gal./1,000 sq. ft. flow rate coverage time)

Calibration course	Flow	Flow rate coverage time

$$\frac{30 \text{ sec.}}{1000 \text{ sq. ft.}} \times \frac{1 \text{ gal.}}{60 \text{ sec.}} = 1/2 \text{ gal. } /1000 \text{ sq. ft.}$$