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## Math Help for Gardeners

Gardeners love the creative aspect of gardening – designing new beds, coordinating bloom color, experimenting with new plant varieties – but some dread the math. For better or worse, gardening does involve some basic arithmetic. Getting comfortable with gardening math helps avoid common pitfalls such as too many plants, too much, or too little, mulch and over-fertilizing.

Here are some simple calculations for successfully designing new beds or adding soil amendments and mulch to existing beds:

- Square footage of a square or rectangle: multiply the LENGTH by WIDTH to determine the square footage or area.  
10 feet long x 15 feet wide = 150 square feet.
- Square footage of a triangle:
  - o The longest side of the triangle is the BASE
  - o Measure from the base to the opposite angle (tip of the triangle) to determine the HEIGHT
  - o Multiply the BASE by the HEIGHT then divide that number in half to determine the area  
(10 feet base x 15 feet height) / 2 = 75 square feet
- Square footage of a circle:
  - o Find the center point of the circle
  - o Measure from that point to the circle's edge to determine the RADIUS
  - o Multiply the radius by itself then multiply that number by 3.14 to determine the area of the circle  
If radius = 10' then (10 feet x 10 feet) x 3.14 = 314 square feet
- Square footage of an irregular shape:
  - o Break up the irregular shape into regular shapes (e.g., squares, rectangles, triangles and circles)
  - o Determine the area of each shape using formulas given above
  - o Add the areas of each shape to determine an approximate square footage

Other than square footage, it is also helpful to know how to determine cubic footage. Cubic footage is a measurement of three-dimensional volume. You'll need to determine cubic footage when purchasing materials such as topsoil, compost, or mulch.

Cubic footage of a level area:

- Know the desired thickness or depth of your material in feet (convert inches to feet if necessary e.g., 6" = .5')
- Measure the length and width of the space to be covered
- Multiply the square footage (length x width) by the desired DEPTH of the material to determine cubic footage  
10 feet x 15 feet x .5 feet = 75 cubic feet OR 150 sq. feet x .5 = 75 cubic feet

If you're purchasing material such as soil or rock by the ton, approximately 27 cubic feet equals one ton – but that varies depending on the type of material. For instance, for heavier material such as river rock, there will be fewer cubic feet per ton than for lighter material such as topsoil.

Do your math first - then get creative and plant away!

Information adapted from Garden Math 101 by Patrick N. Beam printed in Fine Gardening, February 2007 No. 113