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**Math for Gardeners**

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Regardless of how much you hated math in school, if you are a gardener you need to understand some basic mathematical calculations and formulas and be able to apply them in your garden.

Simply figuring the square footage of your lawn is a very important-and basic-measurement, especially when it comes time to apply fertilizer. So here is a basic review of some of the common “math problems” encountered in gardening.

A square garden is the easiest to measure-simply take the length of one side and square it (for those of you especially “number-challenged” that means multiplying the number by itself). For example, if your square measures 6 feet on one side then the total square footage would be 6 times 6 or 36 square feet.

A rectangle requires you to measure 2 sides (one short and one long) then multiply those numbers to arrive at the square footage. So a bed 8 feet long and 6 feet wide would have 48 square feet.

Triangles present a little more complicated measuring problem, but one simple concept is to think of a triangle as half of a square or rectangle. Measure 2 sides, multiply them and then halve that number to get an approximate square footage of the triangle.

Measuring a circular bed dredges up memories of high school geometry and the mystical formula for determining the area within a circle. Remember pi? Well, multiply pi times the square of the radius of your circle to get the square footage. To illustrate, if your bed has a radius (half the diameter which is the distance from one side to the other) of 10 feet then 10 squared is 100 times pi (3.14) resulting in an area of 314 square feet.

Very few lawns or gardens have perfect geometric shapes, so some fudging is allowed in these calculations. Large areas can be broken up into smaller shapes, then the total added together to get approximate square footage. An imaginary shape such as a rectangle can be drawn around an irregular bed and the square footage calculated. Then subtract from that number the portion (¼, ½, etc.) not in the bed. For example, if your bed is approximately 4 feet by 8 feet, the square footage would be 32, but you estimate ¼ of that rectangle is not bed but lawn, so you would subtract ¼ of the total (8 feet) for an approximate square footage of 24 feet.

Determining the perimeter or outer dimensions of a garden or bed can be important, especially if you are planning on edging with some type of fencing or hardscape. The perimeter of straight-sided shapes is simply the sum of all the sides. A circle, however, requires the use of our old pal pi to determine the circumference - pi times the diameter of the circle. So if you want to encircle your rose bed with bricks and the diameter of the bed is 15 feet, you’ll need about 47 linear feet (15 times 3.14) of brick to do the job.

Now to measuring volumes. If you’ve ever bought a bag of potting mix or mulch you know it is sold in cubic feet. If you really want to impress (and probably bore) your gardening friends you can measure the volume of any pot by using the formula of pi times the radius (½ diameter) then multiply that number by the height of the pot to arrive at the number of cubic feet of mix needed to fill that pot. Fortunately, past gardeners have filled enough pots to now provide some very helpful rough estimates. A 1 cubic foot bag of potting mix will fill 18 six-inch pots, 3 ten-inch pots and 1 fourteen-inch pot.

Mulch is also sold by the cubic foot (usually 3) because gardeners are again concerned not only with how many square feet it will cover but also to what depth (i.e. height). One simple guideline to remember is 1 cubic yard is 27 cubic feet (3 ft. long times 3 feet wide times 3 feet high) and will cover a 100 square foot garden to the depth of three inches. So you would need 9 of the 3 cubic foot bags to do the job.

Fortunately, many online horticulture websites now have calculators to help determine the amount of fertilizer, pesticide, or mulch appropriate for a given garden. There are also calculators which provide the number of plants to place in a particular area and the best spacing between plants. But you still have to be able to provide square footage and other mathematical information to get the correct answers. So get out your rulers and start measuring!

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