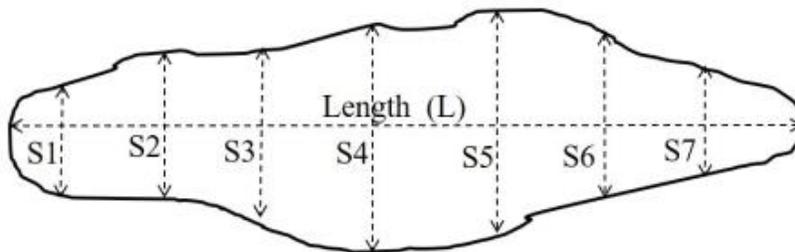


Area of Irregular Shapes

To find the area of an irregularly shaped site, establish a line down the middle of the site (lengthwise). Measure this line to determine the length. Then measure from side to side at several points along this line. The more side measurements you take, the more accurate your area measurement will be. The average of the side measurements is the width. To get the average of the side measurements (or width), add them up and divide that total by the number of side measurements. Then use the formula you used to calculate the area of a rectangle ($L \times W$).

$$\text{Width} = \frac{\text{Side measurement 1} + \text{Side measurement 2} + \text{Rest of side measurements}}{\text{Number of side measurements taken}}$$

$$\text{Area in acres} = \frac{\text{L in feet} \times \text{W in feet}}{43,560 \text{ sq ft per acre}}$$



Practice:

1. The area to be treated is 120 feet long. You measure the width in 6 places: 30 ft., 45 ft., 60 ft., 70 ft., 45 ft., and 35 ft. What is the area, in acres?
2. The area to be treated is 1,000 feet long. You measure the width in 5 places: 450 ft., 660 ft., 700 ft., 450 ft., and 305 ft. What is the area, in acres?
3. The area to be treated is 500 feet long. You measure the width in 6 places: 80 ft., 65 ft., 70 ft., 40 ft., 55 ft., and 35 ft. What is the area, in acres?

Answers:

1. *The area to be treated is 120 feet long. You measure the width in 6 places: 30 ft., 45 ft., 60 ft., 70 ft., 45 ft., and 35 ft. What is the area, in acres?*

First find the average width, then use that as the width when determining the area.

$$\frac{30 \text{ ft.} + 45 \text{ ft.} + 60 \text{ ft.} + 70 \text{ ft.} + 45 \text{ ft.} + 35 \text{ ft.}}{6} = \frac{285 \text{ ft.}}{6} = 47.5 \text{ ft.}$$

$$\frac{47.5 \text{ ft.} \times 120 \text{ ft.}}{43,560 \text{ sq ft per acre}} = \frac{5,700 \text{ sq. ft.}}{43,560 \text{ sq ft per acre}} = 0.13 \text{ acres}$$

2. *The area to be treated is 1,000 feet long. You measure the width in 5 places: 450 ft., 660 ft., 700 ft., 450 ft., and 305 ft. What is the area, in acres?*

First find the average width, then use that as the width when determining the area.

$$\frac{450 \text{ ft.} + 660 \text{ ft.} + 700 \text{ ft.} + 450 \text{ ft.} + 305 \text{ ft.}}{5} = \frac{2,565 \text{ ft.}}{5} = 513 \text{ ft.}$$

$$\frac{513 \text{ ft.} \times 1,000 \text{ ft.}}{43,560 \text{ sq ft per acre}} = \frac{513,000 \text{ sq. ft.}}{43,560 \text{ sq ft per acre}} = 11.8 \text{ acres}$$

3. *The area to be treated is 500 feet long. You measure the width in 6 places: 80 ft., 65 ft., 70 ft., 40 ft., 55 ft., and 35 ft. What is the area, in acres?*

First find the average width, then use that as the width when determining the area.

$$\frac{80 \text{ ft.} + 65 \text{ ft.} + 70 \text{ ft.} + 40 \text{ ft.} + 55 \text{ ft.} + 35 \text{ ft.}}{6} = \frac{345 \text{ ft.}}{6} = 57.5 \text{ ft.}$$

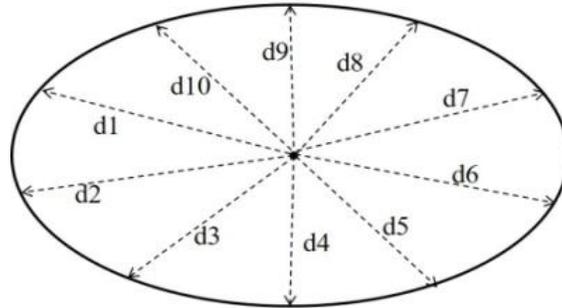
$$\frac{57.5 \text{ ft.} \times 500 \text{ ft.}}{43,560 \text{ sq ft per acre}} = \frac{28,750 \text{ sq. ft.}}{43,560 \text{ sq ft per acre}} = 0.66 \text{ acres}$$

Finding the area of an irregularly shaped circular field

To convert an irregularly shaped site into a circle, begin from a central point within the area. Measure from this point to the edge of the area here and in 9 more places. This will give you a total of 10 measurements. Average these distance measurements to find the average radius by adding the 10 measurements and dividing by 10. Then calculate the area using the formula for a circle.

$$\text{Radius} = \frac{\text{Distance 1} + \text{Distance 2} + 8 \text{ more distance measurements}}{10 \text{ distance measurements}}$$

$$\text{Area in acres} = \frac{3.14 \times \text{radius in feet} \times \text{radius in feet}}{43,560 \text{ sq ft per acre}}$$



You find the approximate center of the area to be treated, and measure from that point to the edge in 10 places, trying to cover the entire field. The measurements are:

30 ft., 45 ft., 60 ft., 70 ft., 45 ft., 40 ft., 35 ft., 40 ft., 60 ft., and 50 ft. What is the area, in acres?

First find the average width, then use that as the width when determining the area.

$$\frac{30 \text{ ft.} + 45 \text{ ft.} + 60 \text{ ft.} + 70 \text{ ft.} + 45 \text{ ft.} + 40 \text{ ft.} + 35 \text{ ft.} + 40 \text{ ft.} + 60 \text{ ft.} + 50 \text{ ft.}}{10} = \frac{475 \text{ ft.}}{10} = 47.5 \text{ ft.}$$

Then, use that number as the radius in the formula for finding the area of a circular field.

$$\frac{3.14 \times 47.5 \text{ ft.} \times 47.5 \text{ ft.}}{43,560 \text{ sq ft per acre}} = \frac{7,085 \text{ sq. ft.}}{43,560 \text{ sq ft per acre}} = 0.16 \text{ acres}$$