04-13-25 Area and Perimeter of Squares, Rectangles, and Triangles

C&L Math Tutoring

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Rectangles

The formula for the area of a rectangle is:

$$A = l \times w$$

and the formula for the perimeter of a rectangle is:

$$P = (l \times 2) + (w \times 2)$$

where l is the length and w is the width.

Example: Francis is planting a big field of roses for Ellen in a rectangular plot. One side of the field measures 5 meters and the other measures 9 meters. Find the area and perimeter of the plot.

Solution: To find the area, use the area formula.

$$\begin{aligned} A &= l \times w \\ A &= 9\,m \times 5\,m \\ A &= \boxed{45\,m^2} \end{aligned}$$

To find the perimeter:

$$\begin{aligned} P &= (l \times 2) + (w \times 2) \\ P &= (9\,m \times 2) + (5\,m \times 2) \\ P &= \boxed{28\,m} \end{aligned}$$

Squares

Squares are rectangles, so you can use the rectangle formulas as well. However, these two formulas are unique to squares.

Area formula of a square:

$$A = s^2$$

Perimeter formula of a square:

$$P = 4 \times s$$

where s is one side.

Example: Nate, while being chased by a cat, is running in a perfect square. The area of the square is 49 m^2. What is the side length of the square, in centimeters?

Solution: Use the area formula.

$$\begin{gathered} A = s^2 \\ 49 = s^2 \\ s = \sqrt{49\ m^2} \\ s = 7\ m \\ (7\ m)\left(\frac{100\ cm}{1\ m}\right) = \boxed{700\ cm} \end{gathered}$$

Triangles

The area formula for a triangle is as follows:

$$A = \frac{1}{2} \times b \times h$$

where b is the base and h is the height.

Example: Nate has arranged flowers for Jenny in a triangle with a base measuring 50 cm and a height measuring 20 cm. What is the area of the triangle filled by the flowers?

$$\begin{gathered} A = \frac{1}{2} \times b \times h \\ A = \frac{1}{2} \times 50\ cm \times 20\ cm \\ A = \frac{1}{2} \times 1000\ cm^2 \\ A = \boxed{500\ cm^2} \end{gathered}$$

Make sure to be careful of the units!