

Area of Figures

You can find the area of different figures by using the appropriate formula.

EXAMPLE A

The area A of a circle is given by $A = \pi r^2$ where r represents the radius of the circle. Find the area of a circle with radius of 6 in. Use 3.14 for π . Round to the nearest tenth.

Step 1: Let $r = 6$. Substitute $r = 6$ into the formula for the area of a circle.

$$\begin{aligned} A &= \pi r^2 \\ &= \pi(6)^2 \\ &= 36\pi \end{aligned}$$

Step 2: Multiply 36 and 3.14. Round to the nearest tenth.

$$\begin{aligned} A &= 36(3.14) \\ &= 113.04 \\ &\approx 113.0 \end{aligned}$$

Solution: The area of the circle is 113.0 square inches, or 113 in.²

EXAMPLE B

The area A of a rectangle with length l and width w is given by $A = l \times w$. Find the area of a rectangle with length of 9 inches and width of 8 inches.

Step 1: Substitute $l = 9$ and $w = 8$ into the formula for the area.

$$\begin{aligned} A &= lw \\ &= (9)(8) \end{aligned}$$

Step 2: Multiply 9 and 8.

$$A = 72$$

Solution: The area of the rectangle is 72 in.²

EXAMPLE C

The area A of a triangle with base b and height h is given by $A = \frac{1}{2}bh$. Find the area of a right triangle with leg lengths of 3 inches and 4 inches.

Step 1: Substitute one leg length for the base and the other for the height.

$$\begin{aligned} A &= \frac{1}{2}bh \\ &= \frac{1}{2}(3)(4) \end{aligned}$$

Step 2: Multiply $\frac{1}{2}$, 3, and 4.

$$\begin{aligned} A &= \frac{1}{2}(12) \\ &= 6 \end{aligned}$$

Solution: The area of the triangle is 6 in.²

Area of Figures (continued)

EXAMPLE D

The area A of a trapezoid with bases b_1 and b_2 and height h is given by $A = \frac{1}{2}(b_1 + b_2)h$.

Find the area of a trapezoid with bases of lengths of 8 inches, 3 inches, and height of 10 inches.

Step 1: Substitute the two values for the bases and $h = 10$.

$$\begin{aligned} A &= \frac{1}{2}(b_1 + b_2)h \\ &= \frac{1}{2}(8 + 3)(10) \end{aligned}$$

Step 2: Simplify the equation.

$$\begin{aligned} A &= \frac{1}{2}(11)(10) \\ &= \frac{1}{2}(110) \\ &= 55 \end{aligned}$$

Solution: The area of the trapezoid is 55 in.²

PRACTICE

Find the area of each figure. Use 3.14 for π . Round to the nearest tenth, if needed.

1. right triangle with legs of length 8 inches each
2. circle with radius of 8 inches
3. trapezoid with bases of lengths of 6 inches, 3 inches, and height of 4 inches
4. rectangle with length of 11 inches and width of 4 inches
5. trapezoid with bases of lengths of 12 inches, 10 inches, and height of 9 inches
6. rectangle with length of 9 inches and width of 3 inches
7. right triangle with legs of length 5 inches and 12 inches
8. square with side length of 12 inches