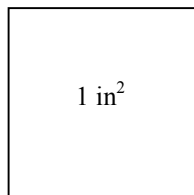


## Area

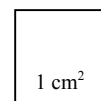
### Objective A To find the area of geometric figures

**Area** is a measure of the amount of surface in a region. Area can be used to describe the size of a rug, a parking lot, a farm, or a national park. Area is measured in square units.

A square that measures 1 in. on each side has an Area of 1 square inch, written  $1 \text{ in}^2$ .

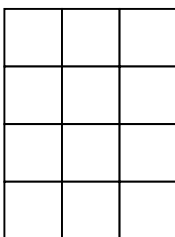


A square that measures 1 cm on each side has an Area of 1 square centimeter; written  $1 \text{ cm}^2$ .



Larger areas can be measured in square feet ( $\text{ft}^2$ ), square meters ( $\text{m}^2$ ), square miles ( $\text{mi}^2$ ), acres ( $43,560 \text{ ft}^2$ ), or any other square unit.

The area of a geometric figure is the number of squares that are necessary to cover the figure. In the figures below, two rectangles have been drawn and covered with squares. In the figure on the left, 12 squares, each of area  $1 \text{ cm}^2$ , were used to cover the rectangle. The area of the rectangle is  $12 \text{ cm}^2$ . In the figure on the right, 6 squares, each of area  $1 \text{ in}^2$ , were used to cover the rectangle. The area of the rectangle is  $6 \text{ in}^2$ .



The area of the rectangle  
Is  $12 \text{ cm}^2$ .



The area of the rectangle is  $6 \text{ in}^2$ .

Note from the above figures that the area of a rectangle can be found by multiplying the length of the rectangle by its width.

### Area of a Rectangle

$$A = LW$$

Find the area of the rectangle shown at the right.

$$A = LW$$

$$= (8 \text{ ft})(5 \text{ ft})$$

$$\bullet L = 8 \text{ ft}, W = 5 \text{ ft.}$$



$$8 \text{ ft}$$

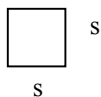
$$= 40 \text{ ft}^2$$

The area of the rectangle is  $40 \text{ ft}^2$ .

A square is a rectangle in which all sides are the same length. Therefore, both the length and width can be represented by a side.

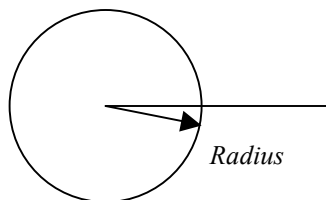
### Area of a Square

$$A = s * s = s^2$$



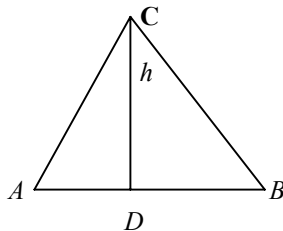
### Area of a Circle

$$A = \pi r^2$$



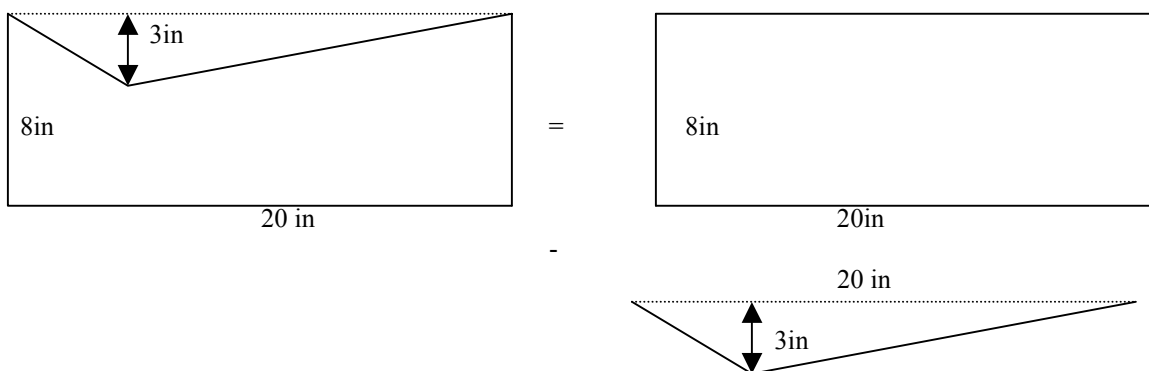
### Area of a Triangle

$$A = \frac{1}{2} bh$$



**Objective B To find the area of composite geometric figures**

The area of the composite figure shown below is found by calculating the area of the rectangle and then subtracting the area of the triangle.



$$\text{COMPOSITE AREA} = [\text{RECTANGLE AREA}] - [\text{TRIANGLE AREA}]$$

$$A = LW - \frac{1}{2}bh$$

$$A = (20 \text{ in})(8 \text{ in}) - \frac{1}{2}(20 \text{ in})(3 \text{ in})$$

$$A = 160 \text{ in}^2 - 30 \text{ in}^2$$

$$A = 130 \text{ in}^2$$