

PERIMETERS AND AREAS
of
RECTANGLES AND TRIANGLES

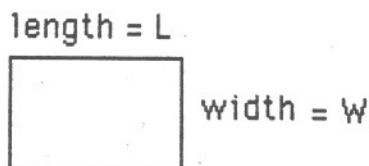


RECTANGLE

Properties of a rectangle

- has four sides
- opposite sides are parallel
- opposite sides are equal in length
- all vertices (corners) are right angles

Sketch of a rectangle

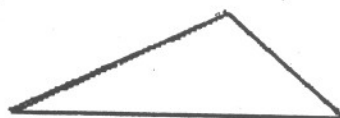


TRIANGLE

Properties of a triangle

- has three sides and three angles
- sum of the angles is 180°

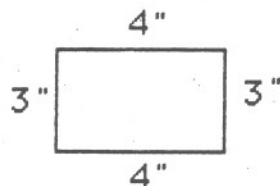
Sketch of a triangle



PERIMETER

The perimeter of a geometric figure is the total of the lengths of the sides.

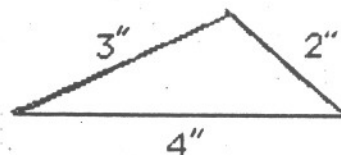
Rectangle



$$\text{Perimeter} = 4'' + 4'' + 3'' + 3'' = 14''$$

General formula: $p = 2L + 2W$
where L = length and W = width

Triangle

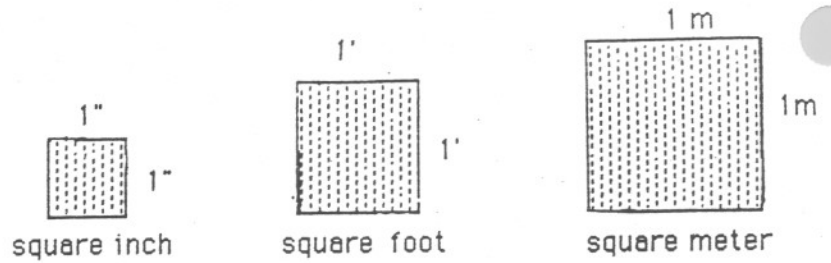


$$\text{Perimeter} = 2'' + 3'' + 4'' = 9''$$

General formula: $p = s_1 + s_2 + s_3$
where s_1 , s_2 , and s_3 denote the lengths of the sides

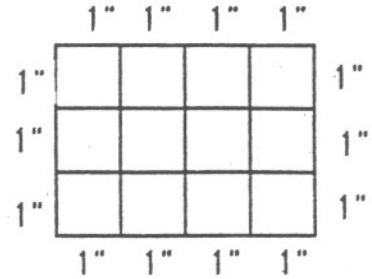
AREA

The area of a geometric figure is a measure of its interior. We measure areas in terms of square units, such as square inches, square feet, or square meters. These units are shown on the right. (The drawings are not to scale.)



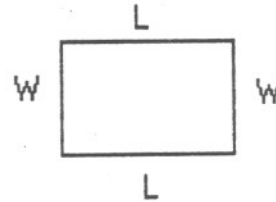
AREA OF A RECTANGLE

We can now use these square units to measure areas. For example, note the rectangle shown on the right. The length is 4 inches and the width is 3 inches. We can divide the length into four equal parts and the width into three equal parts. Each of the squares is one square inch. Since there are twelve such squares, the area of the rectangle is 12 square inches. This can also be written as 12 sq. in. or 12 in.^2 .



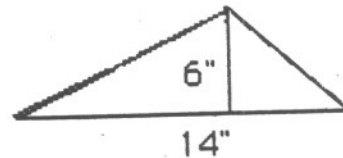
The area of any rectangle can be found by multiplying the length and width.

$$A = L W.$$



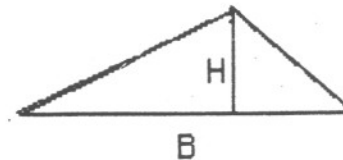
AREA OF A TRIANGLE

A triangle can be thought of as half a rectangle. Consider a triangle with base B and height H . (The height is measured perpendicular to the base.) The area of the triangle shown is $(1/2)(14)(6) = 42 \text{ sq. in.}$



The area of any triangle is half the product of the base and the height.

$$A = 1/2 B H.$$



Note that any triangle has three possible pairs of base and height. You may use any of the three pairs, and you will get the same area.

PROBLEM

Suppose you wish to frame the picture shown. How many square feet of glass would you have to buy? Neglecting overlapping at the corners, how many feet of oak framing wood would you have to buy?

