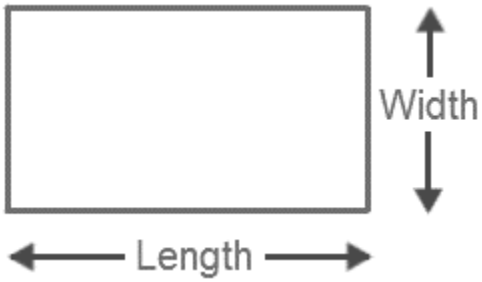
Name: _____ **Perimeter and Area**

The perimeter of a shape is the length of the outline of the shape. The word *perimeter* means 'distance around'. It is the distance around the outside of the shape.

So, to find the perimeter of a rectangle or square, you add up the lengths of its four sides.



The opposite sides of a rectangle are equal.

We call the measure of one of its longer sides its length, and the measure of one of its shorter sides its width.

Then, its perimeter (the distance around it)

= (length + width + length + width)

= (2 x length) + (2 x width) = 2 x (length + width) Why?

Let **P** stand for the **perimeter**, **L** for the **length**, and **W** for the **width.**

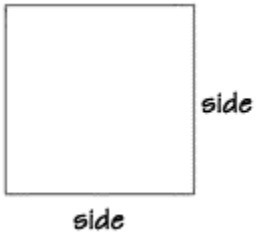
Then, $\mathbf{P}_{\text{rectangle}}$ **= 2 · (L + W)** or **2L + 2W**

A square has four equal sides. So, its perimeter $\mathbf{P}_{\text{square}}$ =

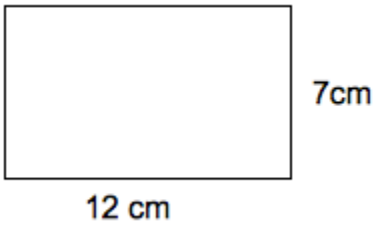
side + side + side + side = 4 x side.

Let **s** stand for the measure of one side.

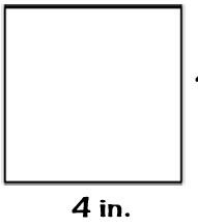
Then, $\mathbf{P}_{\text{square}}$ **= 4 · s**



1. What is the perimeter of this rectangle?



2. What is the perimeter of this square?



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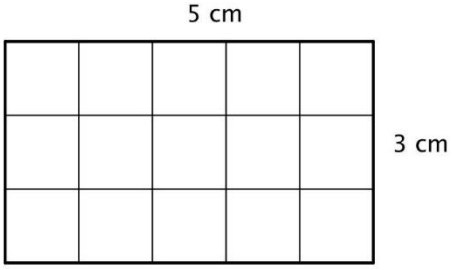
The area of a figure is a measure of its surface—how much surface it has. Area is measured in **square units**.

1 square unit is a square that measures 1 unit on each side. The area of a shape is a measure of how many of these unit squares it would take to cover the surface of the figure.

We measure area using a unit square of the same unit we are measuring distance in.

If we are measuring distance (length and width) in inches, then 1 inch is the unit of distance and 1 square inch (1 sq. in.) is the unit of area.

If we measure distance in meters, then 1 meter is the unit of distance and 1 square meter is the unit of area.



Here we have a rectangle that has its sides measured in centimeters. So, we measure its area in square centimeters (cm^2).

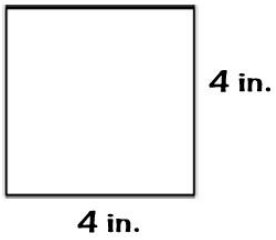
Each little square is 1 centimeter on each side. The little square is 1 square centimeter—the unit we will use to measure the area of the rectangle.

How many little squares cover the rectangle? There are 3 rows of little squares and there are 5 little squares in each row. This makes 3 x 5 = 15 little squares. Each little square is 1 square centimeter. So, the area of the rectangle is 15 cm^2 (15 square centimeters). Area = 5 cm x 3 cm = 15 cm^2

We don't need to draw the little squares to figure out the area. *So long as we measure the length and the width of the rectangle using the <u>same</u> units*, we can just multiply the length times the width to find the area.
The answer—the area—will be in *square units*.

Length (in units) x **Width** (in the same units) = **Area** (in square units)

A square is just a rectangle with all sides equal.
So, the width and length are the same.



Side (in units) x **Side** (in units) = **Area** (in square units)

In this square, the length of a side is measured in inches. So, the area will be in square inches (sq. in.).

Area = 4 in. x 4 in. = 16 sq. in.

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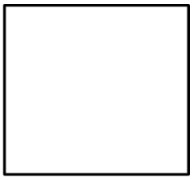
In these problems, be sure to include the correct units in your answers.
(Perimeter should be in units and area in square units.)

1. What is the area of this rectangle?

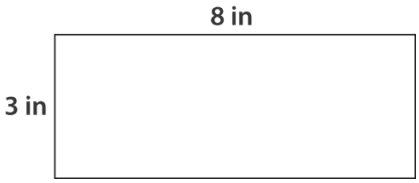
What is its perimeter?

2. What is the perimeter of this square?

What is its area?

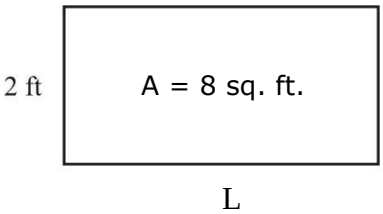


3. What is the perimeter of this rectangle?



What is its area?

4. This rectangle has a width of 2 ft. and an area of 8 sq. ft. What is its length?



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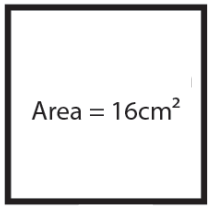
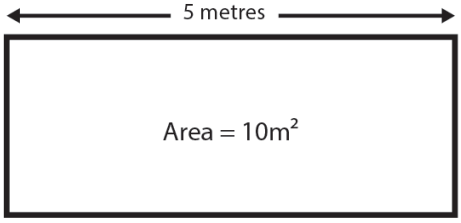
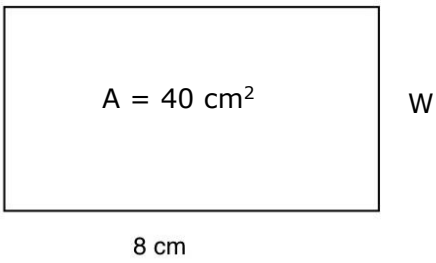
5. This square has an area of 16 square centimeters. What is the measure of its side?





6. This rectangle has an area of 10 square meters and a length of 5 meters. What is its width?

7. Here we have a rectangle with an area of 40 square centimeters and a length of 8 cm. What is the rectangle's perimeter?



8. A square has an area of 25 square yards. What is the measure of its side?

What if the area of the square were 36 sq. ft.? What would the side measure?

How about 9 sq. in. for the area of the square? What does the side measure?