Area and Perimeter of Rectangles

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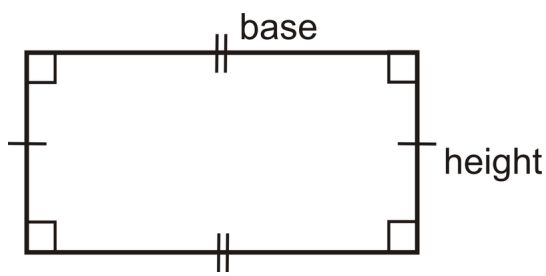
CHAPTER 1 Area and Perimeter of Rectangles

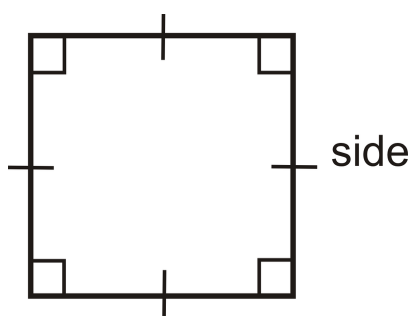
Here you'll learn how to find the area and perimeter of a rectangle given its base and height.

Area and Perimeter of Rectangles

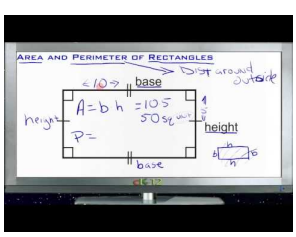
To find the **area of a rectangle,** calculate $A = bh$, where b is the base (width) and h is the height (length). The **perimeter of a rectangle** will always be $P = 2b + 2h$.



If a rectangle is a square, with sides of length s, then perimeter is $P_{square} = 2s + 2s = 4s$ and area is $A_{sqaure} = s \cdot s = s^2$.



What if you were given a rectangle and the size of its base and height? How could you find the total distance around the rectangle and the amount of space it takes up?



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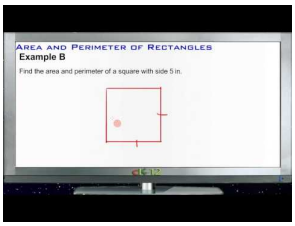

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Examples

Example 1

The area of a square is 75 in^2. Find the perimeter.

To find the perimeter, we need to find the length of the sides.

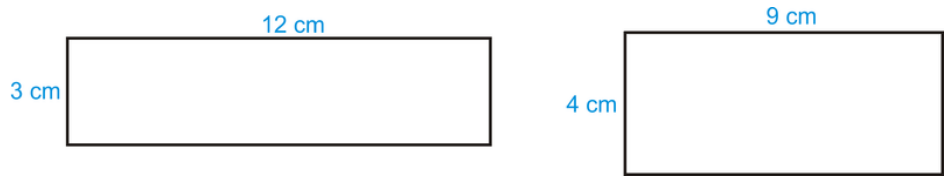
$$A = s^2 = 75\ in^2$$
$$s = \sqrt{75} = 5\sqrt{3}\ in$$

From this, $P = 4\left(5\sqrt{3}\right) = 20\sqrt{3}\ in$.

Example 2

Draw two different rectangles with an area of 36 cm^2.

Think of all the different factors of 36. These can all be dimensions of the different rectangles.



Other possibilities could be $6 \times 6, 2 \times 18$, and 1×36.

Example 3

Find the area and perimeter of a rectangle with sides 4 cm by 9 cm.

The perimeter is $4+9+4+9 = 26\ cm$. The area is $A = 9 \cdot 4 = 36\ cm^2$.

Example 4

Find the area and perimeter of a square with side 5 in.

The perimeter is $4(5) = 20in$ and the area is $5^2 = 25\ in^2$.

Example 5

Find the area and perimeter of a rectangle with sides 13 m and 12 m.

The perimeter is $2(13) + 2(12) = 50\ m$. The area is $13(12) = 156\ m^2$.

Review

1. Find the area and perimeter of a square with sides of length 12 in.
2. Find the area and perimeter of a rectangle with height of 9 cm and base of 16 cm.
3. Find the area and perimeter of a rectangle if the height is 8 and the base is 14.
4. Find the area and perimeter of a square if the sides are 18 ft.
5. If the area of a square is 81 ft^2, find the perimeter.
6. If the perimeter of a square is 24 in, find the area.
7. The perimeter of a rectangle is 32. Find two different dimensions that the rectangle could be.
8. Draw two different rectangles that haven an area of 90 mm^2.
9. True or false: For a rectangle, the bigger the perimeter, the bigger the area.
10. Find the perimeter and area of a rectangle with sides 17 in and 21 in.

Review (Answers)

To see the Review answers, open this PDF file and look for section 10.1.