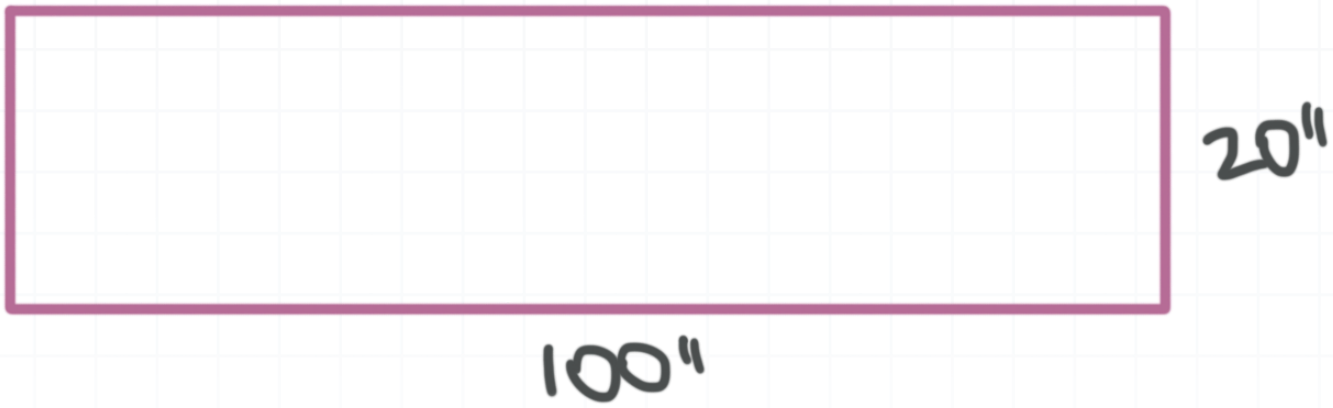
Topic: Area of a rectangle

Question: Find the area of the rectangle.



Answer choices:

A $2{,}000\ \text{in}^2$

B $2{,}000\ \text{in}^3$

C $200\ \text{in}^2$

D $200\ \text{in}^3$

Solution: A

Plugging the dimensions of the rectangle into the formula for the area of a rectangle, we get

$$A = bh$$

$$A = (100 \text{ in})(20 \text{ in})$$

$$A = 2{,}000 \text{ in}^2$$

Topic: Area of a rectangle

Question: A large house has three garage doors, each of which is made of four rectangular panels. Each panel is 24 inches high and 108 inches long. The home owner wants to repaint them and needs to know the total area of the three doors so she can buy enough paint. Find the total area, in square feet, of the three doors.

Answer choices:

A $18\ \text{ft}^2$

B $72\ \text{ft}^2$

C $216\ \text{ft}^2$

D $432\ \text{ft}^2$

Solution: C

The dimensions of each panel in feet are

$$\text{height} = 24 \text{ inches} \cdot \frac{1 \text{ foot}}{12 \text{ inches}} = 2 \text{ feet}$$

$$\text{base} = 108 \text{ inches} \cdot \frac{1 \text{ foot}}{12 \text{ inches}} = 9 \text{ feet}$$

The area of each panel is given by

$$bh = 9 \text{ ft} \cdot 2 \text{ ft} = 18 \text{ ft}^2$$

Three doors with four panels each gives us a total of

$$3 \cdot 4 = 12 \text{ panels}$$

The total area of all 12 panels is

$$12 \cdot 18 \text{ ft}^2 = 216 \text{ ft}^2$$

Topic: Area of a rectangle

Question: A rectangular wall has a height that's $1/3$ of its base. If the area of the wall is 24 m^2, how long is the base of the wall?

Answer choices:

A 2.83 m

B 8.00 m

C 8.48 m

D 10.17 m

Solution: C

Let x be the height of the wall, which will make the base $3x$. Their product is the area.

$$A = bh = 3x \cdot x = 3x^2$$

Since the area is 24 m^2, we have

$$3x^2 = 24$$

$$x^2 = 8$$

$$x = \sqrt{8}$$

According to the way we set up the problem, this is the height of the wall, which we can now use to find the base.

$$b = 3x = 3\sqrt{8} \approx 3 \cdot 2.828 = 8.484 \approx 8.48 \text{ m}$$