

Student Solutions to *Congruent Rectangles*

John: The perimeter is 166 units.

I knew that area was length times width. So I knew that 27 times 28 gave me 756. So I added 28 plus 28 plus 27 plus 27 to get my answer of 166.

Dre: The perimeter of the rectangle is 111.2 units².

First I tried to solve it algebraically. I used $xy=756$ but there were too many answers so I tried finding the area of one of the smaller squares. I did this by dividing the area of the big square by seven because there are seven little triangles in the big one. $756/7 = 108$ but that got me nowhere.

Then I saw the answer. It takes 3 of the rectangles laid across the long way to go from one side to the other the long way but it takes 4 rectangles stacked up the tall way to get from one side to the other the long way.

Hmmm I thought I now have 2 equations and 2 unknowns. They are $3/4x = y$ and $xy = 756$.

All I need to do now is solve. I plugged in $3/4x$ into y in the second equation. I now have $x(3/4x) = 756$. I then multiplied $x \cdot 3/4x$ and got $3/4x^2 = 756$. Then I divided 756 by $3/4$ and got $x^2 = 1008$. Next I took the square root of 1008 and got $x = \text{approx. } 31.8$. To solve for y you must multiply by $3/4$ because $3/4x = y$. Therefore $y = \text{approx } 23.8$.

There are 2 x 's and 2 y 's for both sides of the rectangle. When you add those up you get $31.8 \cdot 2 + 23.8 \cdot 2 = 111.2$. The perimeter of the rectangle is 111.2 units².

Jae: perimeter=1197

length of each rectangle= "X"

width of each rectangle= "Y"

$$(Y+Y+Y+Y)(X+Y)=756 \Rightarrow (4Y)(X+Y)=756$$

$$(X+X+X)(X+Y)=756 \Rightarrow (3X)(X+Y)=756$$

$$\Rightarrow (4Y)(X+Y)=(3X)(X+Y)=756$$

$$\Rightarrow 4Y=3X=756$$

$$\Rightarrow Y=189 ; X=252$$

$$\Rightarrow \text{PERIMETER}=Y+Y+Y+Y+X+Y=5Y+X=(5)(189)+252=1197$$