

Question #25350

The area of a rectangle is 490in^2 . The ratio of the length to the width is 5:2. Find the length and the width.

Solution: Suppose that the value of the length will be - x , and the value of width - y . We can construct the following system of linear equations with two unknowns:

$$\begin{cases} x \times y = 490 \\ \frac{x}{y} = \frac{5}{2} \end{cases} \rightarrow \begin{cases} x \times y = 490 \\ x = \frac{5y}{2} \end{cases}$$

Substitute the value of x into the first equation:

$$\frac{5y}{2} \times y = 490 \rightarrow \frac{5y^2}{2} = 490 \rightarrow 5y^2 = 980 \rightarrow y^2 = 196 \rightarrow y = \pm 14 .$$

Since the width of the negative is not for us, which we decline and leave only positive. So $y = 14$.

$$x = \frac{5 \times 14}{2} = \frac{70}{2} = 35 .$$

Answer: length - 35, width - 14 .