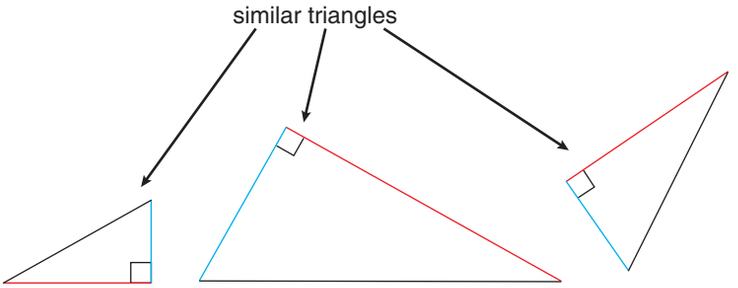
In the previous activity, you may have noticed that **the ratio of corresponding side lengths of similar triangles is always the same**. Take a look at the diagram below showing three similar triangles. All three of the red sides correspond and all three of the blue sides correspond. Dividing the blue length of one triangle by the red length of the same triangle will give the same value for any of the three triangles.

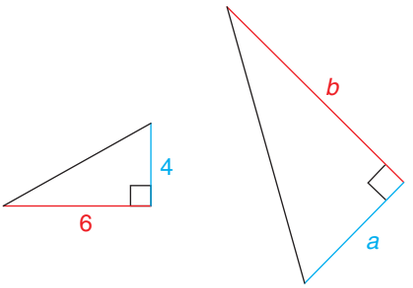


blue length ÷ red length = same value for each triangle

Use this relationship to complete the following *Check Up*.

Check Up

1. The following two right triangles are similar.



   a. State two pairs of corresponding side lengths.

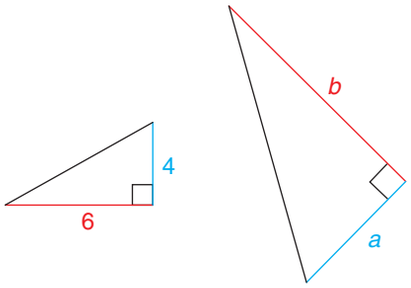
   b. What is the ratio of the blue side length to the red side length in the first triangle?

   c. What is the ratio of the blue side length to the red side length in the second triangle? Explain the reason for this.

   d. Suppose $b = 12$. What must be the length of a?

Compare your answers.

1. The following two right triangles are similar.



a. State two pairs of corresponding side lengths.

4 and a; 6 and b.

b. What is the ratio of the blue side length to the red side length in the first triangle?

$\frac{4}{6} = 0.\overline{6}$

c. What is the ratio of the blue side length to the red side length in the second triangle? Explain the reason for this.

The two triangles are similar, so the ratios of corresponding side lengths must be equal. This means $\frac{a}{b} = 0.\overline{6}$.

d. Suppose $b = 12$. What must be the length of a?

$$\frac{a}{b} = 0.\overline{6}$$
$$\frac{a}{12} = 0.\overline{6}$$
$$\frac{a}{\cancel{12}} \cdot \cancel{12} = 0.\overline{6} \cdot 12$$
$$a = 8$$