A dilation with center C and scale factor k maps B onto D. Find k if CD=5 and CB=10

Solution:

The definition of dilation is next:

Each point B put in correspondence point D such that $\overrightarrow{CB} = k\overrightarrow{CD}$.

Then we have

$$\left|\overrightarrow{CB}\right| = |k| \cdot \left|\overrightarrow{CD}\right|,$$

$$10 = |k| \cdot 5,$$

$$|k| = \frac{5}{10},$$

$$|k| = \frac{1}{2},$$

$$k = \frac{1}{2} \text{ or } k = -\frac{1}{2}.$$

Answer:

$$k = \frac{1}{2} \quad \text{or} \quad k = -\frac{1}{2}.$$