What is the scale factor from $a$ to $b$ ?
Solution.
Example.
Let we have two similar figures:
a

b


In this case, The scale factor from $a$ to $b$ is $\boldsymbol{b} / \boldsymbol{a}$. In other words, if we multiply $a$ by the scale factor $\boldsymbol{b} / \boldsymbol{a}$ we get $b$.

In the general case, a scale factor is a number which scales, or multiplies, some quantity.
For example, if we have an equation $a=S b, \boldsymbol{S}$ is the scale factor.

