

Exercise 65

The variables r and s are inversely proportional, and $r = 6$ when $s = 4$. Determine s when $r = 10$.

Solution

r and s are inversely proportional:

$$r \propto \frac{1}{s}.$$

Make this proportionality an equation we can use by introducing a proportionality constant k .

$$r = \frac{k}{s} \tag{1}$$

Use the fact that $r = 6$ when $s = 4$ to determine k .

$$6 = \frac{k}{4}$$

$$6(4) = k$$

$$k = 24$$

Equation (1) then becomes

$$r = \frac{24}{s}.$$

Therefore, when $r = 10$,

$$10 = \frac{24}{s}$$

$$10s = 24$$

$$s = 2.4.$$