Exercise 63

The variable s is proportional to t, and $s = 25$ when $t = 75$. Determine t when $s = 60$.

Solution

s is proportional to t:

$$s \propto t.$$

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

$$s = kt \tag{1}$$

Use the fact that $s = 25$ when $t = 75$ to determine k.

$$25 = k(75)$$

$$\frac{25}{75} = k$$

$$k = \frac{1}{3}$$

Equation (1) then becomes

$$s = \frac{1}{3}t.$$

Therefore, when $s = 60$,

$$60 = \frac{1}{3}t$$

$$3(60) = t$$

$$t = 180.$$