

FST 2-7 Extra Practice

In 1-3, suppose that $y = 40$ when $x = 25$. For each situation:

- Compute the constant of variation.
- Find y when $x = 2$.

1. Y varies inversely as x .

$$y = \frac{k}{x}$$

a) $y = \frac{k}{x}$

$$25(40) = \left(\frac{k}{25}\right) 25$$

$$\boxed{1000 = k}$$

b) $y = \frac{1000}{2}$

$$\boxed{y = 500}$$

2. Y varies inversely as the square of x .

a) $y = \frac{k}{x^2}$

$$25^2(40) = \left(\frac{k}{25^2}\right) 25^2$$

$$\boxed{k = 25,000}$$

b) $y = \frac{25,000}{2^2}$

$$y = \frac{25,000}{4}$$

$$\boxed{y = 6250}$$

3. Y varies inversely as the cube of x .

a) $y = \frac{k}{x^3}$

$$25^3(40) = \left(\frac{k}{25^3}\right) 25^3$$

$$\boxed{625,000 = k}$$

b) $y = \frac{625,000}{2^3}$

$$y = \frac{625,000}{8}$$

$$\boxed{y = 78,125}$$