Exercise 3

Jessica is walking home from a friend's house. After 2 minutes she is 1.4 miles from home. Twelve minutes after leaving, she is 0.9 miles from home. What is her rate in miles per hour?

Solution

Calculate the average rate of change of Jessica's position by observing that she travels 0.5 miles in 10 minutes.

$$v_{\text{avg}} = \frac{\Delta x}{\Delta t} = \frac{1.4 - 0.9}{12 - 2} \, \frac{\text{mi}}{\text{min}} = \frac{0.5}{10} \, \frac{\text{mi}}{\text{min}} = 0.05 \, \frac{\text{mi}}{\text{min}}$$

Then convert it to miles per hour by multiplying by the appropriate conversion factor.

$$v_{\text{avg}} = 0.05 \, \frac{\text{mi}}{\text{min}} \times \frac{60 \, \text{min}}{1 \, \text{hr}} = 3 \, \frac{\text{mi}}{\text{hr}}$$