Interpreting Function Parts in Situations

Let's pick apart functions.

17.1 Math Talk: Function Evaluation

Find the value of x for the given function value using the function: $f(x) = 3(x - 2)$, mentally.

- $f(x) = 9$
- $f(x) = 210$
- $f(x) = 10$
- $f(x) = 0$

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17.2 A Long Car Trip

On a long car trip, the distance on the odometer (in miles) is a function of time (in hours after the trip begins) given by the equation $d(t) = 34t + 45{,}233$.

1. What is the rate of change for the function? What does it mean in this situation?

2. What is the value of $d(0)$? What does it mean in this situation?

3. What is the value of $d(-1)$? What does it mean in this situation?

4. When is $d(t) = 45{,}800$?

5. Do each of the values make sense with this model? Explain your reasoning.

17.3 A Warehouse and Highway

1. A warehouse in a factory initially holds 2,385 items and receives all of the items made in production continuously throughout a day. During a particular day, the factory produces 150 items per hour to put into the warehouse. Write a function, f, to represent the number of items in the warehouse at time t after production begins for the day.

a. What are the units for t?

b. What is the domain of the function? Explain your reasoning.

c. What is the range of the function? Explain your reasoning.

d. What is the value of t when $f(t) = 3{,}000$? What does that mean in this situation?

2. During a focused effort on building new infrastructure for 3 years, a company can build 0.8 miles of highway per day. The company has already built 12 miles of highway before the focused effort. Write a function, g, to represent the length of highway built by the company as a function of t during the focused effort.

a. What are the units for $g(t)$?

b. What is the domain of the function? Explain your reasoning.

c. What is the range of the function? Explain your reasoning.

d. What is the value of t when $g(t) = 400$? What does that mean in this situation?