

Name _____

Date _____

Lesson 1: Modeling Linear Relationships

Exit Ticket

A rental car company offers a rental package for a midsize car. The cost comprises a fixed \$30 administrative fee for the cleaning and maintenance of the car plus a rental cost of \$35 per day.

- Using x for the number of days and y for the total cost in dollars, construct a function to model the relationship between the number of days and the total cost of renting a midsize car.
- The same company is advertising a deal on compact car rentals. The linear function $y = 30x + 15$ can be used to model the relationship between the number of days, x , and the total cost in dollars, y , of renting a compact car.
 - What is the fixed administrative fee?
 - What is the rental cost per day?

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Lesson 2: Interpreting Rate of Change and Initial Value

Exit Ticket

In 2008, a collector of sports memorabilia purchased 5 specific baseball cards as an investment. Let y represent each card's resale value (in dollars) and x represent the number of years since purchase. Each card's resale value after 0, 1, 2, 3, and 4 years could be modeled by linear equations as follows:

Card A: $y = 5 - 0.7x$

Card B: $y = 4 + 2.6x$

Card C: $y = 10 + 0.9x$

Card D: $y = 10 - 1.1x$

Card E: $y = 8 + 0.25x$

1. Which card(s) are decreasing in value each year? How can you tell?
2. Which card(s) had the greatest initial value at purchase (at 0 years)?
3. Which card(s) is increasing in value the fastest from year to year? How can you tell?
4. If you were to graph the equations of the resale values of Card B and Card C, which card's graph line would be steeper? Explain.
5. Write a sentence explaining the 0.9 value in Card C's equation.

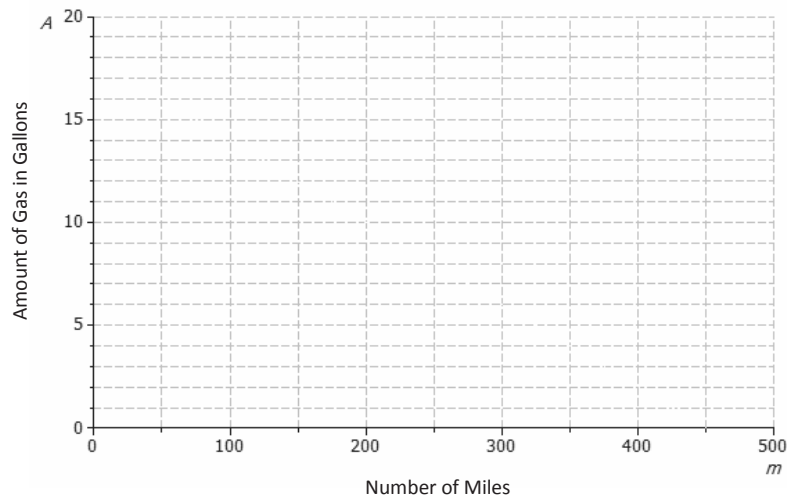
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Lesson 3: Representations of a Line

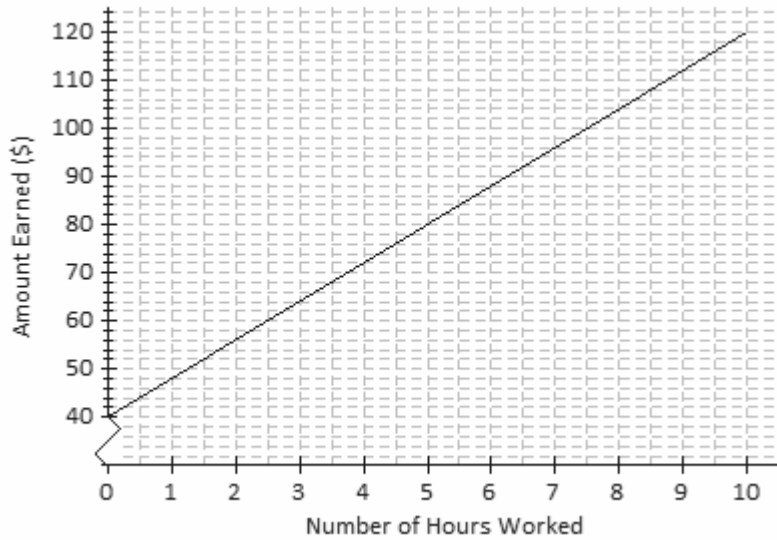
Exit Ticket

1. A car starts a journey with 18 gallons of fuel. Assuming a constant rate, the car consumes 0.04 gallon for every mile driven. Let A represent the amount of gas in the tank (in gallons) and m represent the number of miles driven.



- a. How much gas is in the tank if 0 miles have been driven? How would this be represented on the axes above?
- b. What is the rate of change that relates the amount of gas in the tank to the number of miles driven? Explain what it means within the context of the problem.
- c. On the axes above, draw the line that represents the graph of the linear function that relates A to m .
- d. Write the linear function that models the relationship between the number of miles driven and the amount of gas in the tank.

2. Andrew works in a restaurant. The graph below shows the relationship between the amount Andrew earns in dollars and the number of hours he works.



- a. If Andrew works for 7 hours, approximately how much does he earn in dollars?
- b. Estimate how long Andrew has to work in order to earn \$64.
- c. What is the rate of change of the function given by the graph? Interpret the value within the context of the problem.

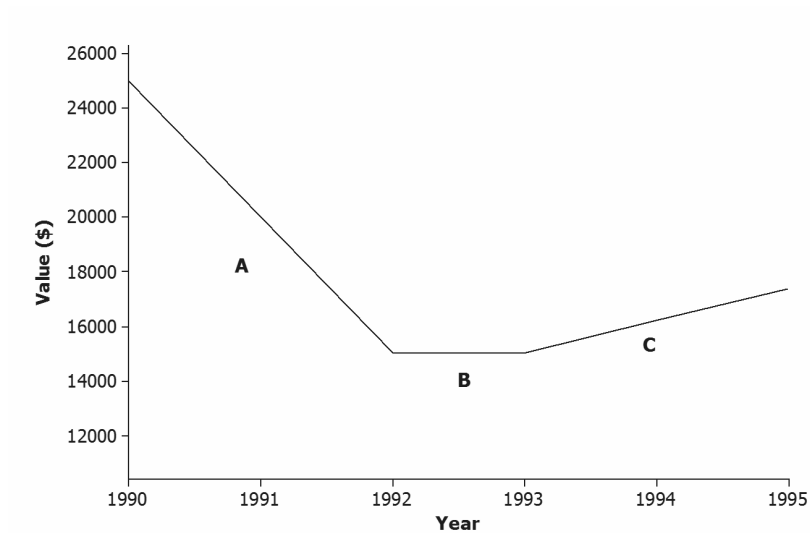
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Lesson 4: Increasing and Decreasing Functions

Exit Ticket

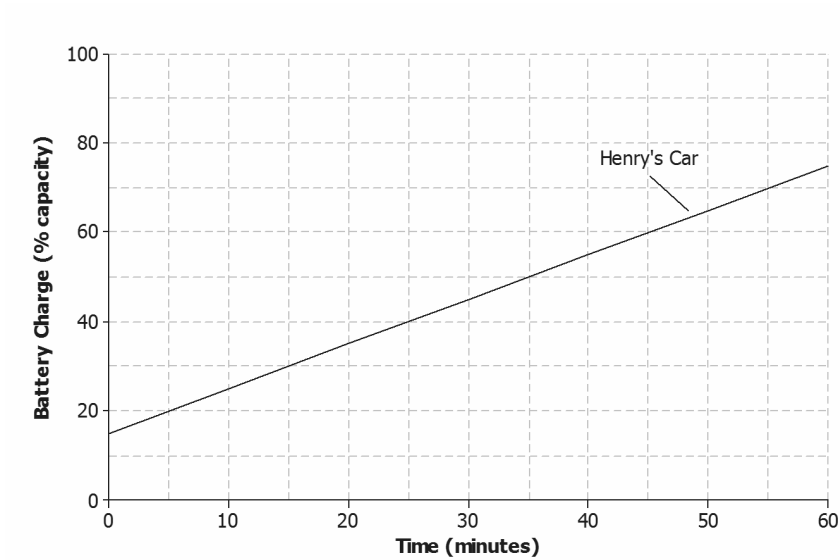
1. The graph below shows the relationship between a car's value and time.



Match each part of the graph (A, B, and C) to its verbal description. Explain the reasoning behind your choice.

- The value of the car holds steady due to a positive consumer report on the same model.
- There is a shortage of used cars on the market, and the value of the car rises at a constant rate.
- The value of the car depreciates at a constant rate.

2. Henry and Roxy both drive electric cars that need to be recharged before use. Henry uses a standard charger at his home to recharge his car. The graph below represents the relationship between the battery charge and the amount of time it has been connected to the power source for Henry's car.



- a. Describe how Henry's car battery is being recharged with respect to time.
- b. Roxy has a supercharger at her home that can charge about half of the battery in 20 minutes. There is no remaining charge left when she begins recharging the battery. Sketch a graph that represents the relationship between the battery charge and the amount of time on the axes above. Assume the relationship is linear.
- c. Which person's car will be recharged to full capacity first? Explain.

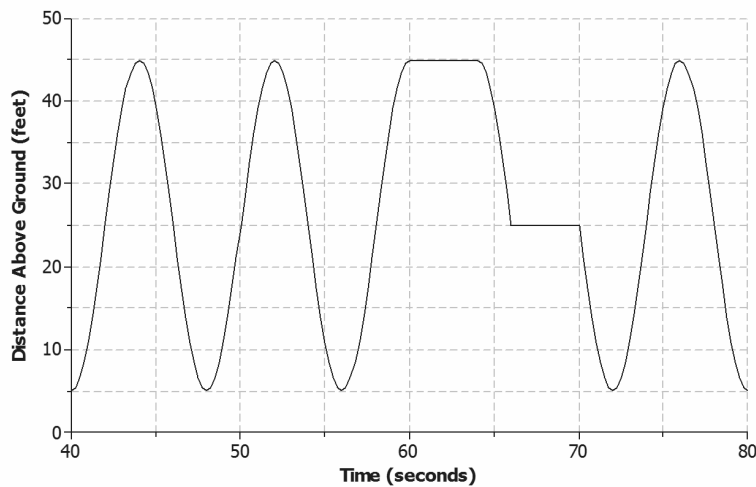
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Lesson 5: Increasing and Decreasing Functions

Exit Ticket

Lamar and his sister continue to ride the Ferris wheel. The graph below represents Lamar and his sister's distance above the ground with respect to time during the next 40 seconds of their ride.



- Name one interval where the function is increasing.
- Name one interval where the function is decreasing.
- Is the function linear or nonlinear? Explain.
- What could be happening during the interval of time from 60 to 64 seconds?
- Based on the graph, how many complete revolutions are made during this 40-second interval?