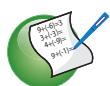


4.3 Exercises



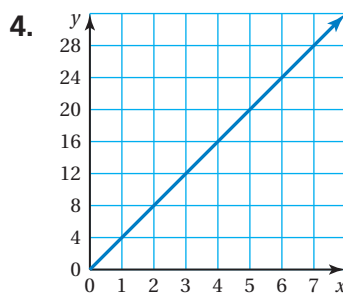
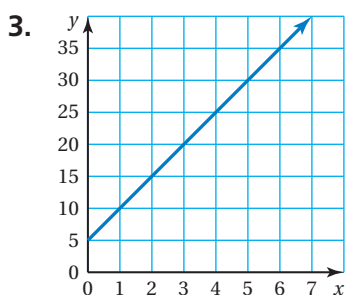
Vocabulary and Concept Check

- VOCABULARY** What point is on the graph of every direct variation equation?
- REASONING** Does the equation $y = 2x + 3$ represent a proportional relationship? Explain.



Practice and Problem Solving

Tell whether x and y are in a proportional relationship. Explain your reasoning. If so, write an equation that represents the relationship.



5.

x	3	6	9	12
y	1	2	3	4

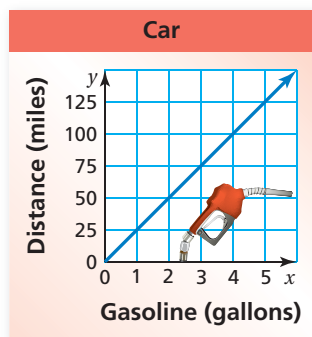
6.

x	2	5	8	10
y	4	8	13	23

- 1 7. **TICKETS** The amount y (in dollars) that you raise by selling x fundraiser tickets is represented by the equation $y = 5x$. Graph the equation and interpret the slope.

- 2 8. **KAYAK** The cost y (in dollars) to rent a kayak is proportional to the number x of hours that you rent the kayak. It costs \$27 to rent the kayak for 3 hours.

- Write an equation that represents the situation.
- Interpret the slope.
- How much does it cost to rent the kayak for 5 hours?



- 3 9. **MILEAGE** The distance y (in miles) that a truck travels on x gallons of gasoline is represented by the equation $y = 18x$. The graph shows the distance that a car travels.

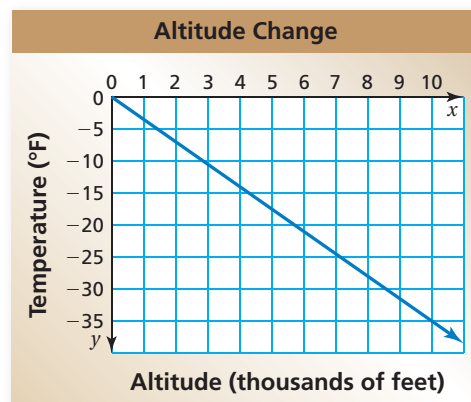
- Which vehicle gets better gas mileage? Explain how you found your answer.
- How much farther can the vehicle you chose in part (a) travel than the other vehicle on 8 gallons of gasoline?

10. **BIOLOGY** Toenails grow about 13 millimeters per year. The table shows fingernail growth.

Weeks	1	2	3	4
Fingernail Growth (millimeters)	0.7	1.4	2.1	2.8

- Do fingernails or toenails grow faster? Explain.
 - In the same coordinate plane, graph equations that represent the growth rates of toenails and fingernails. Compare the steepness of the graphs. What does this mean in the context of the problem?
11. **REASONING** The quantities x and y are in a proportional relationship. What do you know about the ratio of y to x for any point (x, y) on the line?

12. **PROBLEM SOLVING** The graph relates the temperature change y (in degrees Fahrenheit) to the altitude change x (in thousands of feet).



- Is the relationship proportional? Explain.
 - Write an equation of the line. Interpret the slope.
 - You are at the bottom of a mountain where the temperature is 74°F . The top of the mountain is 5500 feet above you. What is the temperature at the top of the mountain?
13. **Critical Thinking** Consider the distance equation $d = rt$, where d is the distance (in feet), r is the rate (in feet per second), and t is the time (in seconds).
- You run 6 feet per second. Are distance and time proportional? Explain. Graph the equation.
 - You run for 50 seconds. Are distance and rate proportional? Explain. Graph the equation.
 - You run 300 feet. Are rate and time proportional? Explain. Graph the equation.
 - One of these situations represents *inverse variation*. Which one is it? Why do you think it is called inverse variation?



Fair Game Review what you learned in previous grades & lessons

Graph the linear equation. (Section 4.1)

14. $y = -\frac{1}{2}x$

15. $y = 3x - \frac{3}{4}$

16. $y = -\frac{x}{3} - \frac{3}{2}$

17. **MULTIPLE CHOICE** What is the value of x ? (Section 3.3)

(A) 110

(B) 135

(C) 315

(D) 522

