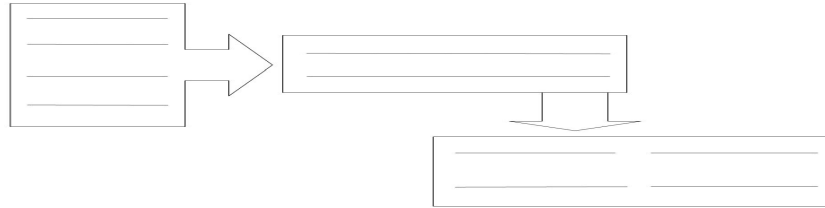
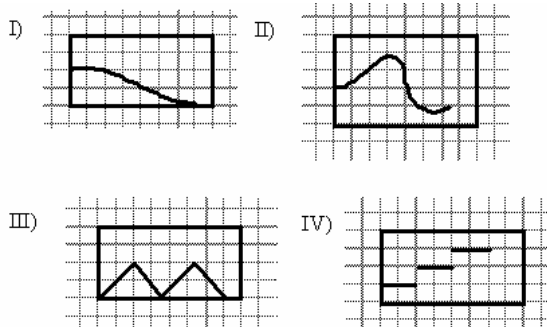


Functions and Linear Functions Review

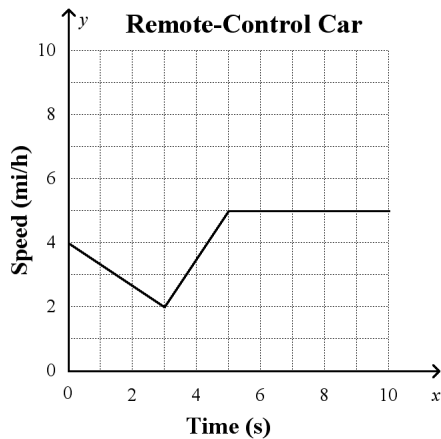
1. Fill in the following diagram using the words: Function Rule, Equation, Input, Output, Domain, Range, X value, Y value, Independent variable, and Dependent Variable.



2. What is a Function? 3. What is a linear Function?
4. Which graph below most likely represents each of the following?
- a person's body temperature as he enters a sauna and then cools off in a jacuzzi
 - the rise and fall of an elevator as it carries passengers from the ground floor to an observation tower
 - the cost to mail a package based on weight categories

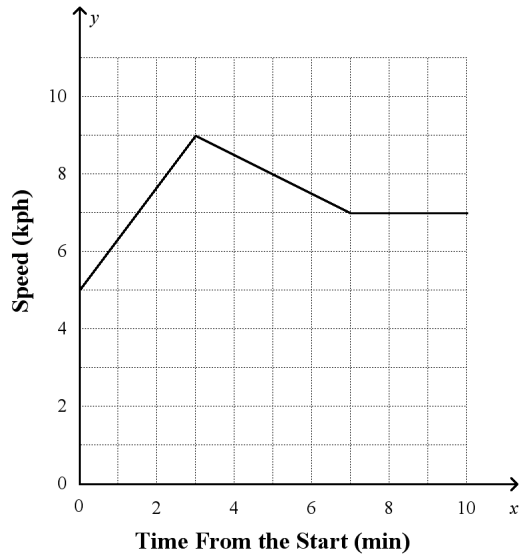


5. Use the graph below. Describe the speed of the remote-control car over time.



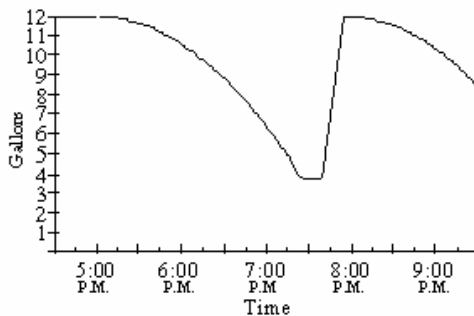
6. A car traveling at 23 mi/h accelerates to 46 mi/h in 5 seconds. It maintains that speed for 5 seconds and then slows to a stop in 5 seconds. Sketch and label a graph showing the car's speed over time.

7. The graph below shows your speed at different times riding a bicycle uphill, downhill, and on level pavement.



- For how long were you going uphill?
- For how long were you going downhill?
- For how long were you riding on level pavement?

8. The graph shows the amount of gas in the tank of Sharon's car during a trip to her mom's house. At what time did she stop to buy gas?



- Create a table of values for $y = x - 6$?
- Use the function rule $f(x) = 3x - 2$. Find the output $f(1.5)$.
- Use the function rule $f(x) = x^2 - 5x + 1$. Find the output $f(-3)$.

12. A gas station charges \$2.19 per gallon of gas. Use function notation to describe the relationship between the total cost $C(g)$ and the number of gallons purchased g .

13. Suppose you earn \$12 each time you mow the lawn. Use function notation to describe the relationship between your total earnings E and the number of times m you mow the lawn.

14. Create a mapping diagram that represents the relation and determine whether the relation is a function.

$$\{(-8, -6), (-5, 2), (-8, 1), (7, 3)\}$$

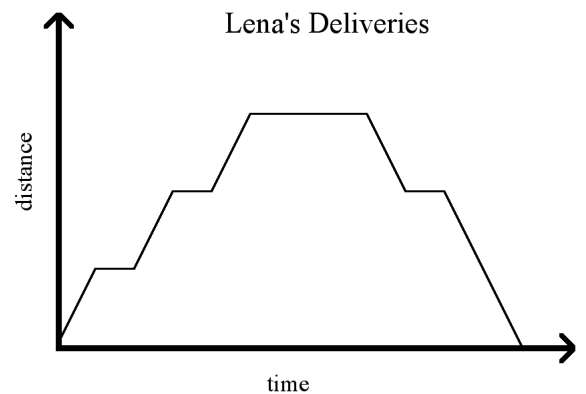
15. Create a mapping diagram that represents the relation and determine whether the relation is a function.

$$\{(-3, -6), (-1, -6), (5, -6), (8, -6)\}$$

16. The function $j(x) = 39x$ represents the number of jumping jacks $j(x)$ you can do in x minutes. How many jumping jacks can you do in 5 minutes?
- 195 jumping jacks
 - 7 jumping jacks
 - 144 jumping jacks
 - 234 jumping jacks
17. The function $b(n) = 6n$ represents the number of light bulbs $b(n)$ that are needed for n chandeliers. How many light bulbs are needed for 15 chandeliers?
- 90 light bulbs
 - 2 light bulbs
 - 96 light bulbs
 - 80 light bulbs

What are the variables in each graph? Describe how the variables are related at various points on the graph.

18. Lena makes home deliveries of groceries for a supermarket. Her only stops after she leaves the supermarket are at traffic lights and the homes where she makes the deliveries. The graph shows her distance from the store on her first trip for the day. What are the variables? Describe how the variables are related at various points on the graph.



What are the slope and y -intercept of the graph of the given equation?

19. $y = -9x + 2$

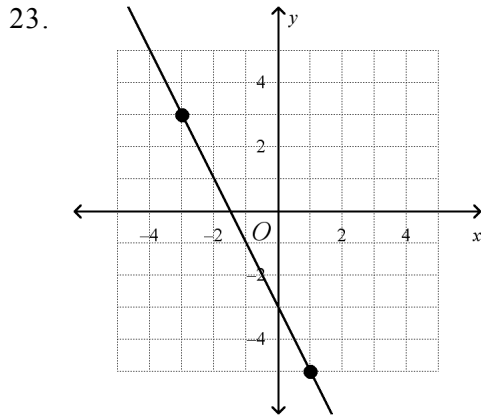
20. $y = \frac{9}{8}x - \frac{3}{10}$

Write an equation of a line with the given slope and y -intercept.

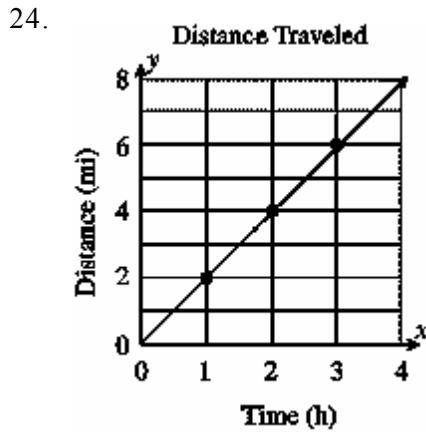
21. $m = 1, b = 4$

22. $m = \frac{1}{4}, b = -\frac{3}{4}$

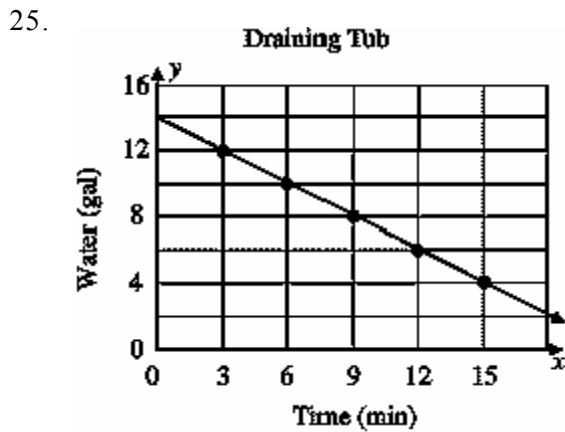
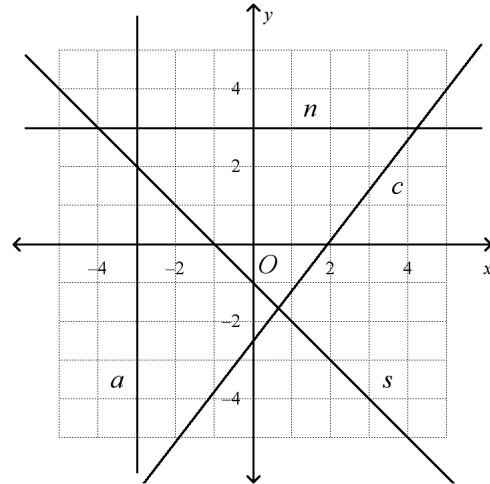
Find the slope of the line.



Find the slope of the line. Describe how one variable changes in relation to the other.



26. List the lines below in the order of positive slope, negative slope, zero slope, and undefined slope.



27. The data in the table are linear. Use the table to find the slope.

x	2	4	6	8
y	1	-2	-5	-8

28. Which hill described in the table is the steepest? Explain.

Street	Horizontal Distance (ft)	Vertical Rise of Street (ft)
Dixie Hill	80	40
Bell Hill	80	20
Liberty Hill	80	60

Do the data in the table represent a linear function? If so, write a rule for the function.

29.

x	-3	-2	-1	0	1
y	1	-2	-5	-8	-11

30.

x	-2	-1	0	1	2
y	-7	1	8	17	25

31. The function rule $C = 26 + 10n$ relates the number of people n who attend a small concert to the cost in dollars C of the concert. Make a table of the input/output pairs to show the cost if 27, 39, and 43 people attend.

32. Copy and complete the table of input/output pairs for the function rule $y = 5x - 1$.

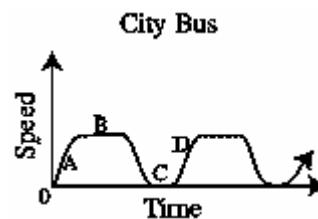
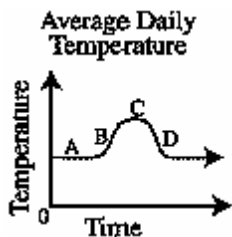
Input	Output
1	■
2	■
■	14
■	19

Make a table of input/output pairs for the function. Then graph the function. Show only the portion of the graph that makes sense for the situation.

33. Kim earns \$6.25 an hour. The amount of money Kim earns (output) is a function of the amount of hours worked (input).

35. The graph below shows the speed of a city bus on its daily route. Explain each labeled section of the graph.

34. The graph below shows the average daily temperature over the period of a year. Explain how each labeled section of the graph relates to the four seasons.



Graph the relation in the table. Then use the vertical-line test. Is the relation a function?

36.

x	y
-3	-4
0	5
1	-5
3	1

37. Find the solution of $y = 6x + 1$ for $x = 5$.

Graph the linear equation.

38. $y = -2x - 4$

40. $y = -3$

39. $y = 4x - 5$

41. $x = 2$

Find the slope of the line through the pair of points.

42. $L(-9, 6), M(-1, -9)$

44. $A(2, -3), P(2, 9)$

43. $C(-6, -7), K(-1, -7)$

Identify the slope and y -intercept of the graph of the equation. Then graph the equation.

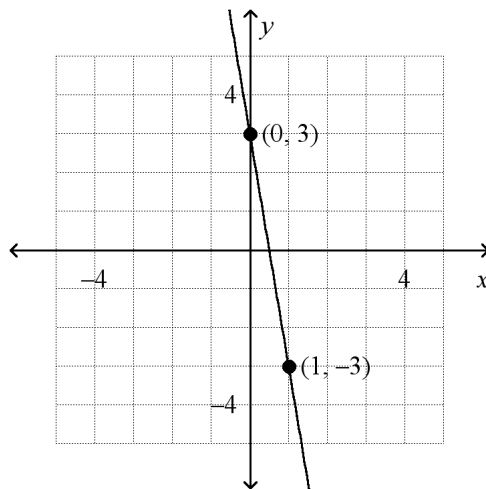
45. $y = \frac{4}{5}x + 1$

49. Write a rule for the linear function in the graph.

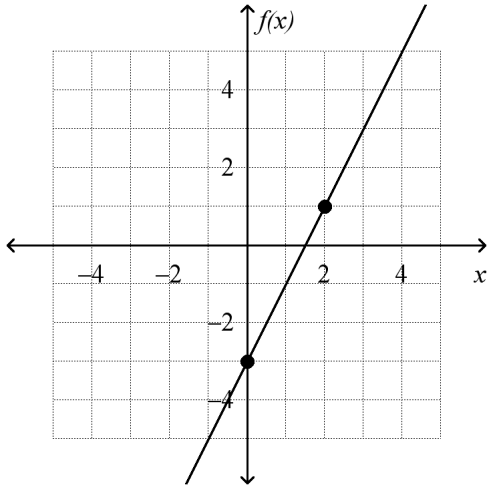
46. $y = -\frac{5}{4}x + 1$

47. $y = -x$

48. The temperature on a particular day started at -13°F . It rose steadily by 3° each hour. The function $y = -13 + 3x$ models the temperature, where x is the number of hours and y is the temperature. Graph the equation.



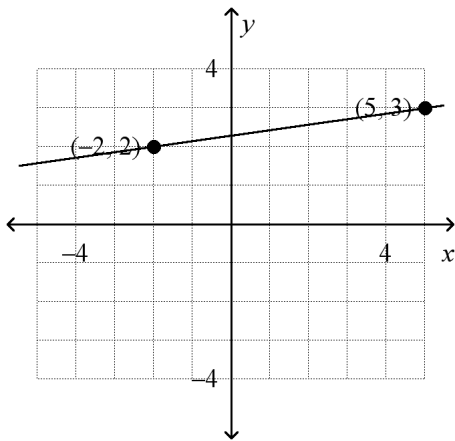
50. Which function rule describes the graph?



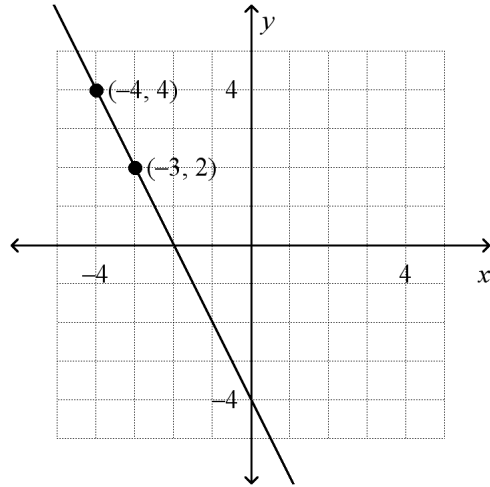
- a. $f(x) = x + 3$
- b. $f(x) = x - 3$
- c. $f(x) = 2x + 3$
- d. $f(x) = 2x - 3$

Find the slope of the line.

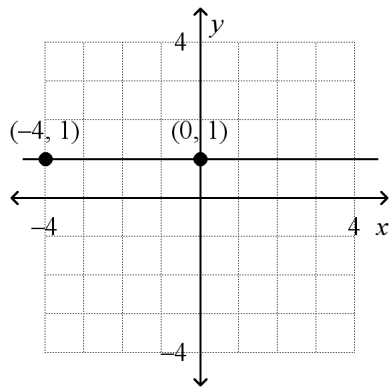
52.



51. Write a rule for the linear function in the graph.



53.



54.

