Mathematics in Action 6th edition Consortium for Foundation Mathematics Test Bank

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MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Determine whether the given relationship represents a function.

1) The cost of tuition for three credit hours of a history class is related to the charge per credit hour.
A) Not a function B) Function

Answer: B

2) A person's weight is related to his or her height
A) Function B) Not a function

Answer: B

3) Over a 10–year period, the daily high temperature measured in a city is related to the month and day on which the measurement is made.
A) Not a function B) Function

Answer: A

4) {(–15, 17), (–14, 19), (–30, 0), (–16, 17), (15, 14)}
A) Not a Function B) Function

Answer: B

5) {(8, –1), (9, 1), (16, 0), (7, –1), (8, –4)}
A) Not a Function B) Function

Answer: A

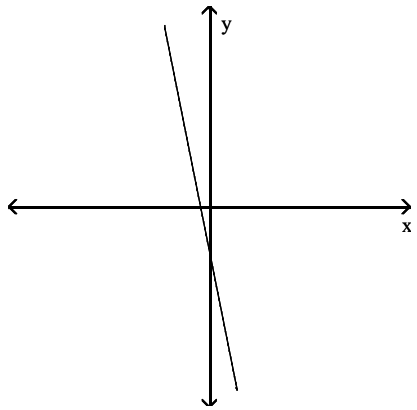
6)

x	–3	–2	–1	0	1	2	3	4
f(x)	1.8	–1.8	3.6	–3.6	–1.4	1.4	–2.8	2.8

A) Not a Function B) Function

Answer: B

7)

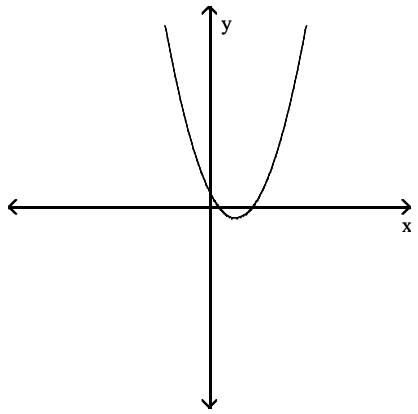


A) Not a function B) Function

Answer: B

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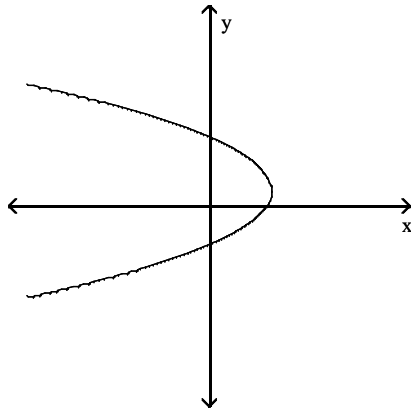
8)



A) Function B) Not a function

Answer: A

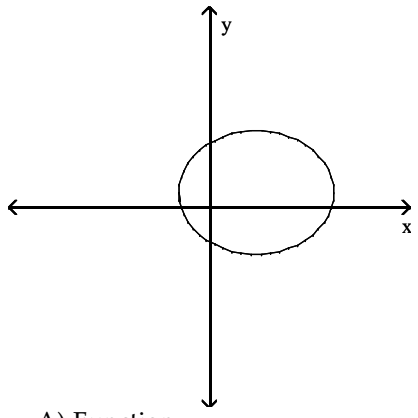
9)



A) Not a function B) Function

Answer: A

10)



A) Function B) Not a function

Answer: B

Perform the indicated evaluation.

11) Given $p(x) = -11x - 1$, determine $p(-6)$.

A) 66 B) –7 C) –65 D) 65

Answer: D

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12) Given $p(x) = 8x + 6$, determine $p\left(\frac{1}{4}\right)$.

A) –4 B) 8 C) – 1 D) 2

Answer: B

13) Given $p(x) = 3x + 6$, determine $p(0)$.

A) –6 B) 9 C) –3 D) 6

Answer: D

14) Given $t(z) = -5z^2 + 6z - 5$, determine $t(6)$.

A) –149 B) 1 C) –144 D) –179

Answer: A

15) Given $f(x) = x^2 + 2x + 1$, determine $f(1)$.

A) 0 B) –2 C) 4 D) 2

Answer: C

16) Given $f(x) = x^2 - 4x - 6$, determine $f(0)$.

A) 0 B) –6 C) 6 D) 36

Answer: B

Solve the problem.

17) A car is traveling at a constant speed of 55 miles per hour. The formula for the distance traveled at the end of t hours is $f(t) = 55t$. Which variable is the output?

A) Hours B) Distance traveled C) Speed

Answer: B

18) A particular type of pen costs 52 cents. If n represents the number of pens purchased, the formula for the cost is $f(n) = 52n$. Which is the independent variable?

A) Number of pens B) Total cost C) Cost of each pen

Answer: A

19) A car is traveling at a constant speed of 46 miles per hour. The formula for the distance traveled at the end of t hours is $f(t) = 46t$. If this function is used to describe the distance traveled on a particular day, then what is the practical domain for the function?

A) 0 to 100 B) 20

C) 0 to 24 D) All positive real numbers

Answer: C

20) A car is traveling at a constant speed of 53 miles per hour. The formula for the distance traveled at the end of t hours is $d = 53t$. Represent the distance traveled at the end of 5, 13, and 19 hours as ordered pairs in the form (t, d).

A) (5, 266), (13, 690), (19, 1008) B) (6, 265), (14, 689), (20, 1007)

C) (5, 265), (13, 689), (19, 1007) D) (5, 318), (13, 742), (19, 1060)

Answer: C

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21) A particular type of pen costs 50 cents. If n represents the number of pens purchased, the formula for the cost is c = 50n with c in cents. Represent the cost of 6, 7, and 11 pens as ordered pairs in the form (n, c).

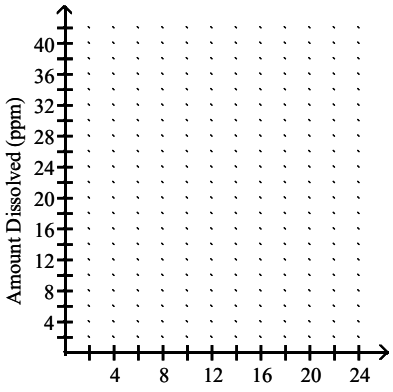
A) (6, 300), (6, 350), (11, 550)
B) (6, 300), (6, 350), (6, 550)
C) (6, 300), (7, 350), (11, 550)
D) (7, 300), (7, 350), (7, 550)

Answer: C

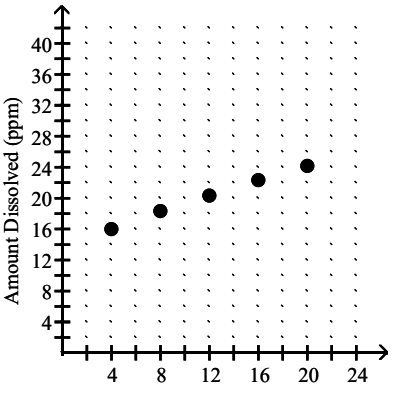
22) Suppose that during a certain step in a chemical manufacturing process the amount of hydrogen sulfide dissolved in a solution, measured in parts per million (ppm), is related to the elapsed time measured from the beginning of the step. Use the following table as a representation of this relationship.

ELAPSED TIME (minutes)	4	8	12	16	20
AMOUNT DISSOLVED (ppm)	16.0	18.4	20.4	22.4	24.2

Represent the data in the table graphically with elapsed time on the horizontal axis and the amount of dissolved hydrogen sulfide on the vertical axis. What general trend does the graph reflect?

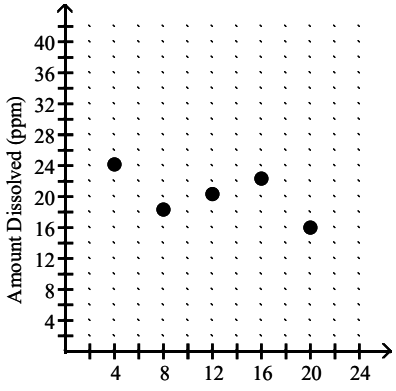


A) With increasing elapsed time, the amount of dissolved hydrogen sulfide decreases.



Elapsed Time (in minutes)

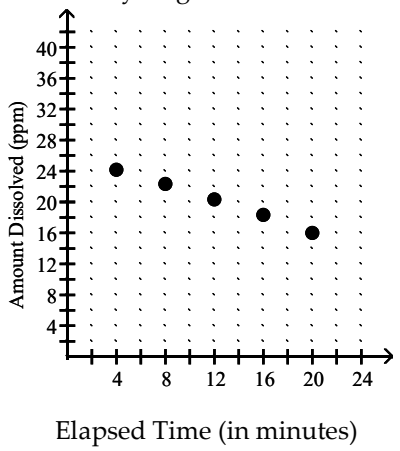
B) There is no apparent trend in the data.



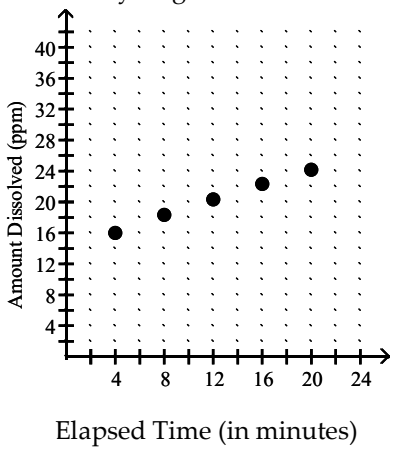
Elapsed Time (in minutes)

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C) With increasing elapsed time, the amount of dissolved hydrogen sulfide increases.



D) With increasing elapsed time, the amount of dissolved hydrogen sulfide increases.

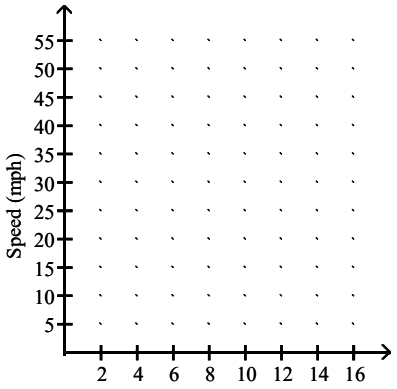


Answer: D

23) Suppose that the speed of a car, measured in miles per hour (mph), is monitored for some short period of time after the driver applies the brakes. The following table relates the speed of the car to the amount of time, measured in seconds (sec), elapsed from the moment that the brakes are applied.

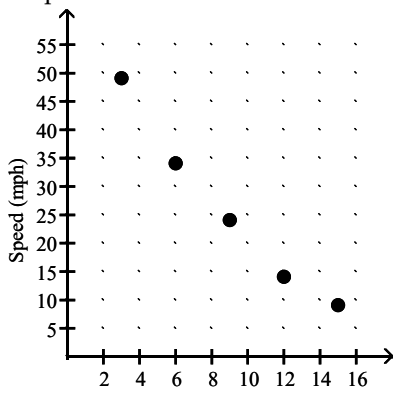
ELAPSED TIME (sec)	3	6	9	12	15
SPEED of CAR (mph)	49	34	24	14	9

Represent the data in the table graphically with elapsed time on the horizontal axis and speed on the vertical axis. What general trend does the graph reflect?

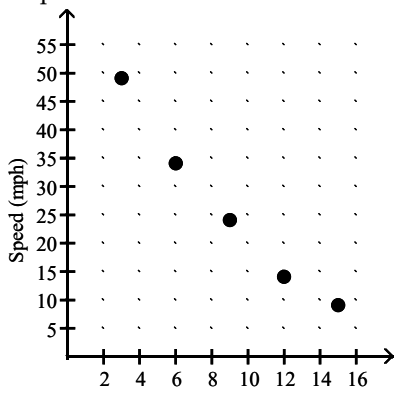


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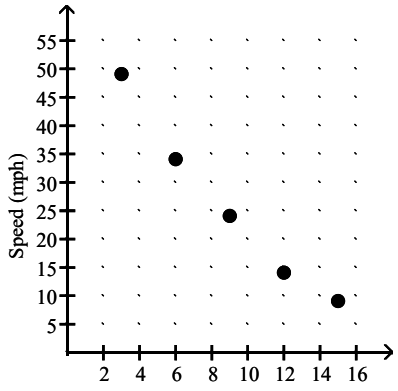
A) With increasing elapsed time, the speed increases.



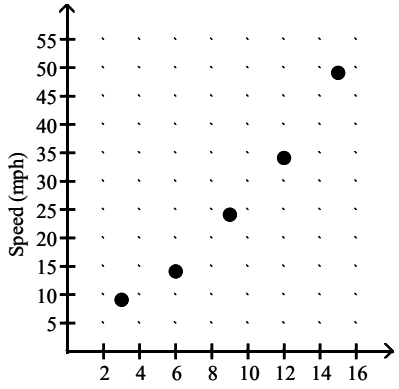
B) With increasing elapsed time, the speed decreases.



C) There is no apparent trend in the data.



D) With increasing elapsed time, the speed increases.

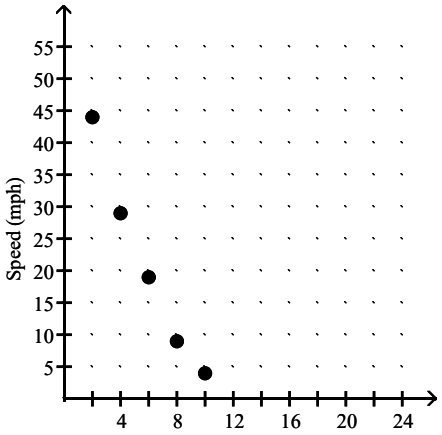


Answer: B

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24) Suppose that the speed of a car, measured in miles per hour (mph), is monitored for some short period of time after the driver applies the brakes. The following table and graph relate the speed of the car to the amount of time, measured in seconds (sec), elapsed from the moment that the brakes are applied.

ELAPSED TIME (sec)	2	4	6	8	10
SPEED of CAR (mph)	44	29	19	9	4



Elapsed Time (in seconds)

What general trend do the data reflect? In which of the time intervals does the speed change the most?

A) With increasing elapsed time, the speed increases. The speed changes most during the time interval from 8 seconds to 10 seconds.

B) With increasing elapsed time, the speed increases. The speed changes most during the time interval from 2 seconds to 4 seconds.

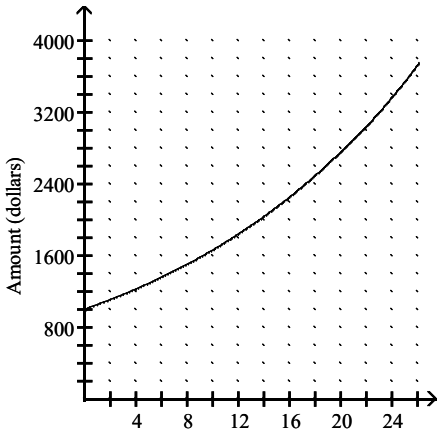
C) With increasing elapsed time, the speed decreases. The speed changes most during the time interval from 2 seconds to 4 seconds.

D) With increasing elapsed time, the speed decreases. The speed changes most during the time interval from 8 seconds to 10 seconds.

Answer: C

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25) When you were born, your uncle put $1000 into a bank account for you. According to the terms of the account, your investment grows in a manner represented by the following graph.

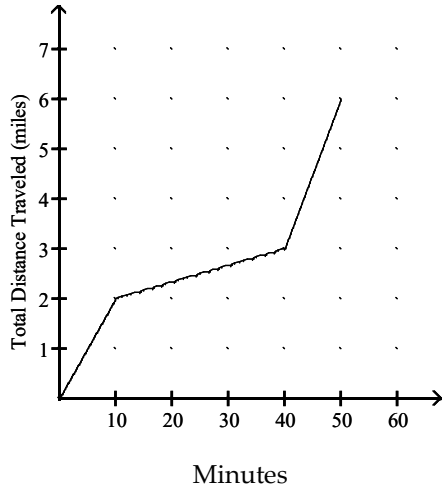


Which variable is the input variable? Which variable is the output variable? If you are 18 years old, how much money is in the account?

A) Dollars; years; $2500
B) Years; dollars; $2600
C) Years; dollars; $2500
D) Dollars; years; $2400

Answer: C

26) Starting at a local park, Rico biked for a distance, walked for a distance, then took a bus ride back to the park. His activity is depicted in the following graph. State in words the details of Rico's activity as it is depicted in the graph.



A) Rico biked for 2 miles, walked for 2 miles, then took a 3 mile bus ride back to the park.
B) Rico biked for 2 miles, walked for 1 mile, then took a 3 mile bus ride back to the park.
C) Rico biked for 3 miles, walked for 1 mile, then took a 3 mile bus ride back to the park.
D) Rico biked for 2 miles, walked for 1 mile, then took a 4 mile bus ride back to the park.

Answer: B

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Provide an appropriate response.

27) Find the domain and range of the function.
{(1, 6), (2, –7), (6, 2), (8, 8), (11, –4)}

A) Domain: {2, 6, 8, 11}; range: {6, –7, 2, 8, –4}
B) Domain: {6, 7, 2, 8, 4}; range: {1, 2, 6, 8, 11}
C) Domain: {6, –7, 2, 8, –4}; range: {1, 2, 6, 8, 11}
D) Domain: {1, 2, 6, 8, 11}; range: {6, –7, 2, 8, –4}

Answer: D

28) Find the domain and range of the function.
{(–4, 8), (–1, –1), (3, 3), (6, 7)}

A) Domain: {8, –1, 3, 7}; range: {–4, –1, 3, 6}
B) Domain: {–4, –1, 3, 6}; range: {8, 1, 3, 7}
C) Domain: {–4, –1, 3, 6}; range: {8, –1, 3, 7}
D) Domain: {–1, 3, 6}; range: {8, –1, 3, 7}

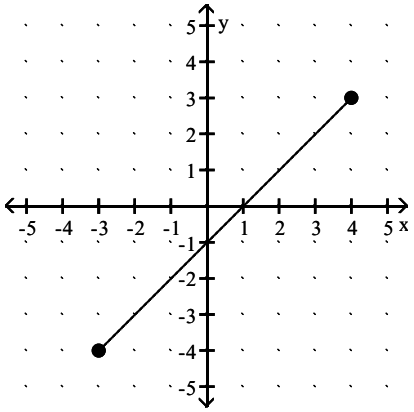
Answer: C

29) Find the domain and range of the function.
{(–8, 5), (–5, –4), (–2, –7), (4, –1)}

A) Domain: {5, –4, –7, –1}; range: {–8, –5, –2, 4}
B) Domain: {–8, –5, –2, 4}; range: {5, –4, –7, –1}
C) Domain: {–5, –2, 4}; range: {5, –4, –7, –1}
D) Domain: {–8, –5, –2, 4}; range: {5, 4, 7, 1}

Answer: B

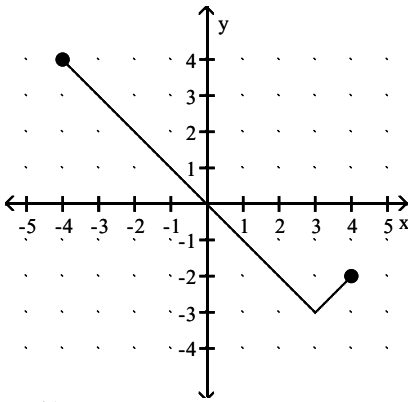
30) Find the domain of the function.



A) –4 ≤ x ≤ 5
B) 2 ≤ x ≤ –2
C) –5 ≤ x ≤ 5
D) –3 ≤ x ≤ 4

Answer: D

31) Find the domain of the function.

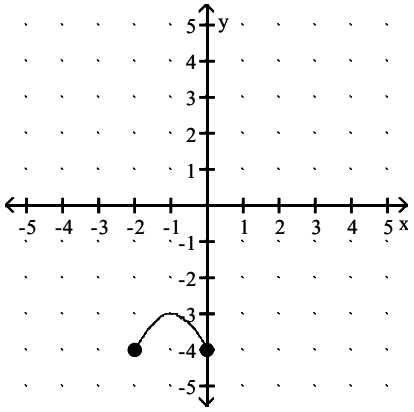


A) –4 ≤ x ≤ 4
B) –2 ≤ x ≤ 4
C) –2 ≤ x ≤ 2
D) {–5, –4, –3, –2, –1, 0, 1, 2, 3, 4, 5}

Answer: A

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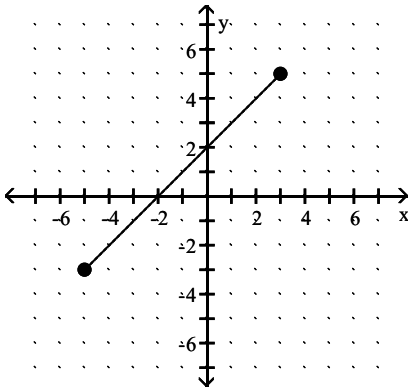
32) Find the range of the function.



A) $-2 \le y \le 0$ B) $-1 \le y \le 1$ C) $-4 \le y \le -3$ D) $-5 \le y \le 5$

Answer: C

33) Find the range of the function.

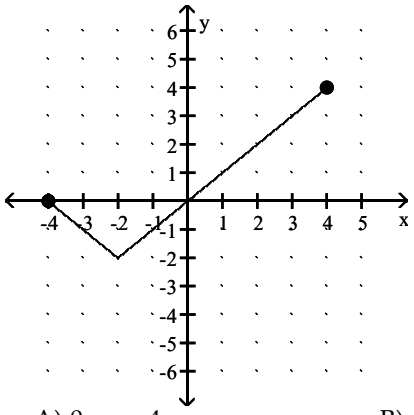


A) $-5 \le x \le 3$ B) $\{-3, -2, -1, 0, 1, 2, 3, 4, 5\}$

C) $-5 \le y \le 5$ D) $-3 \le y \le 5$

Answer: D

34) Find the range of the function.

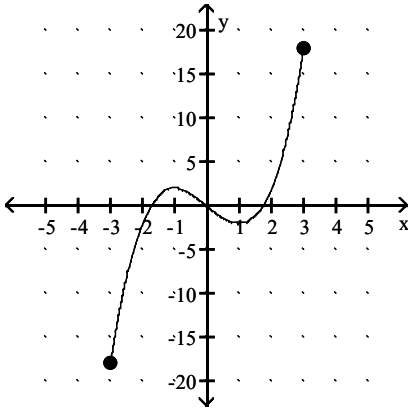


A) $0 \le y \le 4$ B) $\{-5 \le y \le 5\}$ C) $-2 \le y \le 4$ D) $2 \le y \le -2$

Answer: C

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35) Find the domain of the function.



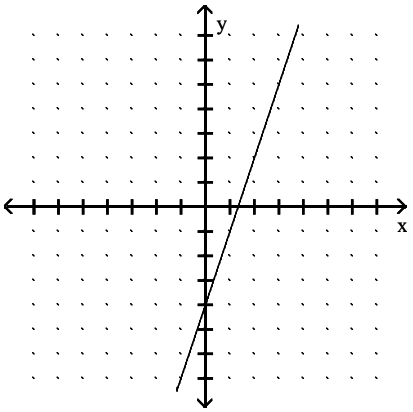
A) $-5 \le x \le 5$ B) All real numbers C) $-3 \le x \le 3$ D) $-18 \le x \le 18$

Answer: C

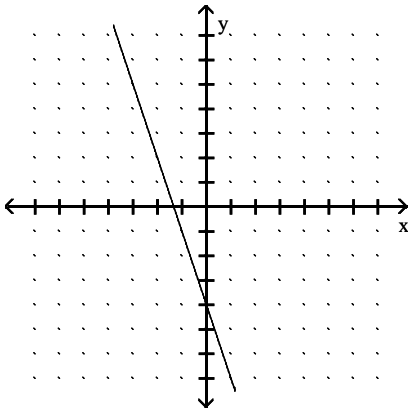
Match the following function or equation with its corresponding graph. Each unit equals one.

36) $f(x) = 3x + 4$

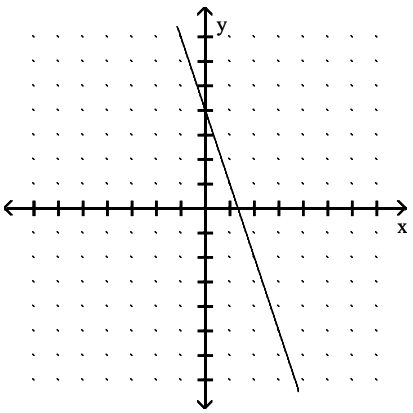
A)



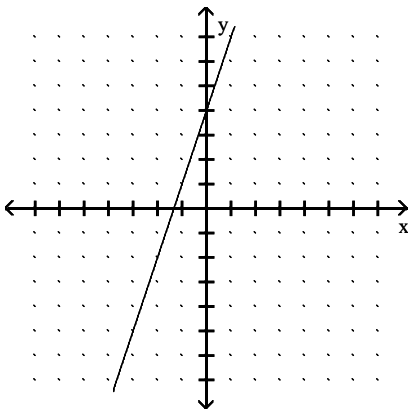
B)



C)



D)

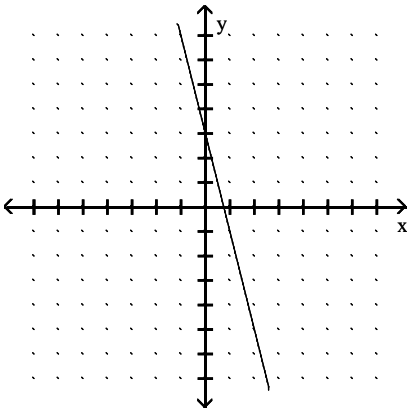


Answer: D

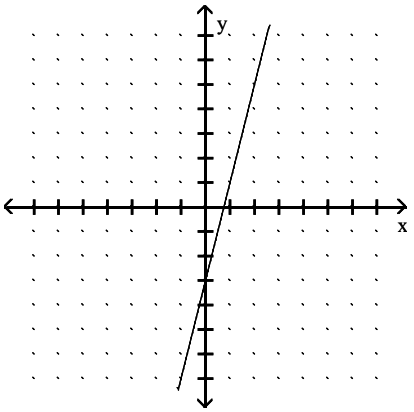
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37) $g(x) = 4x - 3$

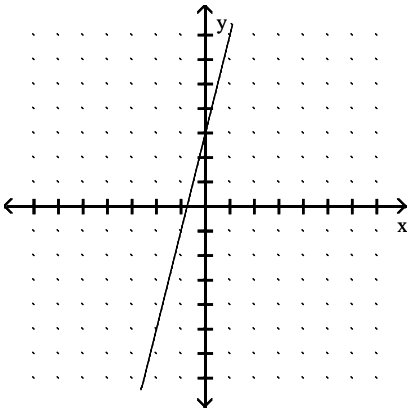
A)



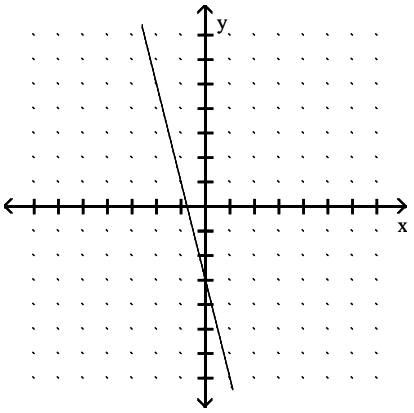
B)



C)



D)

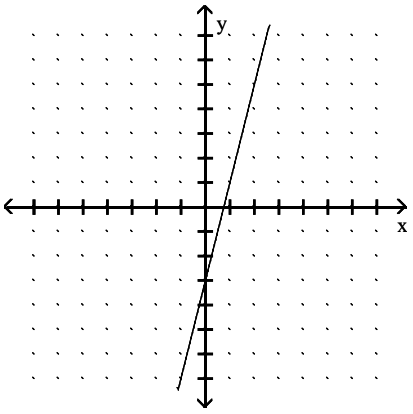


Answer: B

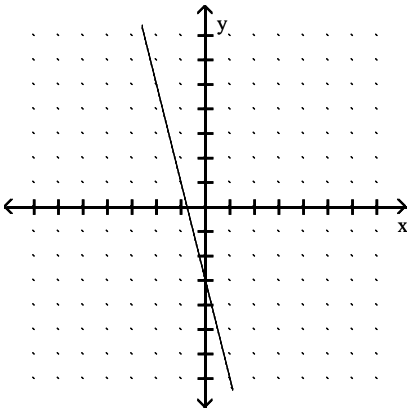
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38) $h(x) = -4x + 3$

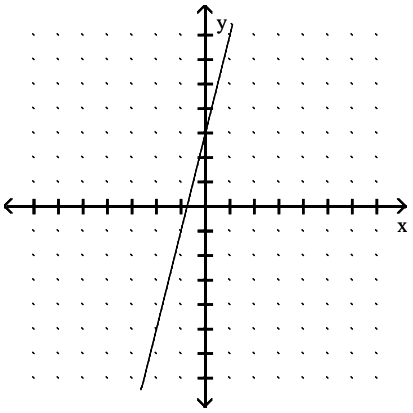
A)



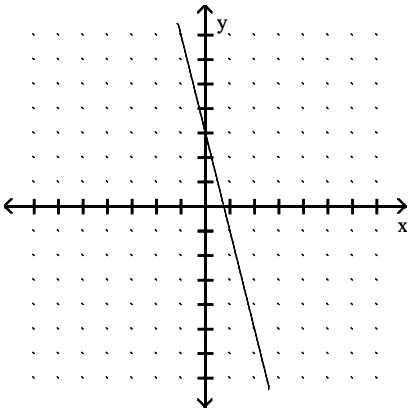
B)



C)



D)

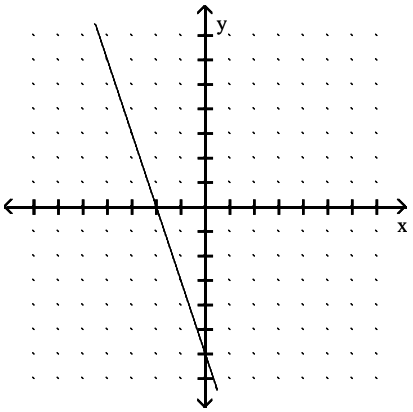


Answer: D

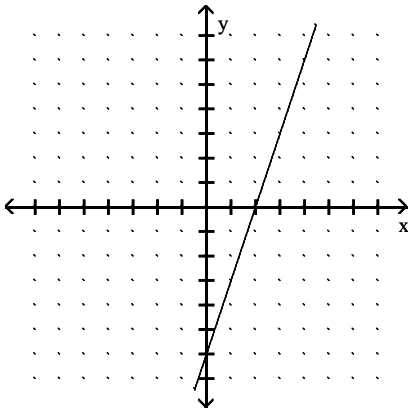
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39) f(x) = –3x – 6

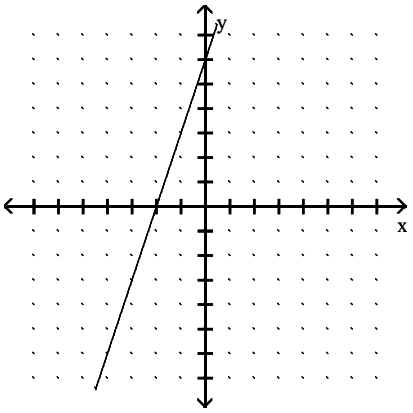
A)



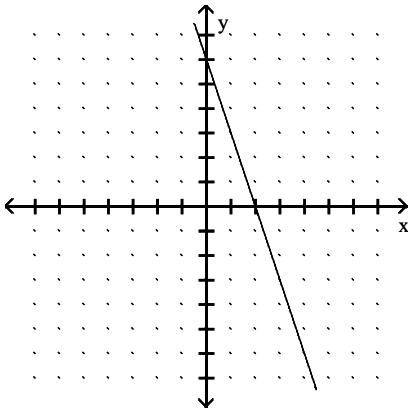
B)



C)



D)

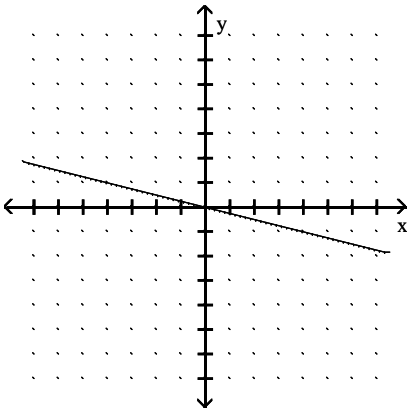


Answer: A

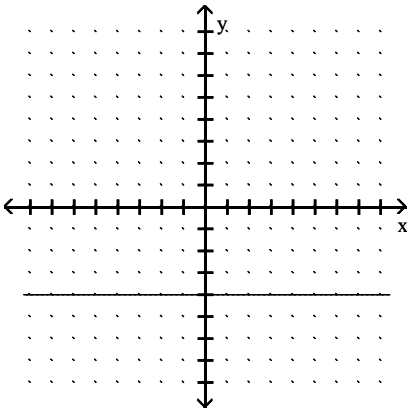
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40) $y = -4x$

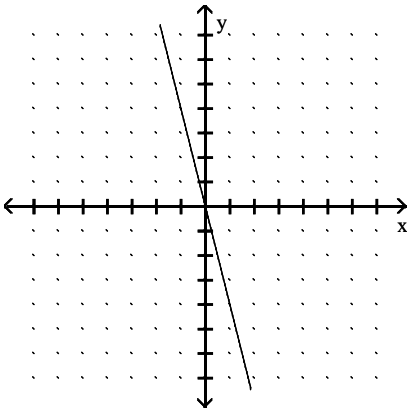
A)



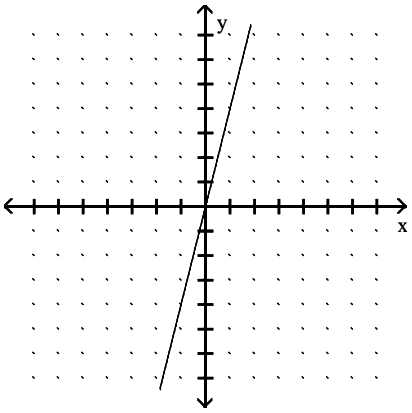
B)



C)



D)

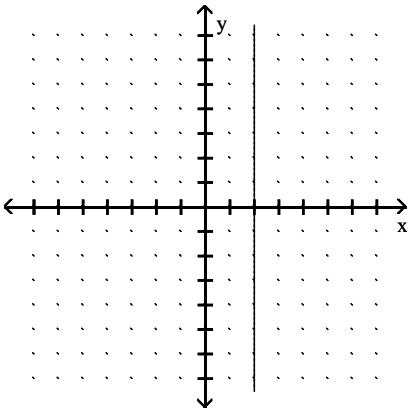


Answer: C

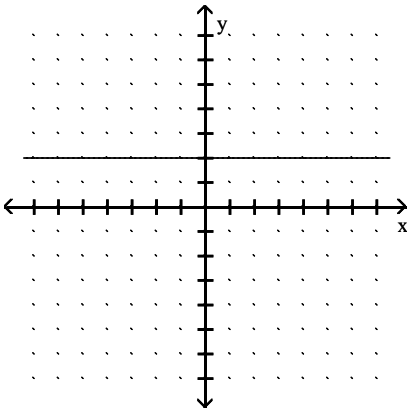
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41) y = 2

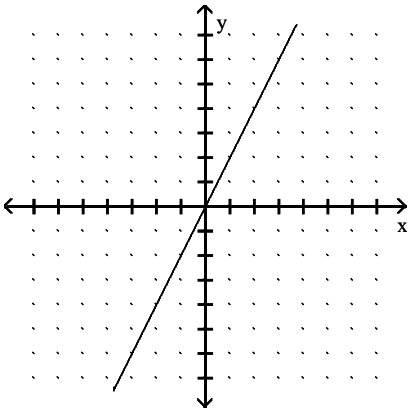
A)



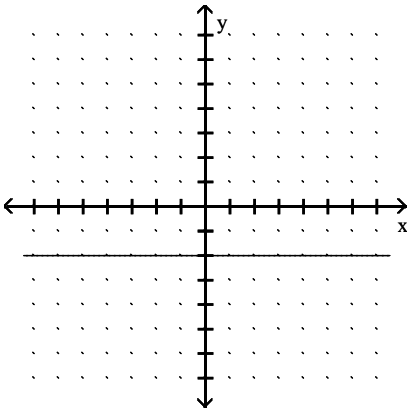
B)



C)



D)

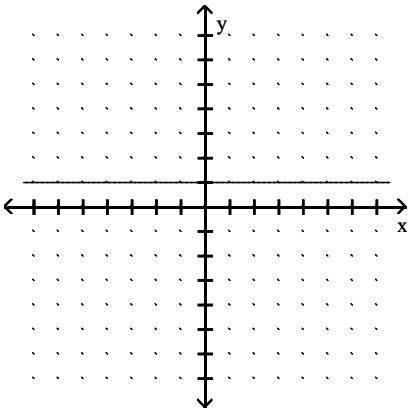


Answer: B

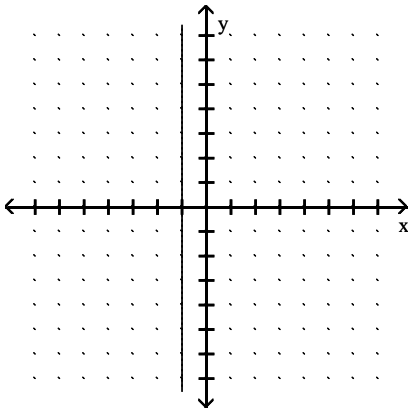
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42) x = –1

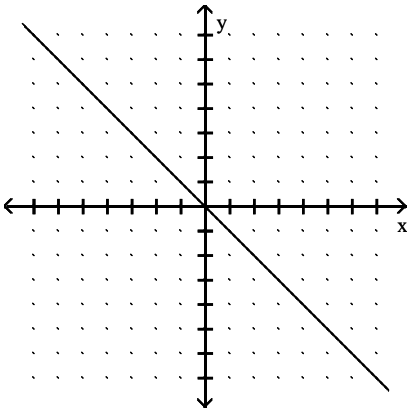
A)



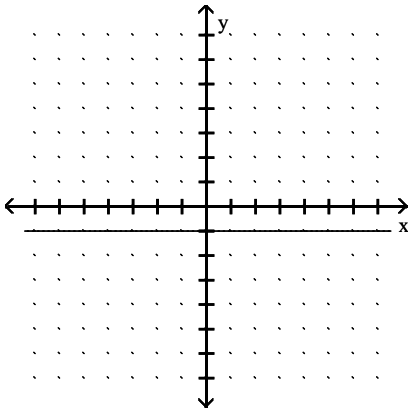
B)



C)



D)



Answer: B

Given the table of values, determine whether s is a linear function.

43)

t	s(t)
0	–2
1	–5
2	–8
3	–11
4	–14

A) Linear

B) Not linear

Answer: A

44)

t	s(t)
–7	48
–6	35
–5	24
–4	15
–3	8

A) Not linear

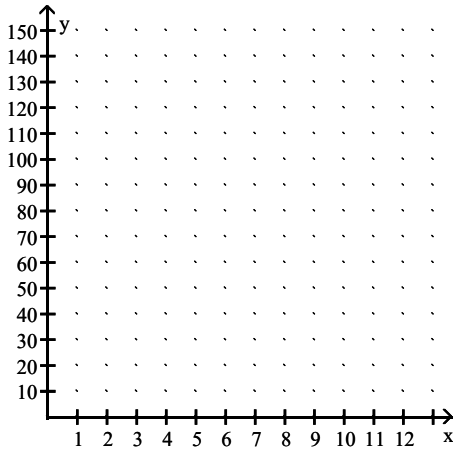
B) Linear

Answer: A

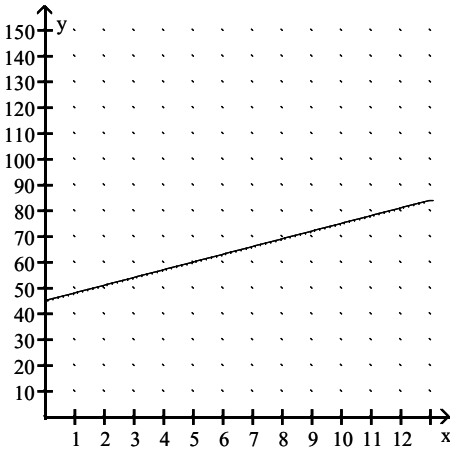
Solve the problem.

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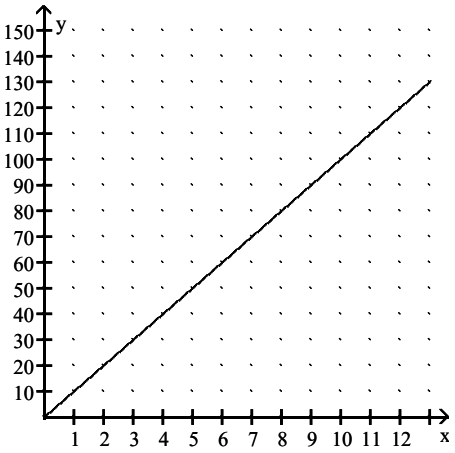
45) Kayla, a photographer, can produce prints of her photos at a cost of $3 per print, with a setup cost of $45 per run. She sells the prints for $10 each. Write an equation for the total cost. Let C represent the total cost and x represent the number of photos produced. Graph the equation by hand. Use the graph to determine the cost of producing 2 prints.



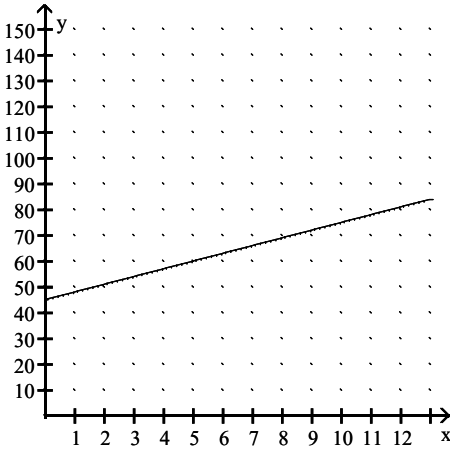
A) C = 3x + 45; $51



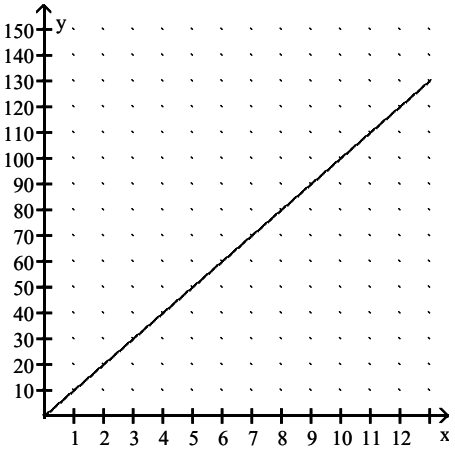
B) C = 10x; $20



C) C = 3x + 45; $54



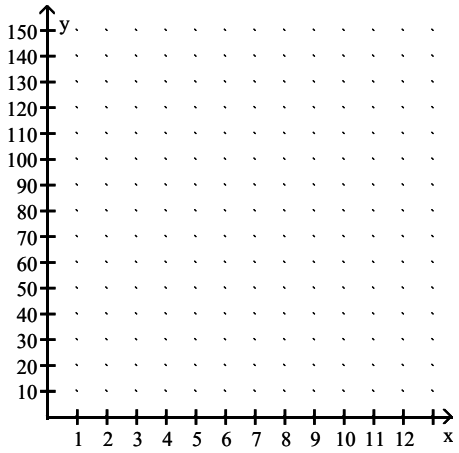
D) C = 10x; $10



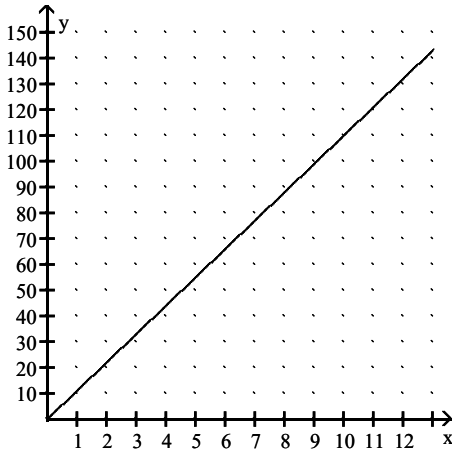
Answer: A

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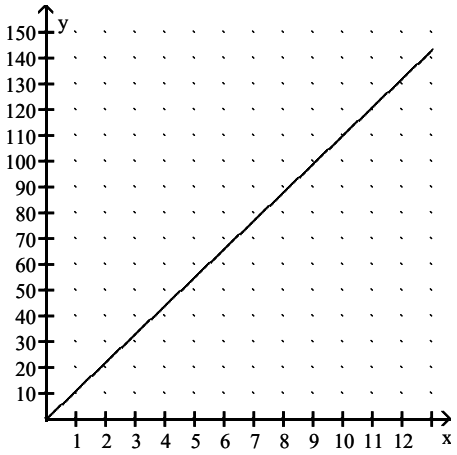
46) Kayla, a photographer, can produce prints of her photos at a cost of $4 per print, with a setup cost of $45 per run. She sells the prints for $11 each. Write an equation for the total cost. Let C represent the total cost and x represent the number of photos produced. Graph the equation by hand. Use the graph to determine the number of prints produced for a cost of $60.



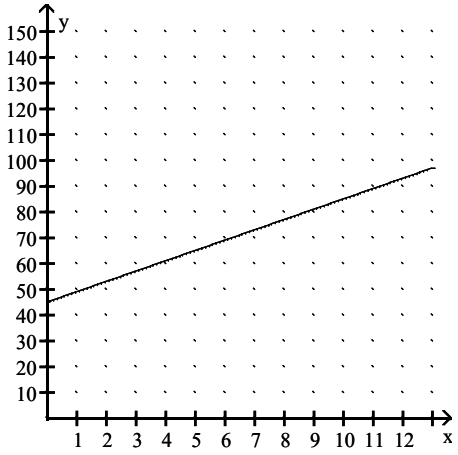
A) C = 11x; 3 prints



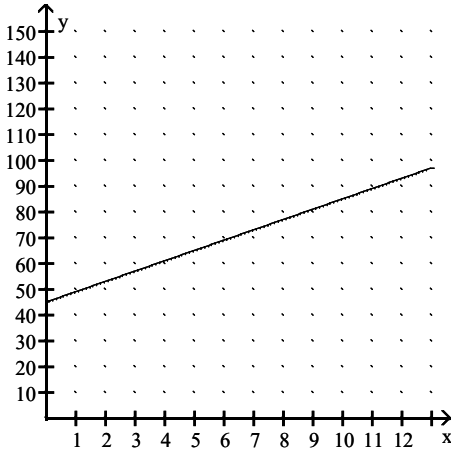
B) C = 11x; 5 prints



C) C = 4x + 45; 2 prints



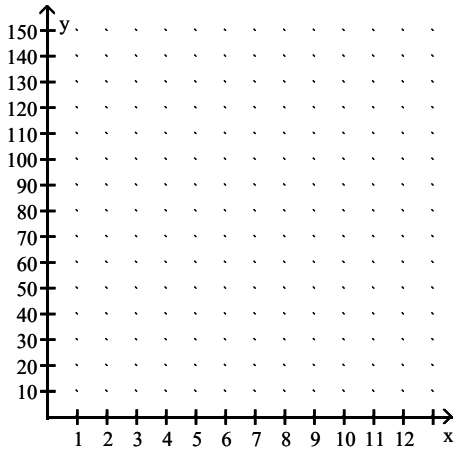
D) C = 4x + 45; 3 prints



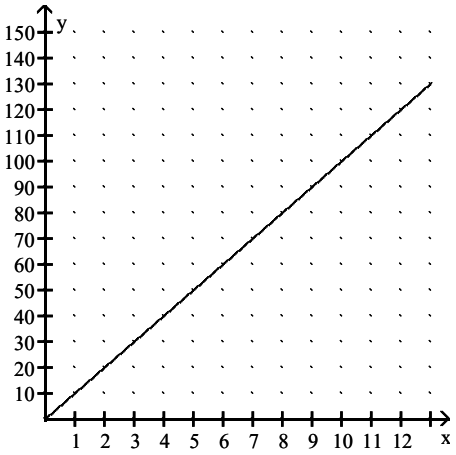
Answer: D

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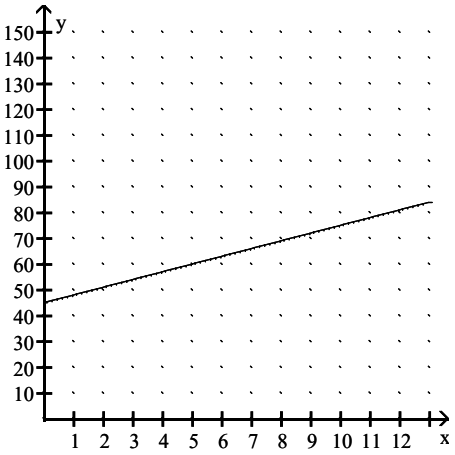
47) Kayla, a photographer, can produce prints of her photos at a cost of $3 per print, with a setup cost of $45 per run. She sells the prints for $10 each. Write an equation for the total revenue. Let R represent the total revenue and x represent the number of photos produced. Graph the equation by hand. Use the graph to determine the revenue of selling 9 prints.



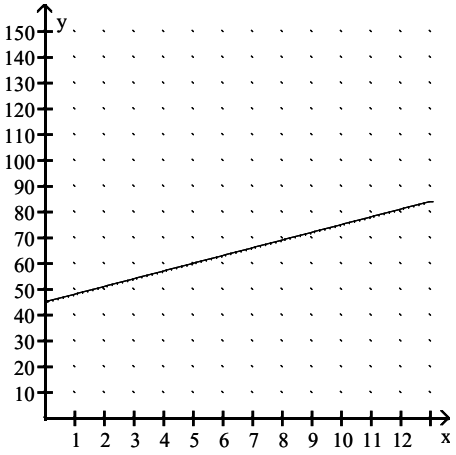
A) R = 10x; $80



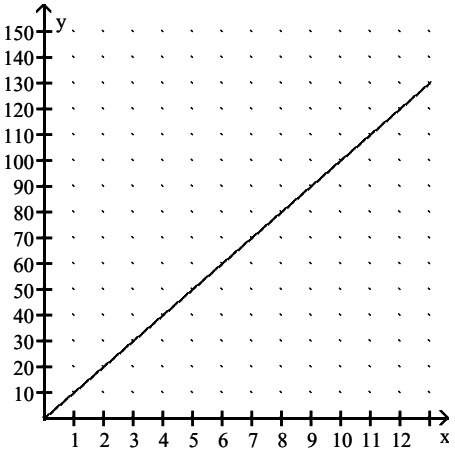
B) R = 3x + 45; $72



C) R = 3x + 45; $75



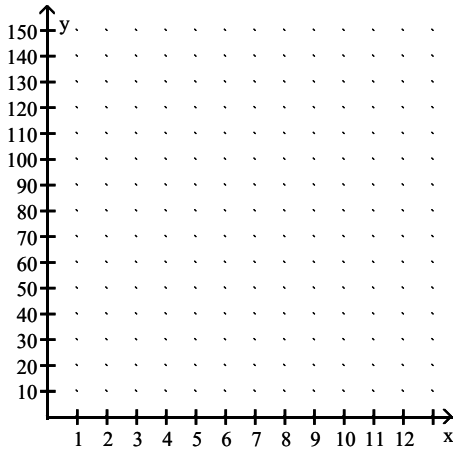
D) R = 10x; $90



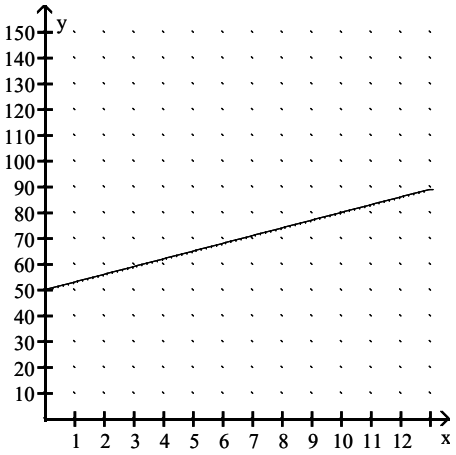
Answer: D

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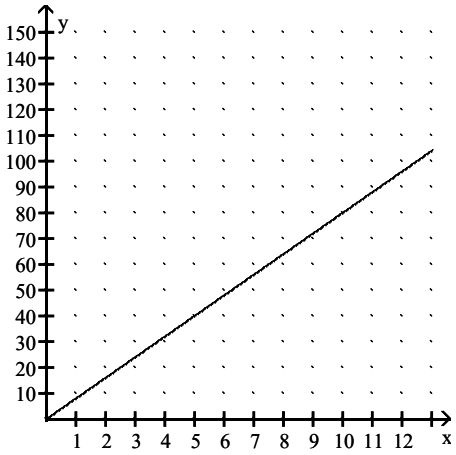
48) Kayla, a photographer, can produce prints of her photos at a cost of $3 per print, with a setup cost of $50 per run. She sells the prints for $8 each. Write an equation for the total revenue. Let R represent the total revenue and x represent the number of photos produced. Graph the equation by hand. Use the graph to determine the number of prints sold to obtain a revenue of $80.



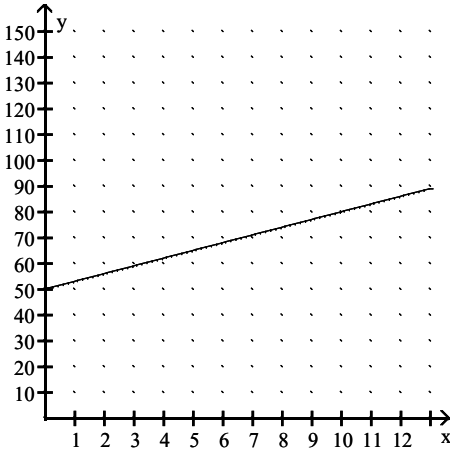
A) R = 3x + 50; 9 prints



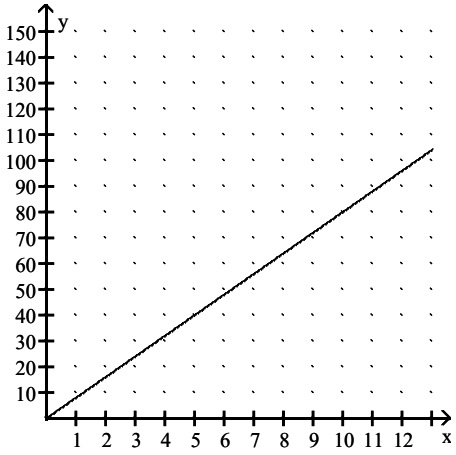
B) R = 8x; 10 prints



C) R = 3x + 50; 10 prints



D) R = 8x; 8 prints



Answer: B

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49) When a tow truck is called, the cost of the service is given by the linear function $y = 2x + 65$, where y is in dollars and x is the number of miles the car is towed. Find and interpret the slope and y–intercept of the linear equation.

A) m = 2; The cost of the service increases $2 every mile the car is towed. y–intercept: 65; The cost of the service is $65 if the car is not towed.

B) m = 65; The number of miles the car is towed increases 65 miles for every dollar spent on the service. y–intercept: 2; The tow truck will tow the car 2 miles for no cost.

C) m = 2; The number of miles the car is towed increases 2 miles for every dollar spent on the service. y–intercept: 65; The tow truck will tow the car 65 miles for no cost.

D) m = 65; The cost of the service increases $65 every mile the car is towed. y–intercept: 2; The cost of the service is $2 if the car is not towed.

Answer: A

50) The amount of water in a leaky bucket is given by the linear function $y = 112 - 5x$, where y is in ounces and x is in minutes. Find and interpret the slope and y–intercept of the linear equation.

A) m = 5; The amount of water in the bucket increases 5 ounces every minute. y–intercept: 112; At x = 0, the amount of water in the bucket was 112 ounces.

B) m = 112; The amount of water in the bucket increases 112 ounces every minute. y–intercept: 5; At x = 0, the amount of water in the bucket was 5 ounces.

C) m = –5; The amount of water in the bucket decreases 5 ounces every minute. y–intercept: 112; At x = 0, the amount of water in the bucket was 112 ounces.

D) m = 112; The amount of water in the bucket decreases 112 ounces every minute. y–intercept: 5; At x = 0, the amount of water in the bucket was 5 ounces.

Answer: C

51) The price of a certain commodity is a function of supply and demand. The table below shows the price of the commodity per barrel between 2005 and 2010. Find the average annual rate of change between 2006 and 2008.

Year	Price/barrel
2005	$19
2006	$25
2007	$17
2008	$10
2009	$25
2010	$36

A) $7.50 per year B) –$7.50 per year C) $2.75 per year D) –$15.00 per year

Answer: B

52) The price of a certain commodity is a function of supply and demand. The table below shows the price of the commodity per barrel between 2005 and 2010. Find the average annual rate of change between 2008 and 2010.

Year	Price/barrel
2005	$21
2006	$26
2007	$17
2008	$12
2009	$25
2010	$35

A) $23.00 per year B) $2.25 per year C) –$11.50 per year D) $11.50 per year

Answer: D

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Determine the slope of the indicated line.

53) The line going through the points (–9, 5) and (3, 7)

A) $\frac{7}{2}$ B) 6 C) $\frac{2}{7}$ D) $\frac{1}{6}$

Answer: D

54) The line going through the points (–1, 0) and (0, 4)

A) $-\frac{1}{4}$ B) 4 C) $\frac{1}{4}$ D) – 4

Answer: B

55) The line going through the points (–2, 7) and (–7, 7)

A) 2 B) 12 C) 1 D) 0

Answer: D

56) The line represented by the equation $2x + 5y = 21$

A) $\frac{2}{5}$ B) $\frac{5}{2}$ C) $-\frac{2}{5}$ D) $-\frac{5}{2}$

Answer: C

57) The line represented by the equation $-4y = -2x - 14$

A) 2 B) – 2 C) $-\frac{1}{2}$ D) $\frac{1}{2}$

Answer: D

58) The line represented by the equation $2x - 3y = 12$

A) $\frac{3}{2}$ B) $-\frac{2}{3}$ C) $\frac{2}{3}$ D) $-\frac{3}{2}$

Answer: C

59) The line represented by the equation $7y - 19 = 9x$

A) $\frac{19}{7}$ B) 9 C) 7 D) $\frac{9}{7}$

Answer: D

Write the equation of the line described. Write the equation in slope–intercept form where applicable.

60) The slope is $\frac{7}{3}$ and the line passes through the point (0, –3).

A) $y = \frac{7}{3}x + 3$ B) $y = \frac{7}{3}x - 3$ C) $y = -\frac{7}{3}x + 3$ D) $y = -\frac{7}{3}x - 3$

Answer: B

61) The slope is 0 and the line passes through the point (0, 4).

A) $y = 0$ B) $y = 4$ C) $y = 4x$ D) $x = 4$

Answer: B

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62) The line passes through the point (4, 2) and the slope is – 5.

A) $y = -\frac{1}{5}x + 22$ B) $y = -5x + \frac{1}{22}$ C) $y = -5x + 22$ D) $y = -5x - 22$

Answer: C

63) The line passes through the points (–7, –3) and (0, 7).

A) $y = \frac{10}{7}x + 7$ B) $y = -\frac{4}{7}x + 7$ C) $y = \frac{4}{7}x + 7$ D) $y = -\frac{10}{7}x + 7$

Answer: A

64) The line passes through the points (–2, 5) and (8, 5).

A) $y = 5$ B) $-2x + 8y = 0$ C) $8x - 2y = 0$ D) $x = -2$

Answer: A

65) The slope is $-\frac{3}{5}$ and the vertical intercept is 3.

A) $y = -\frac{3}{5}x + 3$ B) $y = -\frac{3}{5}x - 3$ C) $y = \frac{3}{5}x - 3$ D) $y = \frac{3}{5}x + 3$

Answer: A

66) The slope is $\frac{8}{9}$ and the vertical intercept is –4.

A) $y = -\frac{8}{9}x - 4$ B) $y = \frac{8}{9}x - 4$ C) $y = -\frac{8}{9}x + 4$ D) $y = \frac{8}{9}x + 4$

Answer: B

67) The line passes through (7, 7) and is parallel to $-4x - 9y = -37$.

A) $y = \frac{7}{9}x + \frac{37}{9}$ B) $y = \frac{4}{9}x - \frac{91}{9}$ C) $y = -\frac{4}{9}x + \frac{91}{9}$ D) $y = -\frac{9}{4}x - \frac{7}{4}$

Answer: C

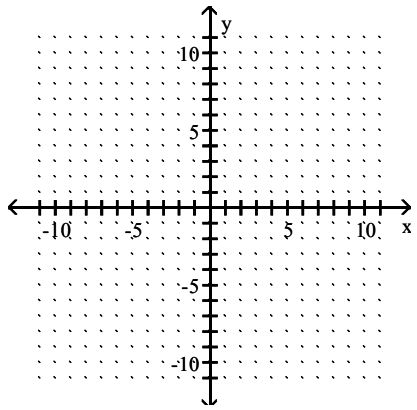
68) The line is vertical and passes through (7, –4).

A) $x = -4$ B) $y = -4$ C) $y = 7$ D) $x = 7$

Answer: D

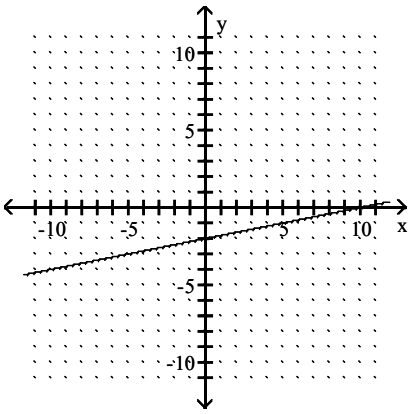
Graph.

69) The line through (0, 2) with slope of $\frac{1}{5}$.

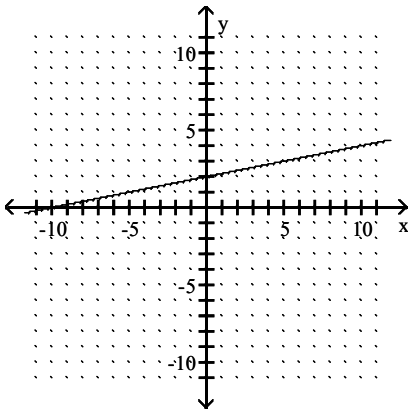


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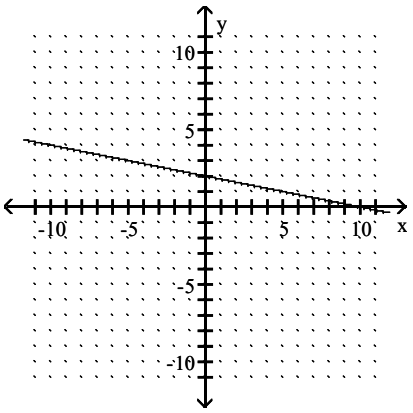
A)



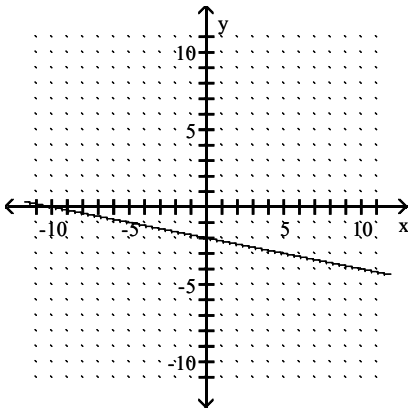
B)



C)

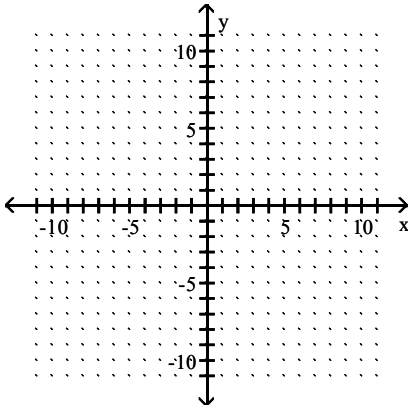


D)



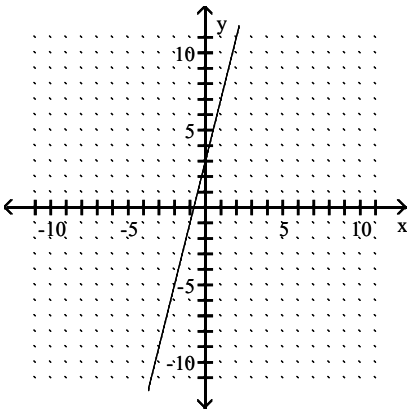
Answer: B

70) The line through (–3, –9) with slope of 4.

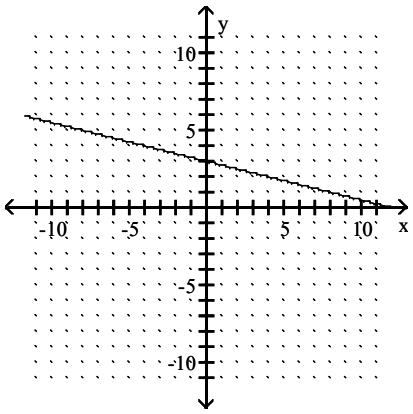


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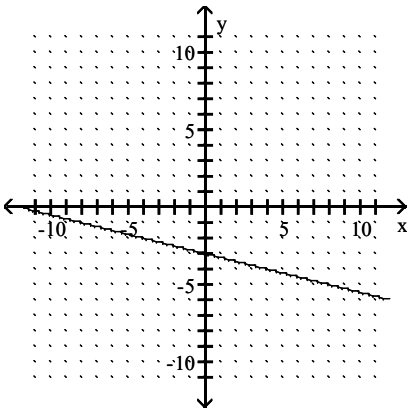
A)



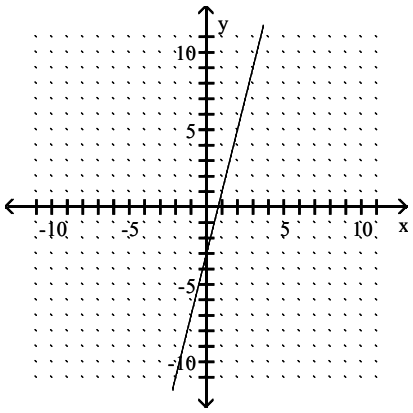
B)



C)

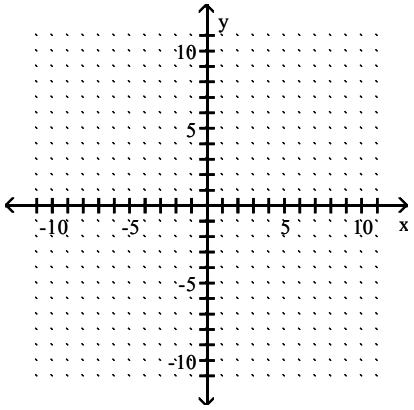


D)



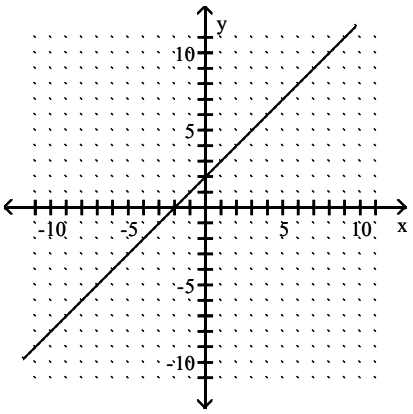
Answer: A

71) $x + y = -2$

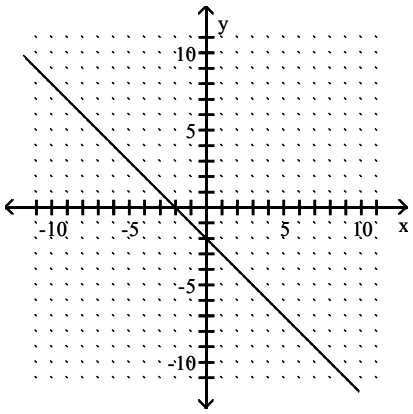


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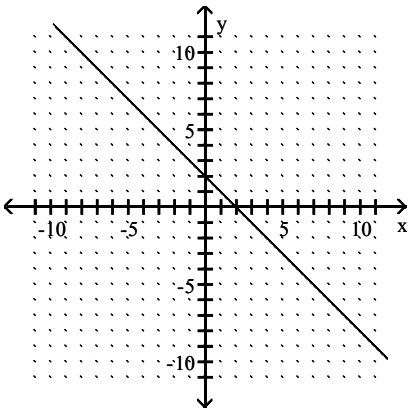
A)



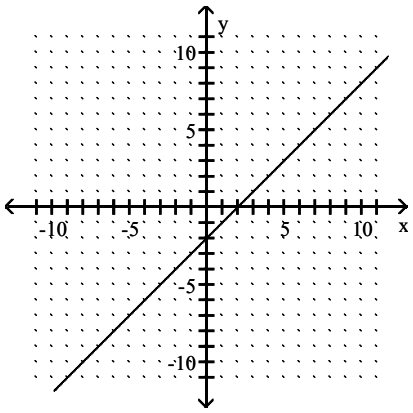
B)



C)

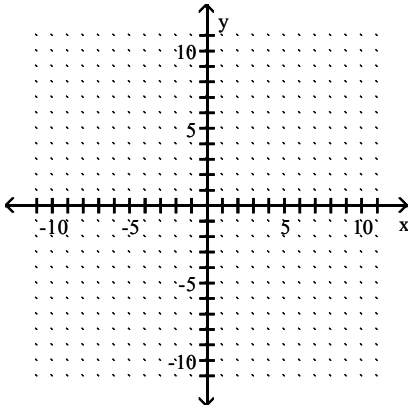


D)



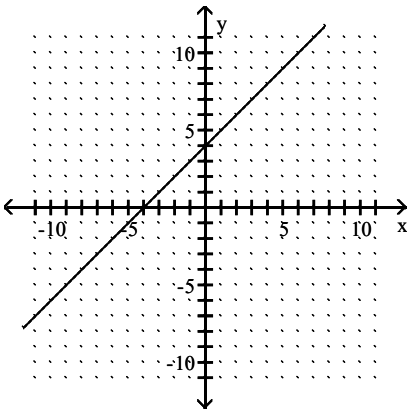
Answer: B

72) $y = x - 4$

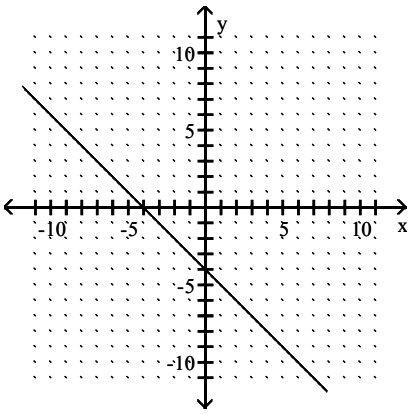


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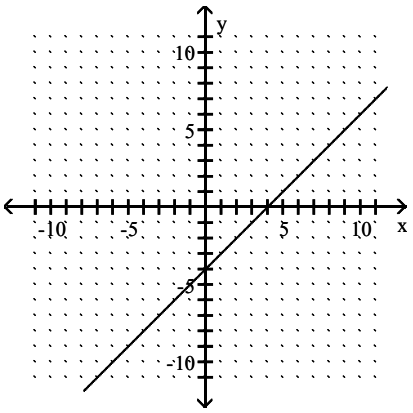
A)



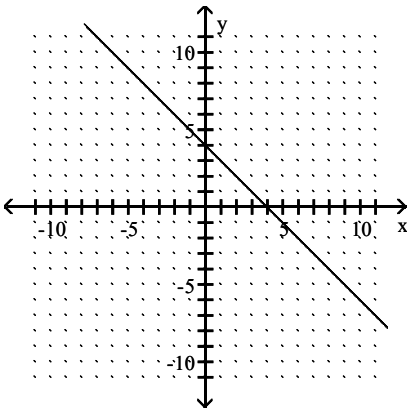
B)



C)

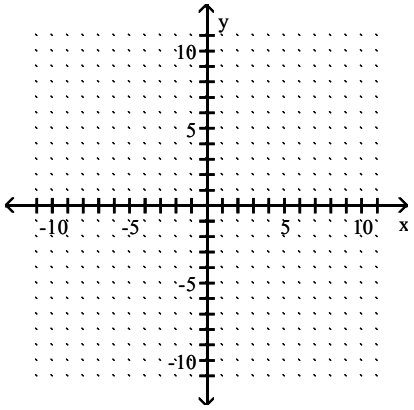


D)



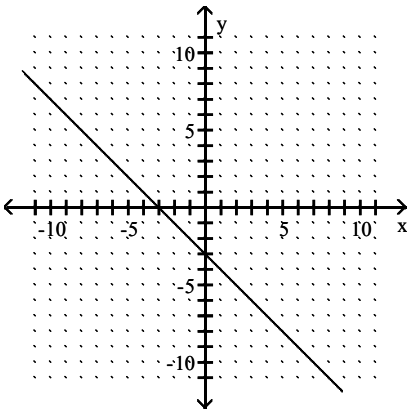
Answer: C

73) $y + 3 = x$

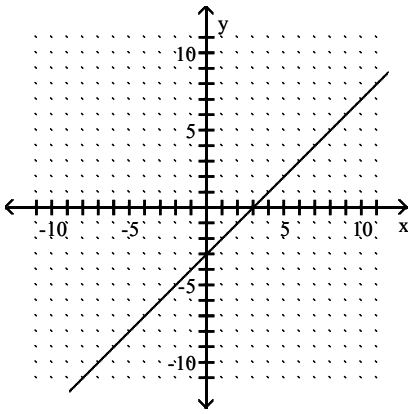


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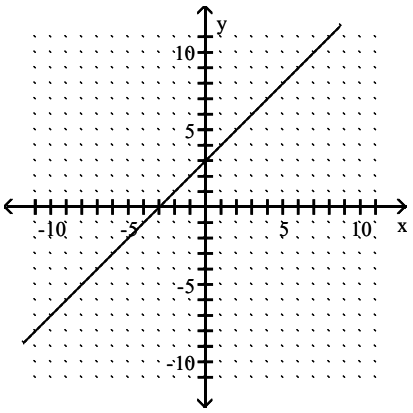
A)



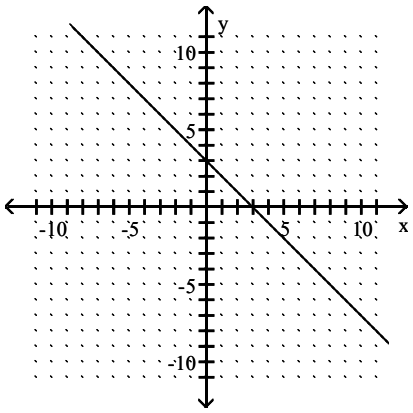
B)



C)

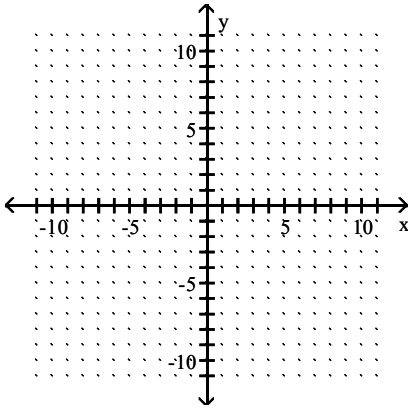


D)



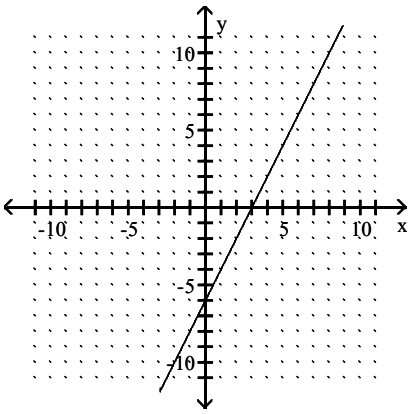
Answer: B

74) $y = 2x - 6$

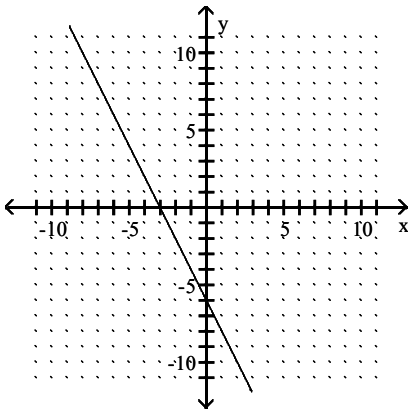


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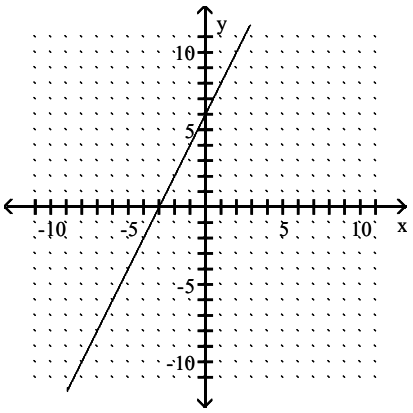
A)



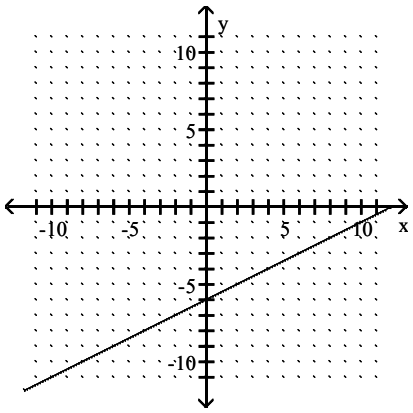
B)



C)

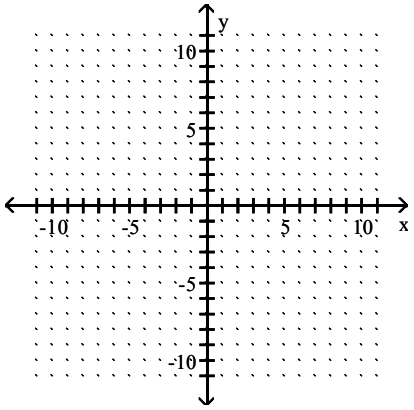


D)



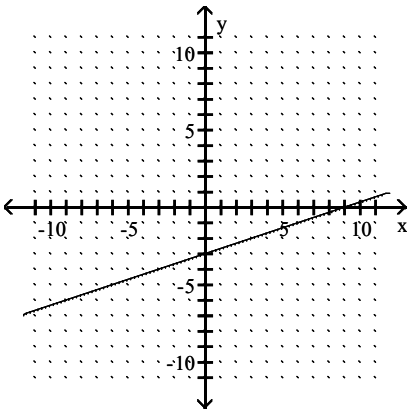
Answer: A

75) $3x - y = 3$

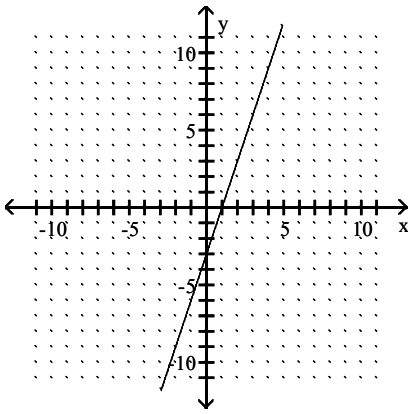


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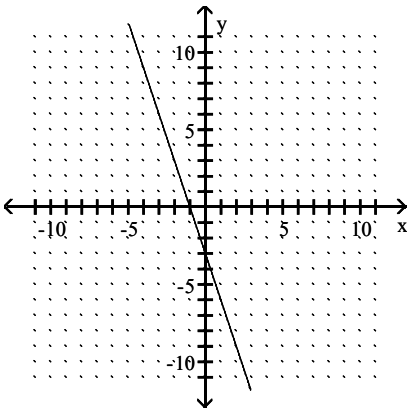
A)



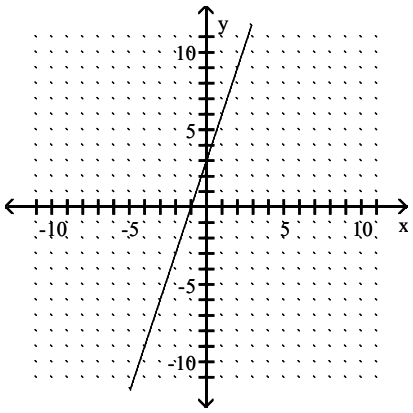
B)



C)

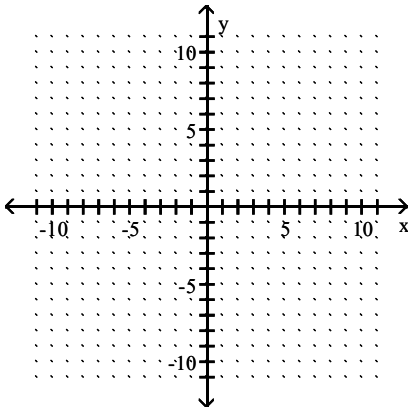


D)



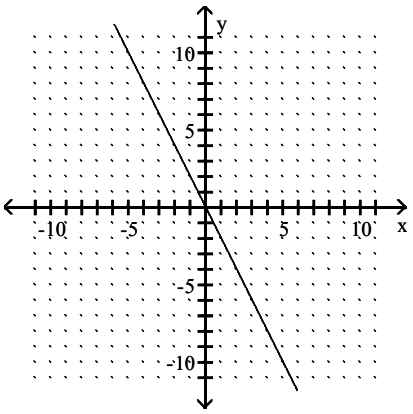
Answer: B

76) $y = \frac{1}{2}x$

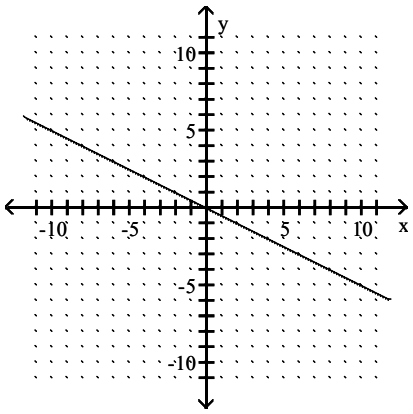


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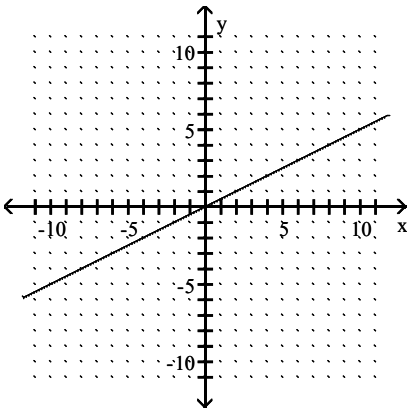
A)



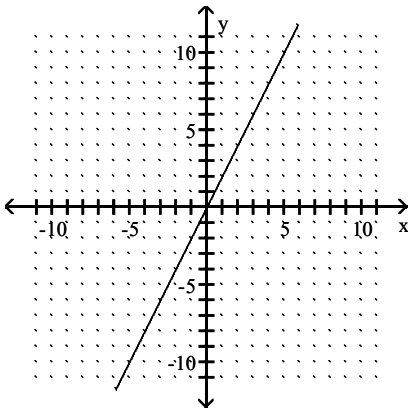
B)



C)

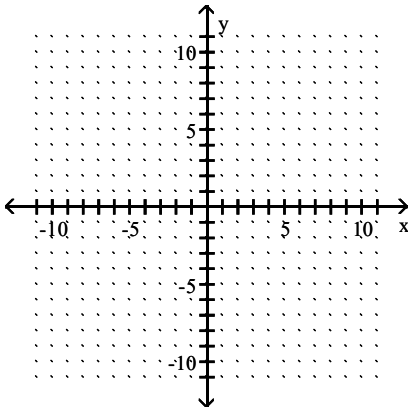


D)



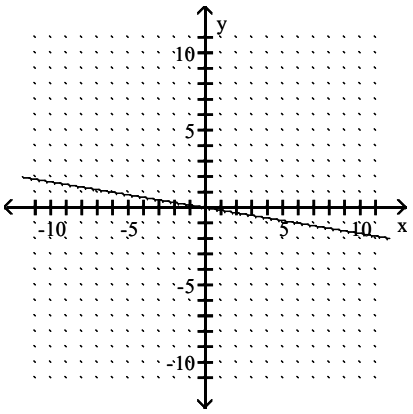
Answer: C

77) $y = -\frac{1}{6}x$

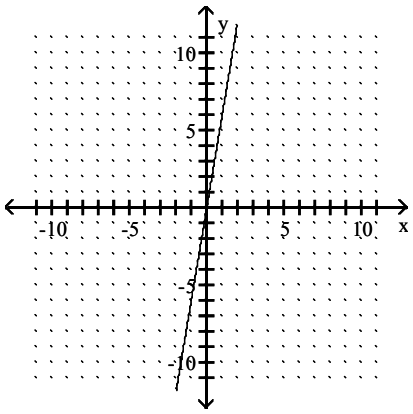


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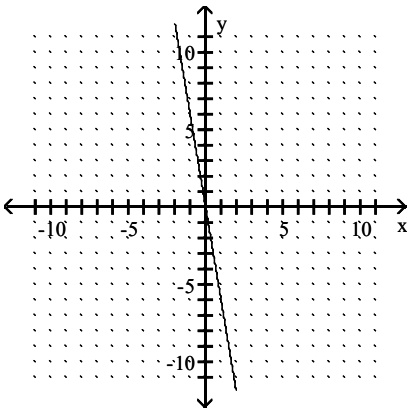
A)



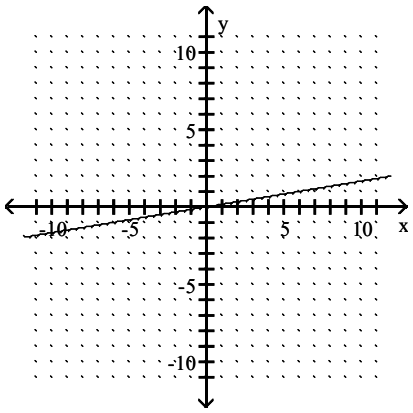
B)



C)

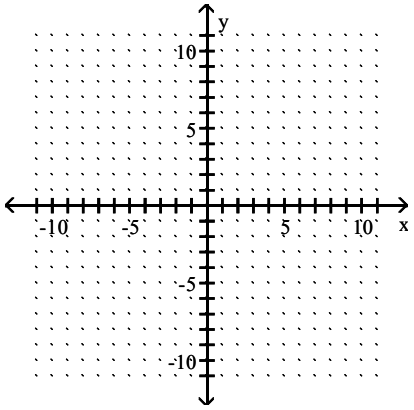


D)



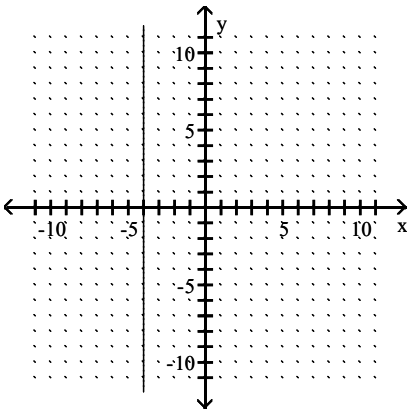
Answer: A

78) $y = -4$

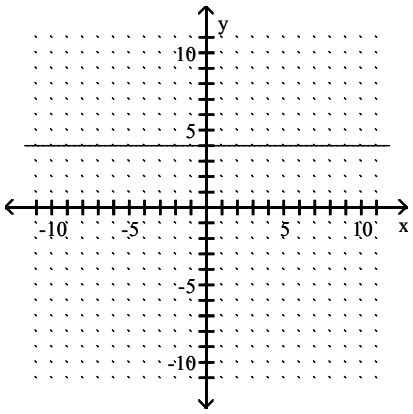


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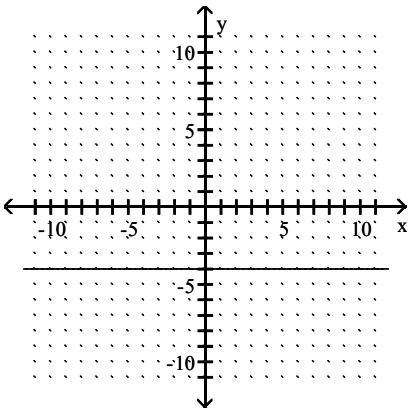
A)



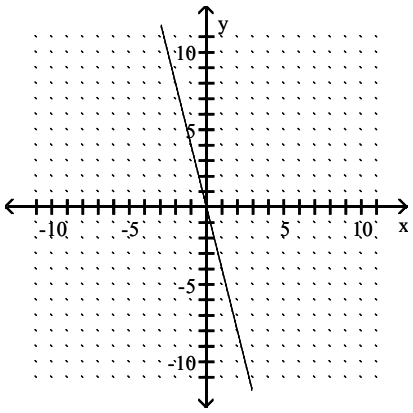
B)



C)



D)



Answer: C

Solve the problem. Round to two decimal places.

79) Ten students in a graduate program were randomly selected. Their grade point averages (GPAs) when they entered the program were between 3.5 and 4.0. The following data were obtained regarding their GPAs on entering the program versus their current GPAs. Use linear regression to find a linear function that predicts a student's current GPA as a function of his or her entering GPA.

Entering GPA	Current GPA
3.5	3.6
3.8	3.7
3.6	3.9
3.6	3.6
3.5	3.9
3.9	3.8
4.0	3.7
3.9	3.9
3.5	3.8
3.7	4.0

A) $y = 0.02x + 4.91$ B) $y = 0.33x + 2.51$ C) $y = 0.50x + 5.81$ D) $y = 0.03x + 3.67$

Answer: D

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80) The paired data below consist of the test scores of 6 randomly selected students and the number of hours they studied for the test. Use linear regression to find a linear function that predicts a student's score as a function of the number of hours he or she studied.

Hours	5	10	4	6	10	9
Score	64	86	69	86	59	87

A) y = 0.05x + 3.79 B) y = 3.79x + 0.05 C) y = 1.07x + 67.35 D) y = 1.07x – 67.35

Answer: C

81) The paired data below consist of the costs of advertising (in thousands of dollars) and the number of products sold (in thousands). Use linear regression to find a linear function that predicts the number of products sold as a function of the cost of advertising.

Cost	9	2	3	4	2	5	9	10
Number	85	52	55	68	67	86	83	73

A) y = 2.79x + 55.79 B) y = 0.18x – 7.28 C) y = –7.28x + 0.18 D) y = –2.79x + 55.79

Answer: A

82) The paired data below consist of the temperatures on randomly chosen days and the amount a certain kind of plant grew (in millimeters). Use linear regression to find a linear function that predicts a plant's growth as a function of temperature.

Temp	62	76	50	51	71	46	51	44	79
Growth	36	39	50	13	33	33	17	6	16

A) y = –0.21x + 14.57 B) y = 0.18x + 53.00 C) y = 0.21x + 14.57 D) y = –0.18x + 53.00

Answer: C

83) A study was conducted to compare the average time spent in the lab each week versus course grade for computer students. The results are recorded in the table below. Use linear regression to find a linear function that predicts a student's course grade as a function of the number of hours spent in lab.

Number of hours spent in lab	Grade (percent)
10	96
11	51
16	62
9	58
7	89
15	81
16	46
10	51

A) y = 15.77x – 0.06 B) y = 88.63x + 1.86 C) y = –0.06x + 15.77 D) y = –1.86x + 88.63

Answer: D

Mathematics in Action 6th edition Consortium for Foundation Mathematics Test Bank

84) Two separate tests are designed to measure a student's ability to solve problems. Several students are randomly selected to take both tests and the results are shown below. Use linear regression to find a linear function that predicts a student's score on Test B as a function of his or her score on Test A.

Test A	48	52	58	44	43	43	40	51	59
Test B	73	67	73	59	58	56	58	64	74

A) $y = -19.40x + 0.93$ B) $y = -0.93x - 19.40$ C) $y = 19.40x - 0.93$ D) $y = 0.93x + 19.40$

Answer: D

85) Ten students in a graduate program were randomly selected. Their grade point averages (GPAs) when they entered the program were between 3.5 and 4.0. The following data were obtained regarding their GPAs on entering the program versus their current GPAs. By using linear regression, the following function is obtained: $y = 3.67 + 0.0313x$, where x is entering GPA and y is current GPA. Use this function to predict current GPA of a student whose entering GPA is 3.4.

Entering GPA	Current GPA
3.5	3.6
3.8	3.7
3.6	3.9
3.6	3.6
3.5	3.9
3.9	3.8
4.0	3.7
3.9	3.9
3.5	3.8
3.7	4.0

A) 3.40 B) 3.29 C) 3.58 D) 3.78

Answer: D

86) The paired data below consist of the test scores of 6 randomly selected students and the number of hours they studied for the test. By using linear regression, the following function is obtained: $y = 67.3 + 1.07x$, where x is number of hours studied and y is the test score. Use this function to predict the score on the test of a student who studies 4 hours.

Hours	5	10	4	6	10	9
Score	64	86	69	86	59	87

A) 73.30 B) 71.58 C) 66.58 D) 76.58

Answer: B

87) The paired data below consist of the temperatures on randomly chosen days and the amount a certain kind of plant grew (in millimeters). By using linear regression, the following function is obtained: $y = 14.6 + 0.211x$, where x is temperature and y is growth in millimeters. Use this function to predict the growth of a plant if the temperature is 65.

Temp	62	76	50	51	71	46	51	44	79
Growth	36	39	50	13	33	33	17	6	16

A) 26.95 B) 29.36 C) 28.32 D) 28.84

Answer: C

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88) A study was conducted to compare the average time spent in the lab each week versus course grade for computer students. The results are recorded in the table below. By using linear regression, the following function is obtained: $y = 88.6 - 1.86x$, where x is the number of hours spent in the lab and y is the test grade. Use this function to predict the grade of a student who spends 16 hours in the lab.

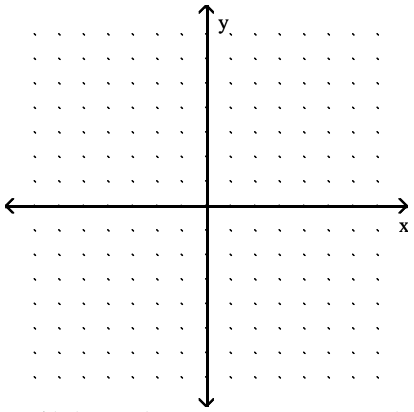
Number of hours spent in lab	Grade (percent)
10	96
11	51
16	62
9	58
7	89
15	81
16	46
10	51

A) 54.84 B) 72.60 C) 58.84 D) 62.04

Answer: C

Solve the system by graphing.

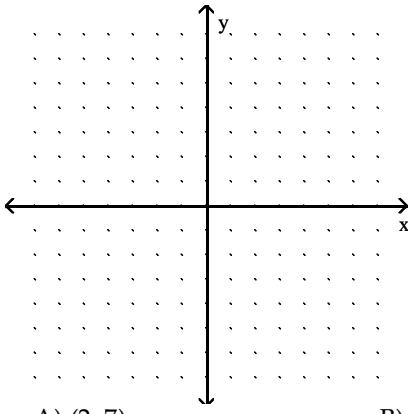
89) $3x + y = 14$
$x + 2y = 3$



A) (–5, –1) B) (5, –1) C) (5, 4) D) (4, 2)

Answer: B

90) $-2x + 3y = -8$
$3x + 2y = 25$



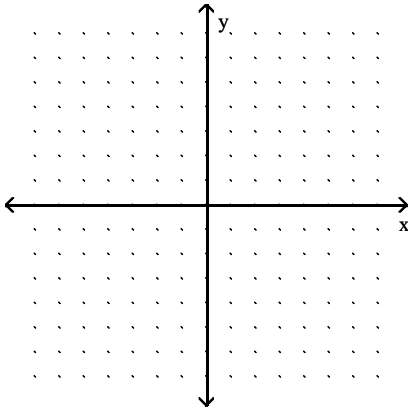
A) (2, 7) B) (7, 2) C) No solution D) (–2, 31)

Answer: B

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91) $9x - 2y = 30$

$5x + \frac{4}{3}y = 24$

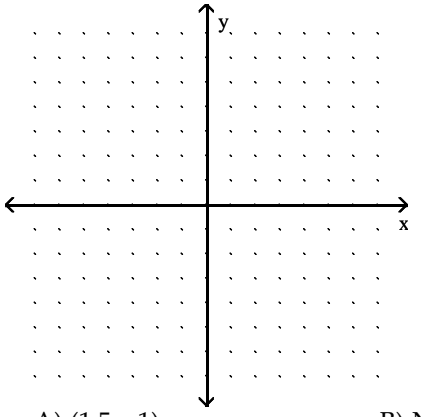


A) (3, 4) B) (4, 3) C) (4, –3) D) (3, 1)

Answer: B

92) $3x + 2y = 5$

$-6x - 4y = 5$

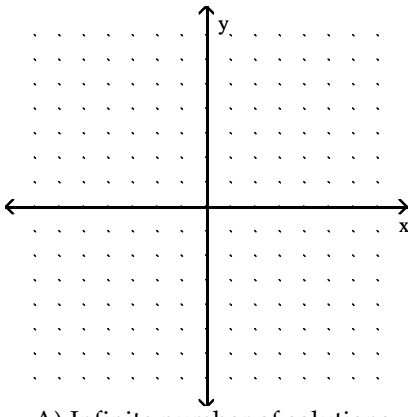


A) (1.5, –1) B) No solution C) (1, 1) D) (–1.5, –1)

Answer: B

93) $5x + y = 14$

$5x + y = 49$



A) Infinite number of solutions B) (12, –46)

C) (10, 4) D) No solution

Answer: D

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Solve the system algebraically.

94) $y = 5x - 31$
$y = 4x - 24$
A) No solution B) (7, 4) C) (–4, –7) D) (–7, 4)
Answer: B

95) $y = 7x + 35$
$y = 4x + 23$
A) (4, 7) B) No solution C) (–4, 7) D) (4, –7)
Answer: C

96) $x + y = 4$
$y = x + 2$
A) (–1, 4) B) (1, 3) C) (0, 4) D) No solution
Answer: B

97) $x + 4y = -6$
$-5x + 4y = -18$
A) (2, –2) B) (3, –3) C) No solution D) (2, 2)
Answer: A

98) $x + 6y = -22$
$2x + 6y = -14$
A) (–8, –6) B) No solution C) (9, 8) D) (8, –5)
Answer: D

99) $8x + 7y = 46$
$-5x - 2y = -24$
A) (3, 3) B) No solution C) (4, 2) D) (4, 3)
Answer: C

100) $-6x + 8y = -40$
$-2x + 2y = -10$
A) (–1, –4) B) (0, –5) C) No solution D) (0, –4)
Answer: B

101) $3x + 3y = 3$
$2x + 2y = 4$
A) No solution B) Many solutions C) (8, 2) D) (1, 1)
Answer: A

102) $x + y + z = 7$
$x - y + 2z = 7$
$5x + y + z = 11$
A) (1, 2, 4) B) (4, 2, 1) C) (4, 1, 2) D) (1, 4, 2)
Answer: A

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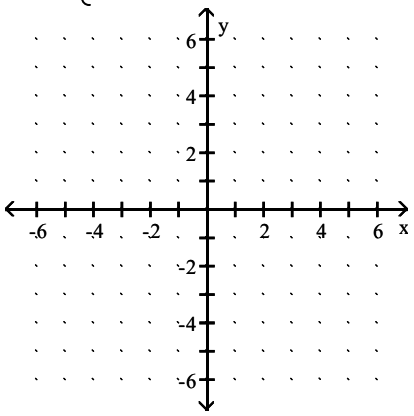
103) $x - y + z = 8$
$x + y + z = 6$
$x + y - z = -12$

A) (–2, –1, –9) B) (–2, –1, 9) C) (2, –1, –9) D) (2, –1, 9)

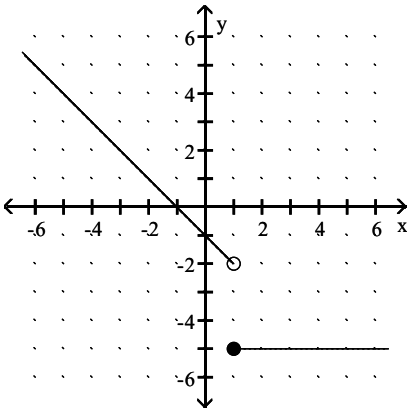
Answer: B

Graph the piecewise function.

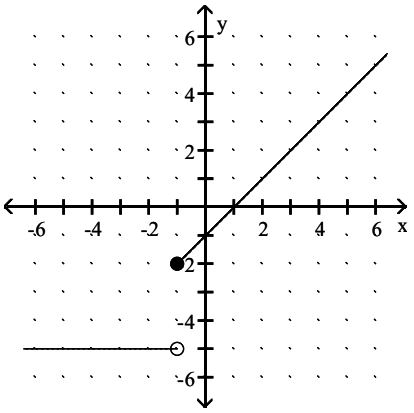
104) $f(x) = \begin{cases} -5 & \text{if } x \geq 1 \\ -1 - x & \text{if } x < 1 \end{cases}$



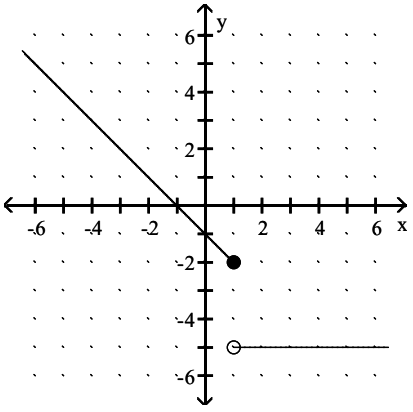
A)



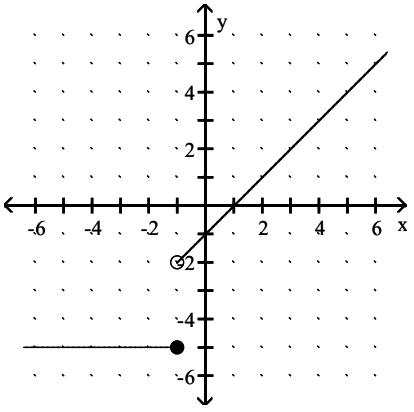
B)



C)



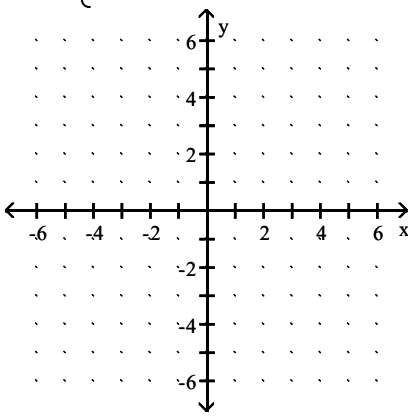
D)



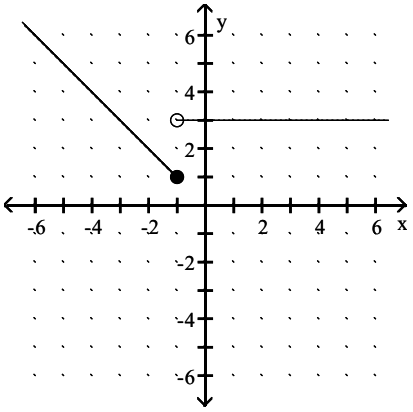
Answer: A

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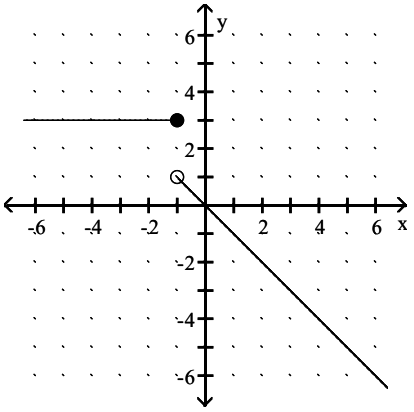
105) $f(x) = \begin{cases} x + 1 & \text{if } x > 0 \\ 3 & \text{if } x \le 0 \end{cases}$



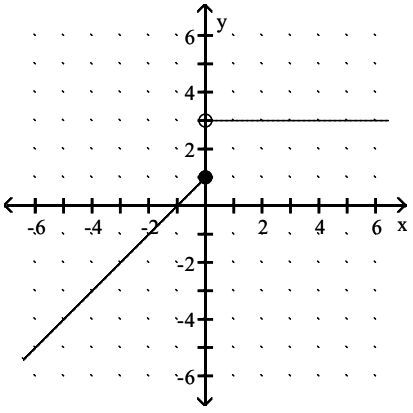
A)



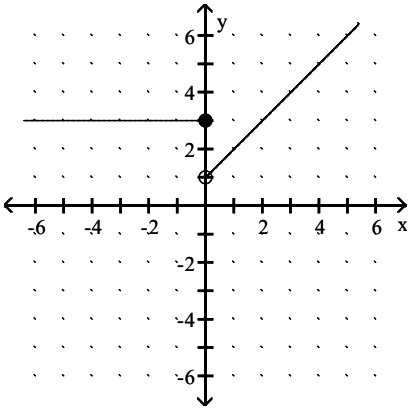
B)



C)



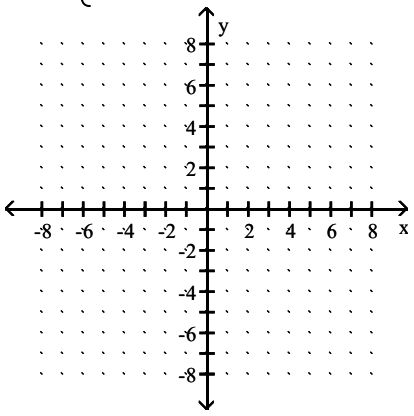
D)



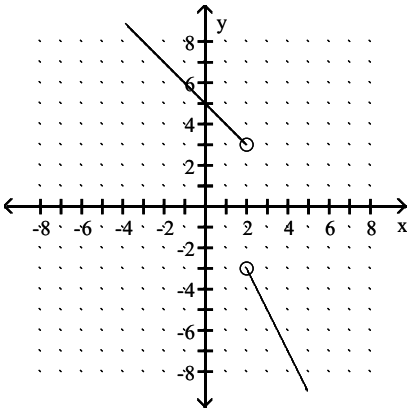
Answer: D

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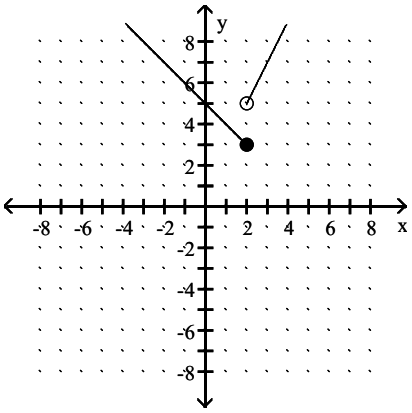
106) $f(x) = \begin{cases} 5 - x & \text{if } x \le 2 \\ 1 - 2x & \text{if } x > 2 \end{cases}$



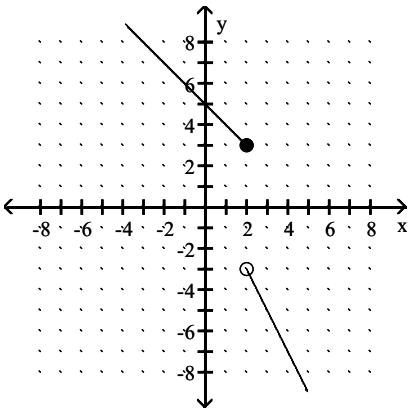
A)



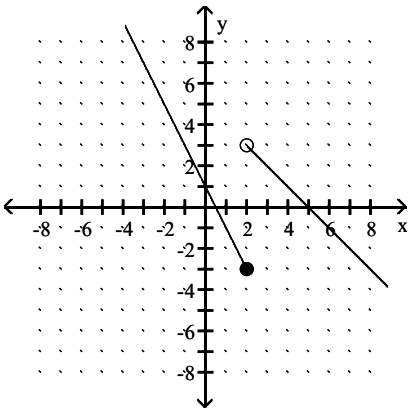
B)



C)



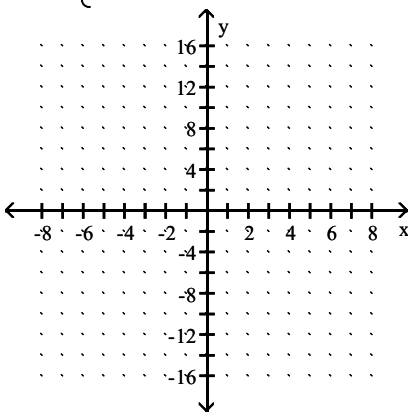
D)



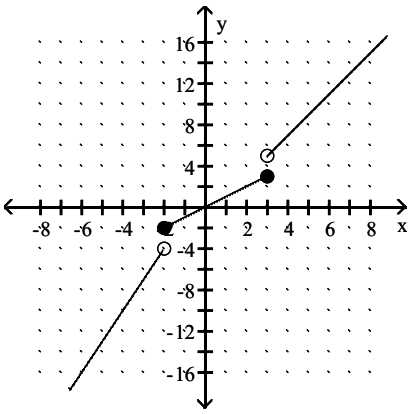
Answer: C

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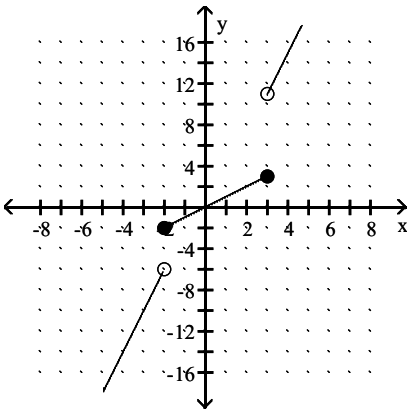
107) $f(x) = \begin{cases} 3x + 2 & \text{if } x < -2 \\ x & \text{if } -2 \le x \le 3 \\ 2x - 1 & \text{if } x > 3 \end{cases}$



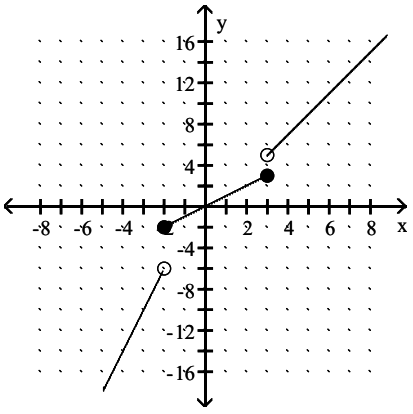
A)



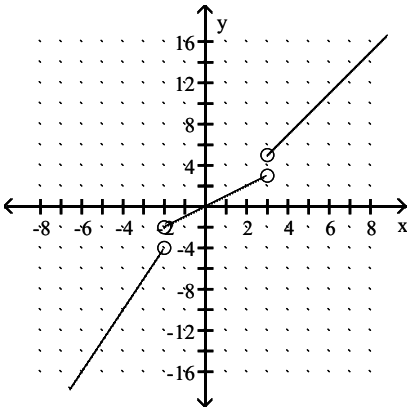
B)



C)



D)



Answer: A

Solve the inequality algebraically.

108) $x - 7 < -6$

A) $x > 1$ B) $x \ge 1$ C) $x < 1$ D) $x \le 1$

Answer: C

109) $x - 11 \ge -20$

A) $x \le -9$ B) $x > -9$ C) $x < -9$ D) $x \ge -9$

Answer: D

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110) $x + 9 < 1$

A) $x < -8$ B) $x \leq -8$ C) $x \geq -8$ D) $x > -8$

Answer: A

111) $10x - 3 > 17$

A) $x < -2$ B) $x > \frac{7}{5}$ C) $x > 20$ D) $x > 2$

Answer: D

112) $3.1x + 9.7 \leq 18.38$

A) $x \leq 2.8$ B) $x \leq -2.8$ C) $x \geq -2.8$ D) $x \geq 2.8$

Answer: A

113) $-3.6x + 6.9 > 16.62$

A) $x < 2.7$ B) $x > 2.7$ C) $x > -2.7$ D) $x < -2.7$

Answer: D

114) $-5 < 2x + 5 \leq 3$

A) $-5 \leq x < -1$ B) $-5 < x \leq -1$ C) $-5 \leq x \leq -1$ D) $-5 < x < -1$

Answer: B

115) $-15 < -4y + 5 \leq 1$

A) $-5 \leq x < -1$ B) $1 < x \leq 5$ C) $-5 < x \leq -1$ D) $1 \leq x < 5$

Answer: D

Solve the problem.

116) Sarah Comar's Candy Store sold 34 individual pounds of jelly beans, a gourmet assortment at $4.92 per pound and a regular assortment at $0.89 per pound. In all, $155.19 was taken in for the two types of jelly beans. Write the system of equations using g for the gourmet assortment and r for the regular assortment.

A) $g + r = 155.19$
$4.92g + 0.89r = \$34$

B) $g + r = 5.81$
$4.92g + 0.89r = \$155.19$

C) $g + r = 34$
$4.92g + 0.89r = \$155.19$

D) $g + r = 34$
$5.81g + r = \$155.19$

Answer: C

117) Bill & Jose's Discount Cinema sold adult tickets for $3.10 each and children's tickets for $1.50 each. Last Tuesday, a total of $281.80 was collected from 126 movie watchers. Write the system of equations using a for adult tickets and c for the children's tickets.

A) $a + c = 281.80$
$3.10a + 1.50c = \$126$

B) $a - c = 126$
$3.10a + 1.50c = \$281.80$

C) $a + c = 4.60$
$3.10a + 1.50c = \$281.80$

D) $a + c = 126$
$3.10a + 1.50c = \$281.80$

Answer: D

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118) A vendor sells hot dogs and bags of potato chips. A customer buys 3 hot dogs and 2 bags of potato chips for $9.00. Another customer buys 2 hot dogs and 5 bags of potato chips for $11.50. Find the cost of each item.
A) $1.50 for a hot dog; $2.00 for a bag of potato chips
B) $2.25 for a hot dog; $1.75 for a bag of potato chips
C) $2.00 for a hot dog; $1.50 for a bag of potato chips
D) $2.00 for a hot dog; $1.75 for a bag of potato chips

Answer: C

119) Jamil always throws loose change into a pencil holder on his desk and takes it out every two weeks. This time it is all nickels and dimes. There are 8 times as many dimes as nickels, and the value of the dimes is $3.00 more than the value of the nickels. How many nickels and dimes does Jamil have?
A) 32 nickels and 4 dimes
B) 4 nickels and 32 dimes
C) 3 nickels and 24 dimes
D) 5 nickels and 40 dimes

Answer: B

120) A vendor sells hot dogs, bags of potato chips, and soft drinks. A customer buys 3 hot dogs, 3 bags of potato chips, and 5 soft drinks for $15.00. The price of a hot dog is $0.50 more than the price of a bag of potato chips. The cost of a soft drink is $1.50 less than the price of two hot dogs. Find the cost of each item.
A) $1.00 for a hot dog; $1.50 for a bag of potato chips; $1.50 for a soft drink
B) $1.50 for a hot dog; $1.50 for a bag of potato chips; $1.00 for a soft drink
C) $1.75 for a hot dog; $1.25 for a bag of potato chips; $1.50 for a soft drink
D) $1.50 for a hot dog; $1.00 for a bag of potato chips; $1.50 for a soft drink

Answer: D

121) A store sells tents, sleeping bags, and camp stools. A customer buys a tent, 2 sleeping bags, and 4 camp stools for $ 136. The price of the tent is 8 times the cost of a camp stool. The cost of a sleeping bag is $12 more than the cost of a camp stool. Find the cost of each item.
A) $64 for a tent; $25 for a sleeping bag; $13 for a camp stool
B) $72 for a tent; $20 for a sleeping bag; $9 for a camp stool
C) $64 for a tent; $20 for a sleeping bag; $8 for a camp stool
D) $64 for a tent; $20 for a sleeping bag; $9 for a camp stool

Answer: C

Translate the following into an inequality statement.

122) x is greater than −8 and at most 2.
A) $2 \le x < -8$
B) $-2 < x \le 8$
C) $-8 < x \le 2$
D) $-8 \le x < 2$

Answer: C

123) x is less than −8 or is at least 2.
A) $x < -8$ or $x \ge 2$
B) $x \le -8$ or $x > 2$
C) $x \ge -8$ or $x < 2$
D) $x > -8$ or $x \le 2$

Answer: A

124) x is at most −5 or is greater than 4.
A) $x < -5$ or $x \ge 4$
B) $x \ge -5$ or $x < 4$
C) $x \le -5$ or $x > 4$
D) $x > -5$ or $x \le 4$

Answer: C

125) x is greater than or equal to −5 and less than 2.
A) $2 \le x < -5$
B) $-5 < x \le 2$
C) $-5 \le x < 2$
D) $-2 < x \le 5$

Answer: C

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Solve the problem.

126) When making a long distance call from a certain pay phone, the first three minutes of a call cost $1.70. After that, each additional minute or portion of a minute of that call costs $0.40. Use an inequality to find the number of minutes one can call long distance for $6.90.

A) $x \le 17$ minutes B) $x \le 4$ minutes C) $x \le 13$ minutes D) $x \le 16$ minutes

Answer: D

127) It takes 28 minutes to set up a candy making machine, and it produces 15 candies per minute once it is set up. Use an inequality to find the number of candies that can be produced in 8 hours.

A) $x \le 13{,}020$ candies B) $x \le 120$ candies C) $x \le 3360$ candies D) $x \le 6780$ candies

Answer: D

128) A certain store has a fax machine available for use by its customers. The store charges $2.25 to send the first page and $0.45 for each subsequent page. Use an inequality to find the number of pages that can be faxed for $4.50.

A) $x \le 2$ pages B) $x \le 6$ pages C) $x \le 50$ pages D) $x \le 10$ pages

Answer: B

129) Using data from 1996–1998, the annual number of cars sold at a certain dealership can be modeled by the formula

$$y = 3x + 5,$$

where y is the number of cars, in thousands, sold x years after 1996. According to this formula, in which years will the number of cars sold exceed 38 thousand?

A) after 2009 B) after 2007 C) after 2005 D) after 2011

Answer: B

130) Parts for an automobile repair cost $465. The mechanic charges $31 per hour. If you receive an estimate for at least $589 and at most $682 for fixing the car, what is the time interval, in hours, that the mechanic will be working on the job?

A) $4 \le t \le 7$ B) $19 \le t \le 22$ C) $1 \le t \le 4$ D) $1 \le t \le 7$

Answer: A

131) A landscaping company sells 40–pound bags of top soil. The actual weight x of a bag, however, may differ from the advertised weight by as much as 0.75 pound. Write the absolute value inequality that expresses the relationship between the actual weight x of a bag and 40 pounds and solve.

A) $|40 + x| \le 0.75;\ 39.25 \le x \le 40.75$ B) $|40 - x| \le 0.75;\ 39.25 \le x \le 40.75$

C) $|x + 0.75| \le 40;\ 39.25 \le x$ D) $|x| - 40 \le 0.75;\ x \le 40.75$

Answer: B

132) A landscaping company sells 40–pound bags of top soil. The actual weight x of a bag, however, may differ from the advertised weight by as much as 0.75 pound. Bags that do not meet these requirements are sent back to the manufacturer. Write the absolute value inequality that determines if a bag needs to be sent back to the manufacturer and solve.

A) $|40 + x| > 0.75;\ x > 40.75$ or $x < 39.25$ B) $|x| - 40 > 0.75;\ x > 40.75$

C) $|40 - x| > 0.75;\ x > 40.75$ or $x < 39.25$ D) $|x + 0.75| > 40;\ x < 39.25$

Answer: C

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1) B
2) B
3) A
4) B
5) A
6) B
7) B
8) A
9) A
10) B
11) D
12) B
13) D
14) A
15) C
16) B
17) B
18) A
19) C
20) C
21) C
22) D
23) B
24) C
25) C
26) B
27) D
28) C
29) B
30) D
31) A
32) C
33) D
34) C
35) C
36) D
37) B
38) D
39) A
40) C
41) B
42) B
43) A
44) A
45) A
46) D
47) D
48) B
49) A
50) C

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51) B
52) D
53) D
54) B
55) D
56) C
57) D
58) C
59) D
60) B
61) B
62) C
63) A
64) A
65) A
66) B
67) C
68) D
69) B
70) A
71) B
72) C
73) B
74) A
75) B
76) C
77) A
78) C
79) D
80) C
81) A
82) C
83) D
84) D
85) D
86) B
87) C
88) C
89) B
90) B
91) B
92) B
93) D
94) B
95) C
96) B
97) A
98) D
99) C
100) B

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101) A
102) A
103) B
104) A
105) D
106) C
107) A
108) C
109) D
110) A
111) D
112) A
113) D
114) B
115) D
116) C
117) D
118) C
119) B
120) D
121) C
122) C
123) A
124) C
125) C
126) D
127) D
128) B
129) B
130) A
131) B
132) C

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