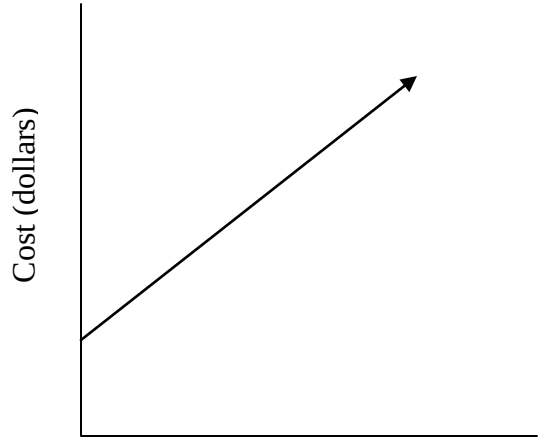
Supplemental Worksheet: EAGLE Problem Set 3—Number, Algebra, Geometry Strand

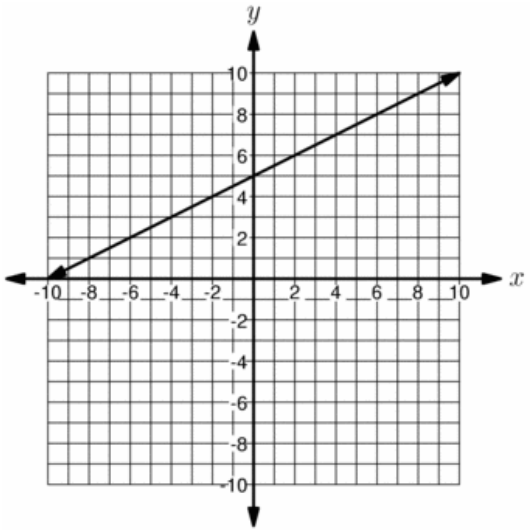
1. An 8-ounce bottle of juice has 120 calories. Which proportion can be used to find the number of calories in a 12-ounce bottle of the same juice?
   a. $\frac{8}{x} = \frac{12}{120}$ b. $\frac{8}{12} = \frac{x}{120}$ c. $\frac{8}{120} = \frac{x}{12}$ d. $\frac{8}{120} = \frac{12}{x}$
2. The proportion, $\frac{\$8.00}{1 hour} = \frac{\$d}{8 hours}$, is used to find the number of dollars, d, Jamie earns working 8 hours. What is the value of d?
   a. $1.00 b. $16.00 c. $64.00 d. $88.00
3. How long would it take to travel 30 miles at an average speed of 50 miles per hour?
   a. 1.5 hours b. 0.6 hour c. 0.5 hour d. 1.66 hours
4. Three gallons of paint cover 750 square feet. Which equation can be used to find the number of gallons of paint, p, needed to cover 1,250 square feet?
   a. $\frac{3}{p} = \frac{1250}{750}$ b. $\frac{3}{750} = \frac{p}{1250}$ c. $\frac{p}{750} = \frac{3}{1250}$ d. $\frac{3}{750} = \frac{1250}{p}$
5. The equation, C = 0.25m + 30, models the total cost of Sharla's cell phone bill, where C is the dollar amount of the bill and m is the number of minutes she used the phone. Which of these represents the independent variable?
   a. C b. 0.25 c. m d. 30
6. Stella received the following estimate for repairing her car: $84 for parts and $60 per hour for labor. The linear equation shown, T = 60h + 84, models the total cost to repair the car, where T represents the total cost in dollars and h is the number of hours of labor. Which answer best describes h in this linear equation?
   a. The slope b. the y-intercept c. the dependent variable d. the independent variable
7. The ninth grade class is going to the theater for a field trip. The total cost of the field trip includes the price of each ninth grader's ticket and bus fee. What factor represents the dependent variable?
   a. Amount of bus fee b. cost for theater ticket c. total cost of field trip d. number of ninth graders on trip
8. Carl's car averages 20 miles per gallon. He fills his car's 13 gallon gas tank. Carl wants to know what amount of gas is left in the tank after the car has been driven for a few miles. Which of these factors best represents the independent variable for this situation?
   a. the amount of time Carl drives
   b. the number of miles Carl drives
   c. the amount of gas left in the gas tank after driving
   d. the number of gallons the gas tank holds when full

9. Gloria plans to burn a 12-inch candle for a few hours. The height of the candle decreases at the same rate each hour. Gloria writes an equation to model the height of the burning candle for each hour it burns. What is the dependent variable in this equation?
    a. The original height of the candle
    b. The height of the burning candle
    c. the rate the candle burns each hour
    d. the number of hours the candle burns
10. Ben builds custom ladders of varying heights. He uses this equation, $r = h \div 0.8$, to determine the number of rungs, r, to put on a ladder that has a height of h feet. What is the independent variable in this situation?
    a. The height of the ladder
    b. the number of ladders
    c. the space between the rungs on the ladder
    d. the total number of rungs on the ladder
11. Bud is a contestant in the final round of a game show. This equation, $p = 2{,}334 + 500q$, shows the total amount of prize money, p, Bud will win for answering q questions correctly. What is the **dependent** variable in this situation?
    a. The total number of Bud's correct responses
    b. The total amount of prize money Bud will win
    c. the amount of prize money Bud won in previous rounds
    d. the amount of prize money Bud wins for each correct response
12. The graph shown below relates the cost to mail a letter with the weight of the letter. Which statement is true?
    a. The mailing cost depends on the weight of the letter
    b. The weight of the letter depends on the mailing cost
    c. The mailing cost and weight depend on the number of letters being mailed
    d. The number of letters being mailed depends on the mailing cost and weight



13. Amanda needs to graph a line with at least one of these properties: i)passes through the point (-2, 4); ii) has a slope of 1.5. Which graph cannot be the graph of Amanda's line?

a.



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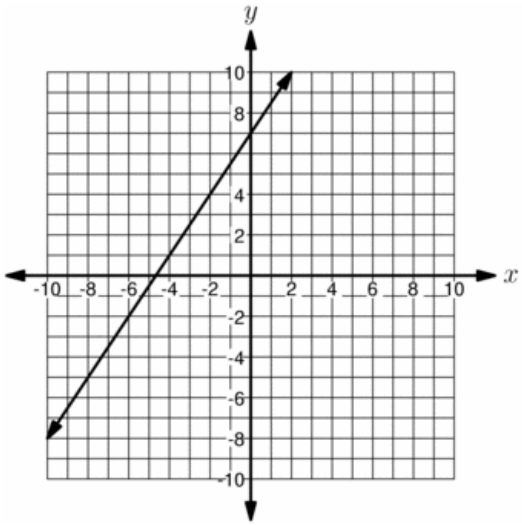

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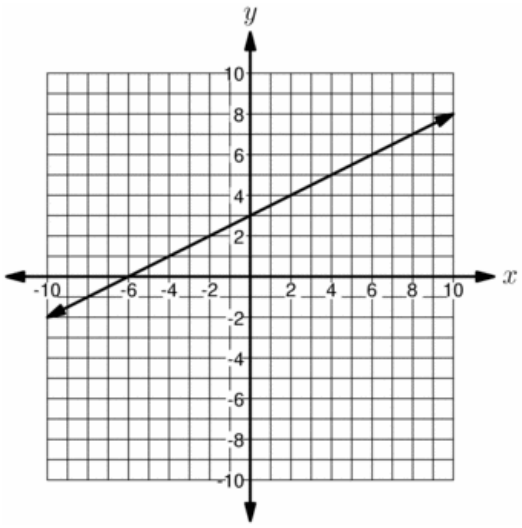

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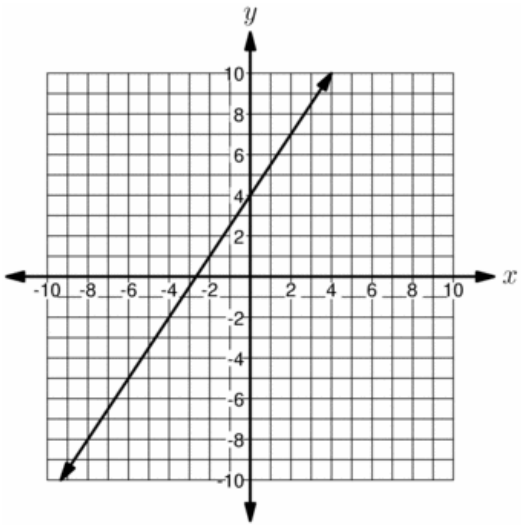


14. Which line has a slope of 1?

a. $2x - 2y = -2$ b. $2x - y = 1$ c. $x - 2y = -1$ d. $2x + 2y = -2$

15. For the equation $y = 2x + 8$, what value represents the slope of this equation?

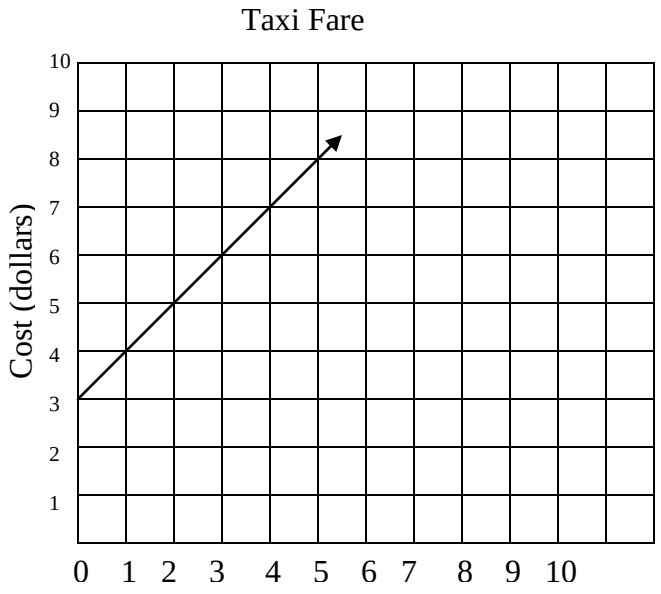
a. 2 b. 8 c. x d. y

16. Which equation has a slope of 2?

a. $2x + y = 7$ b. $2x – y = 7$ c. $x + 2y = 7$ d. $x – 2y = 7$

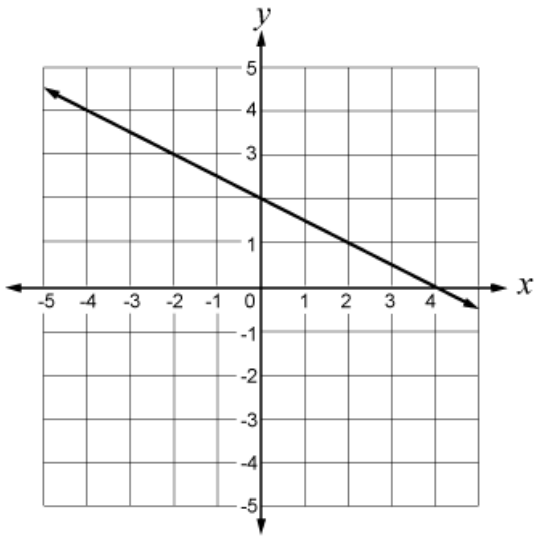
17. The intercepts of a line are: x-intercept = 4; y-intercept = -2. What is the slope of the line?
    a. -2
    b. b. -1/2
    c. ½
    d. 2

18. A taxi company charges an initial fee of $3. The fare increases at a constant rate. The graph below shows the cost, c, for traveling d miles. What is the slope of the line?
    a. -1
    b. ¼
    c. 1
    d. 3

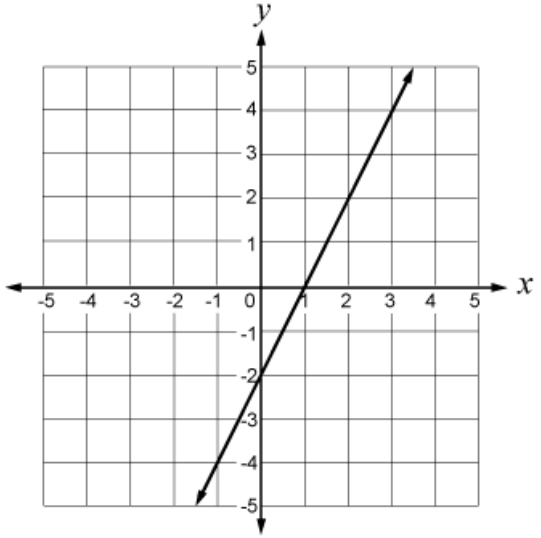


19. Which graph has a y-intercept of 2 and a slope of -2?

a.


y
x
5
4
3
2
1
-1
-2
-3
-4
-5
-5 -4 -3 -2 -1 0 1 2 3 4

c.


y
x
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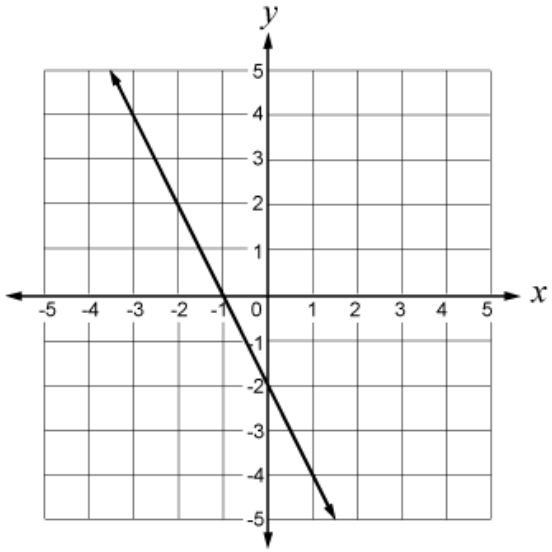
3
2
1
-1
-2
-3
-4
-5
-5 -4 -3 -2 -1 0 1 2 3 4 5

b.


y
x
5
4
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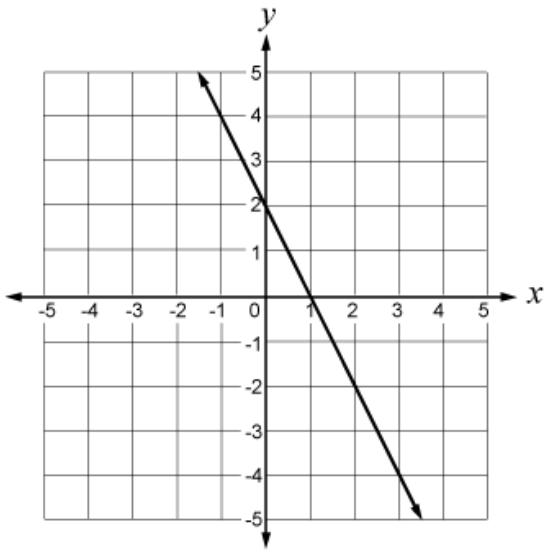
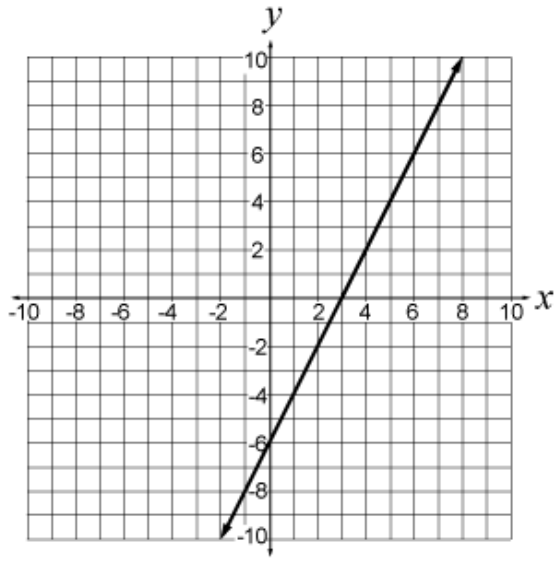
2
1
-1
-2
-3
-4
-5
-5 -4 -3 -2 -1 0 1 2 3 4 5

d.

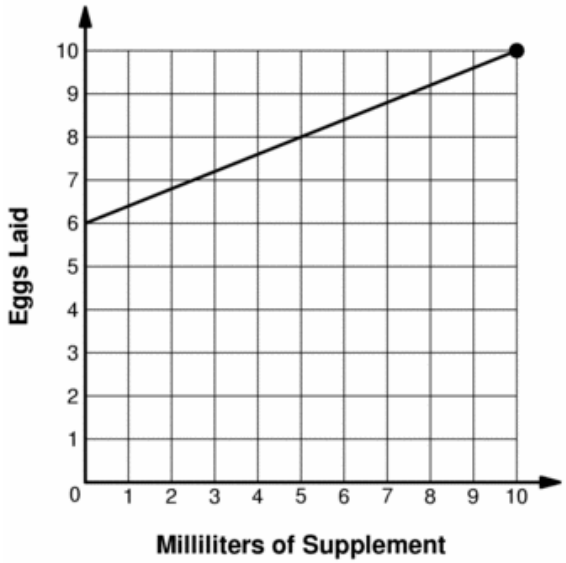

y
x
5
4
3
2
1
-1
-2
-3
-4
-5
-5 -4 -3 -2 -1 0 1 2 3 4 5

20. What is the slope of the line that is graphed on the coordinate grid?
    a. -6
    b. -3
    c. 2
    d. 3



Chicken Productivity

21. Abram records the number of eggs (*e*) a chicken lays while being fed *m* milliliters of a special supplement. He draws this line of best fit for the data. Which equation matches this line?
    a. $e = 0.2m + 6$
    b. $e = 0.4m + 6$
    c. $e = 0.6m + 2$
    d. $e = 0.6m + 4$



22. Which situation can be modeled by the expression $10 + 2x$?
    a. Ron has $10. Each day, he doubles his money. How much money

does he have after *x* days?

b. Jim has 10 trees. Each year, he cuts down 2 trees. How many trees does he have after *x* years?

c. Robin has 10 pens. Each month, she loses 2 pens. How many pens does she have after *x* months?

d. Dana has 10 CDs. Each week, she buys 2 new CDs. How many CDs does she have after *x* weeks?

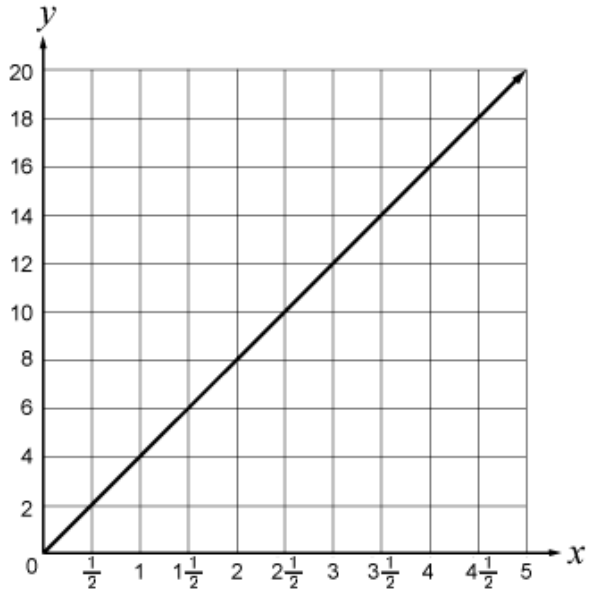
23. The graph below shows the relationship between the cups of pancake mix used, x, and the number of pancakes made, y. Which equation shows the same relationship?

a. $y = \frac{1}{4}x$

b. $y = \frac{1}{2}x$

c. $y = 2x$

d. $y = 4x$



24. David bought some blank video tapes and a video tape holder. The table shows the total cost in dollars, *y*, for *x* videotapes and a video tape holder. Which equation also shows this relationship?

a. y = x + 5

b. y = x + 10

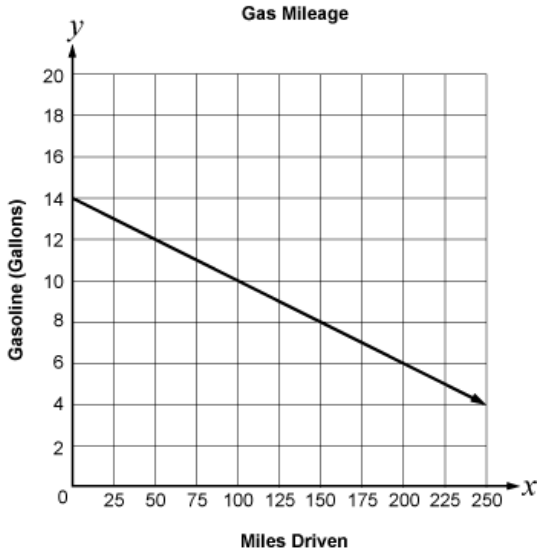
c. y = 5x + 5

d. y = 5x + 10

x	*y*
5	10
10	15
15	20
20	25

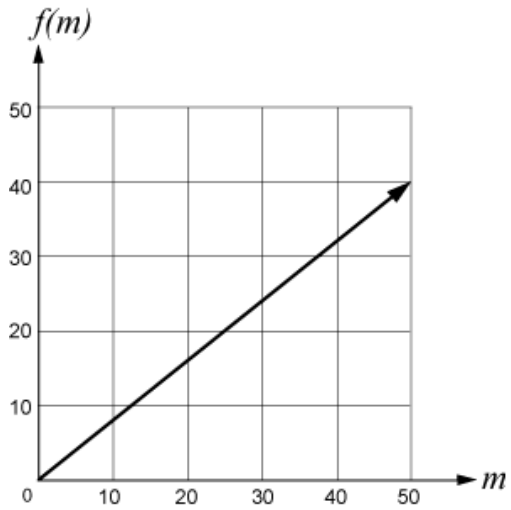
Supplemental Worksheet: EAGLE Problem Set 4—Algebra, Geometry, Functions Strand

1. For the equation 5x -7y = 0, which of the following situation can this equation represent?
   a. Abby works 5 out of every 7 days. About how many total days (x) have passed if Abby has worked y days?
   b. Abby works 5 out of every 7 days. About how many total days (y) have passed if Abby has worked x days?
   c. Jim assembles 7 toy trains (x) for every 5 toy airplanes (y) he assembles. What is the total number of toys Jim assembles?
   d. Jim assembles 7 toy trains (y) for every 5 toy airplanes (x) he assembles. What is the total number of toys Jim assembles?
2. The cost of printing business cards is \$0.05 per card plus \$0.001 per letter on each card. The cost for Paul to print 200 cards is \$16.00. Which equation shows how to find the number of letters printed on each card (L)?
   a. $L = \frac{0.05(200)}{0.001(200)}$ b. $L = \frac{0.05(16.00)}{0.001}$ c. $L = \frac{16.00 - 0.05(200)}{0.001(200)}$ d. $L = \frac{0.05(16.00) - 200}{0.001(200)}$
3. Paula conducts a study, recording the total distance a forest has advanced into a grassy valley. She uses this equation, $f = 3y + 54$, where y is the number of years since Paula's study began, and f is the total number of feet the forest has advanced. If the forest has advanced into the valley 90 feet, how many years have passed since Paula's study began?
   a. 12 years b. 30 years c. 270 years d. 324 years
4. What is the value of the expression when x = 7? $(4x + 9) – 4(x – 1) + x$
   a. *7* *b. 20* *c. 23* *d. 68*
5. What is the value of this expression when m = -3? $2m^5 – 3m^3 + 12$
   a. -555 c. 417
   b. -393 d. 579
6. The graph shows the relationship between the number of miles a car travels, x, and the gallons of gas left in the car, y. How many miles can this car travel on one gallon of gas?
   a. 12 miles
   b. 14 miles
   c. 25 miles
   d. 50 miles



7. The function, $f(m) = \frac{4}{5}m$, represents the average distance, in miles, a train travels in m minutes. Which graph models this function?

a.



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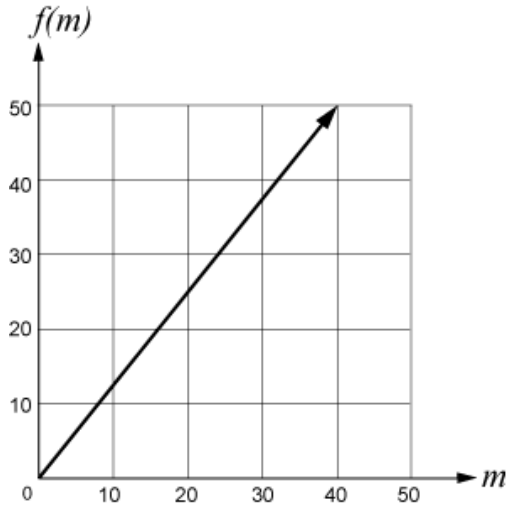

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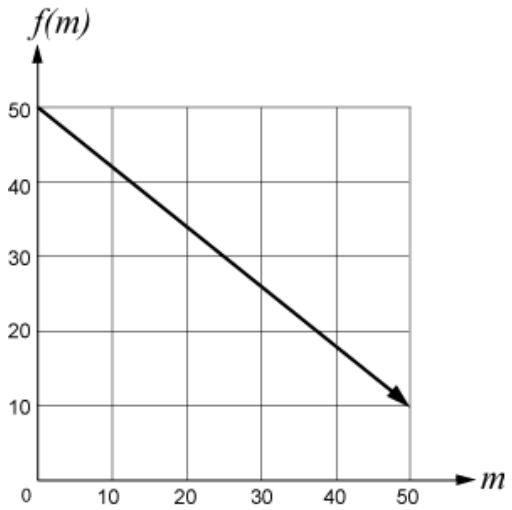

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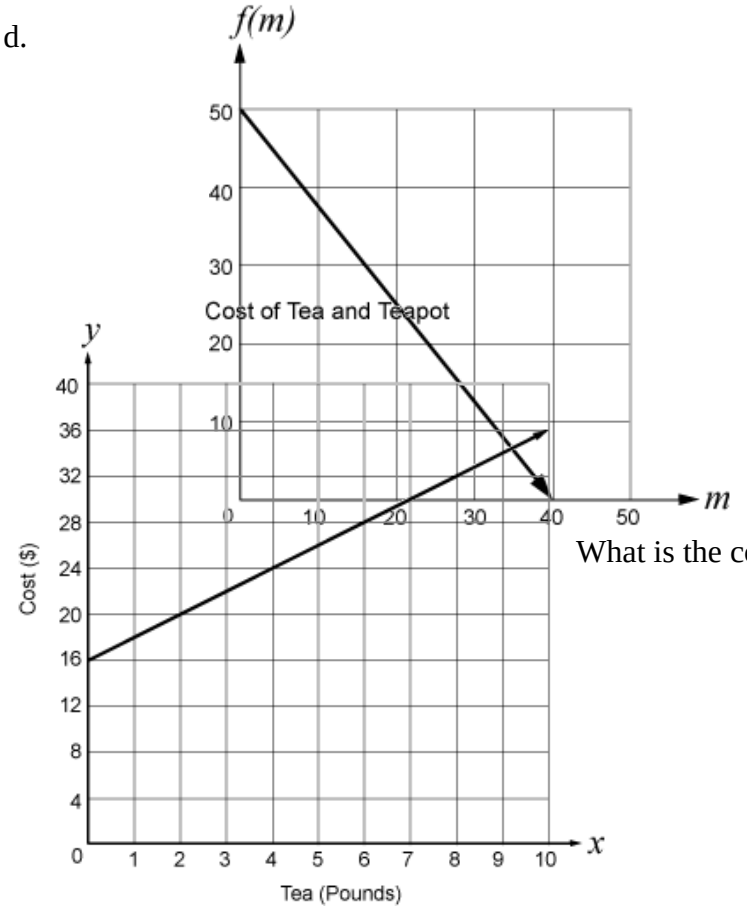
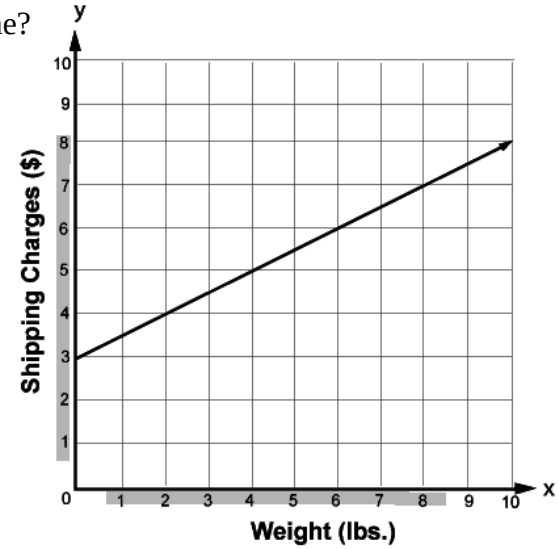


8. The cost for a teapot and x pounds of tea is modeled in the graph below. What is the cost in dollars of the teapot?
   a. $2
   b. $8

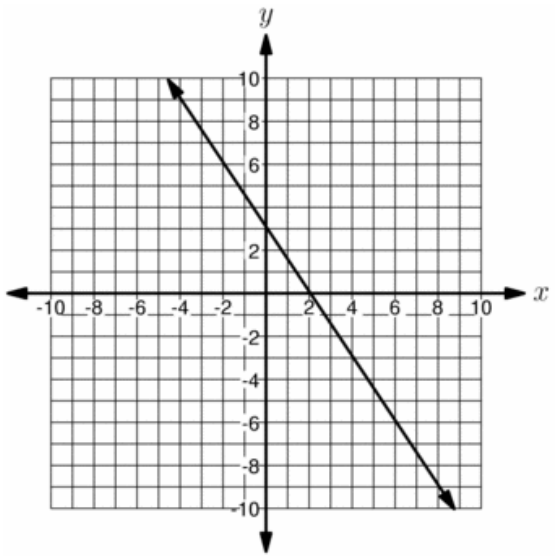
c. $16
d. $30

9. A line has a slope of $-\frac{2}{3}$ and contains the point (2, 3).Which other point is also on this line?
   a. (-1, 5) c. (1, 5)
   b. b. (0, 6) d. (4, 0)
10. The graph at right models the shipping charges, y, in dollars, for catalog orders weighing x pounds. Write an equation in slope-intercept form that shows the relationship between the shipping charges and weight of an order.

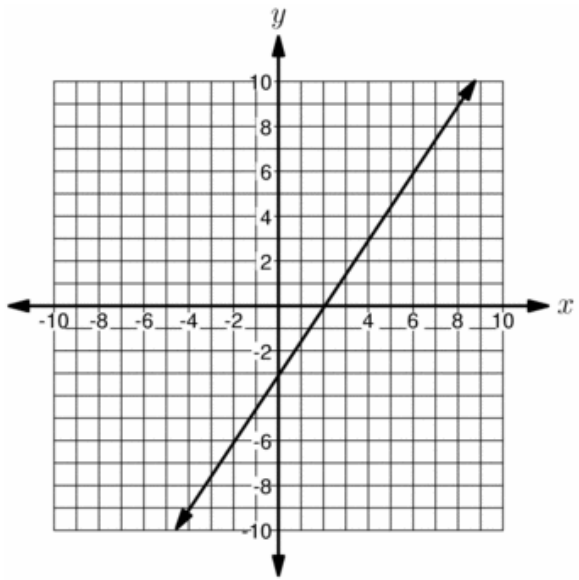


11. Which graph shows a line that passes through the points (3.4, -2) and (1, 1.6)?

a.



c.



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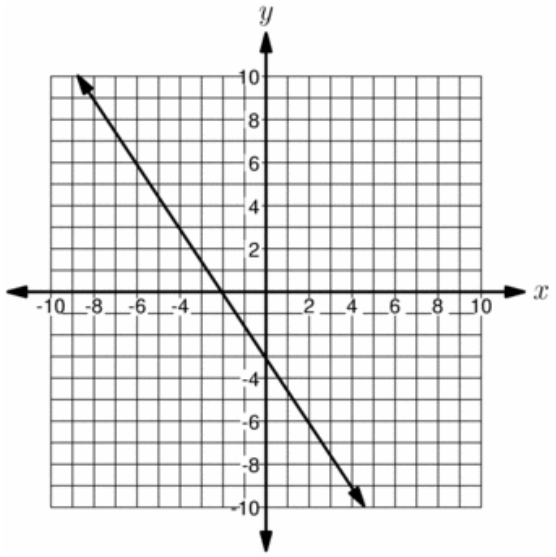

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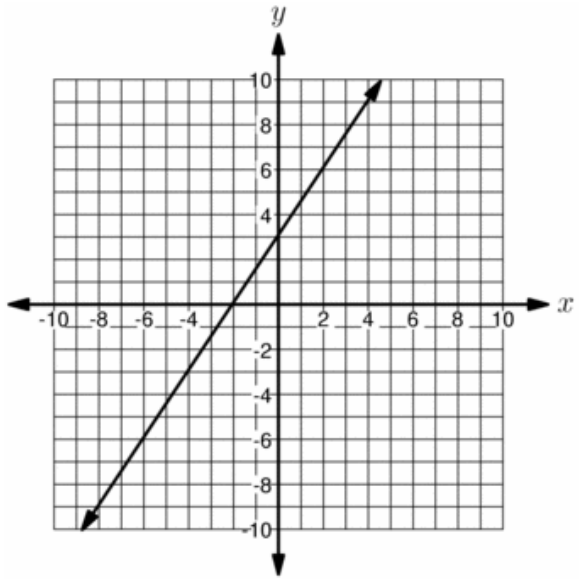
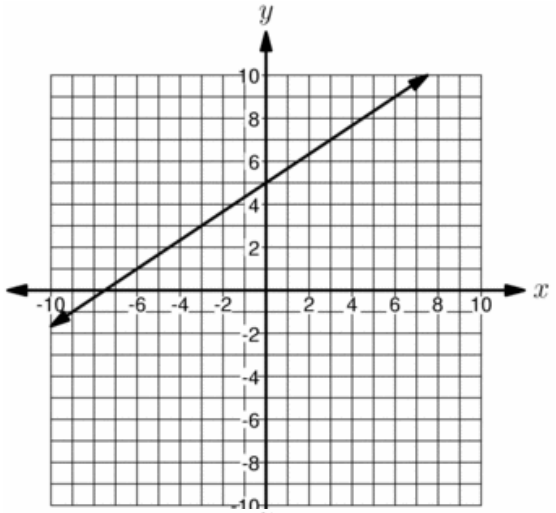


12. Amanda drew the graph of the line that has a slope of -2/3 and goes through the point (1, -6). Which graph shows Amanda's line?

a.



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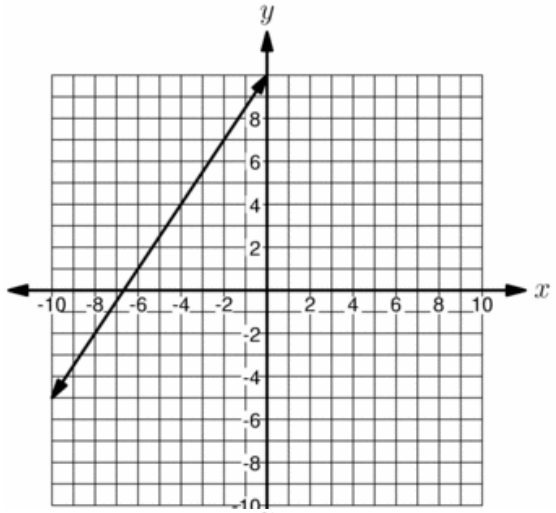

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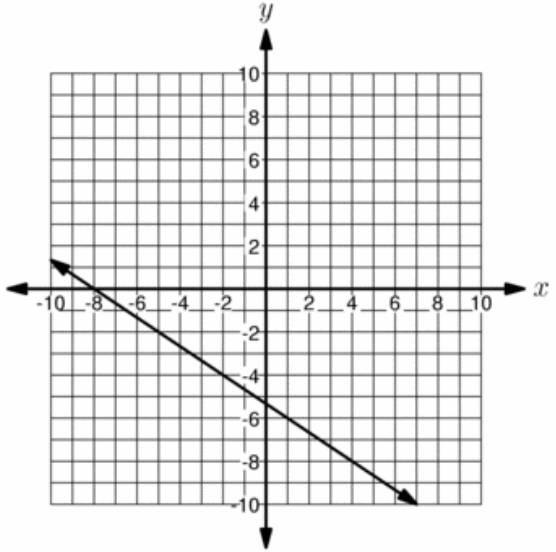

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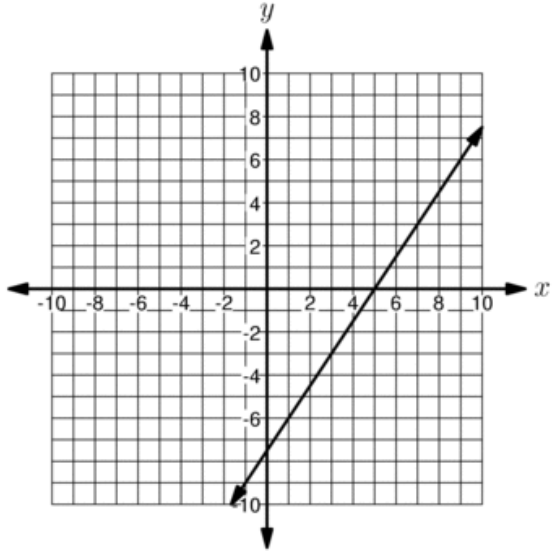
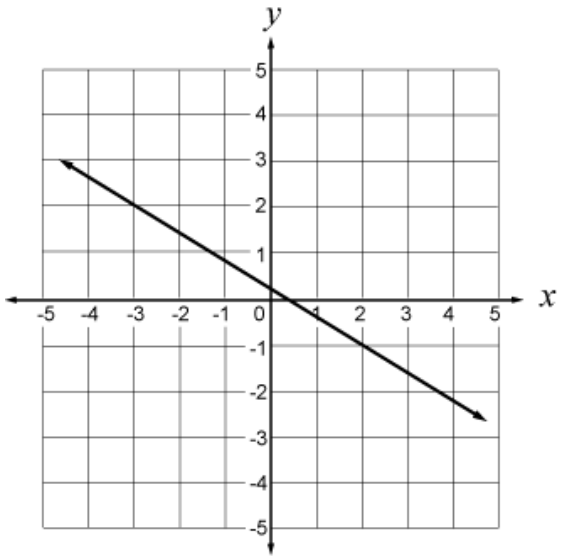


13. Line *p* has a slope of -5/3 and contains the point (-1, 2). Which coordinate grid shows line *p*?

a.



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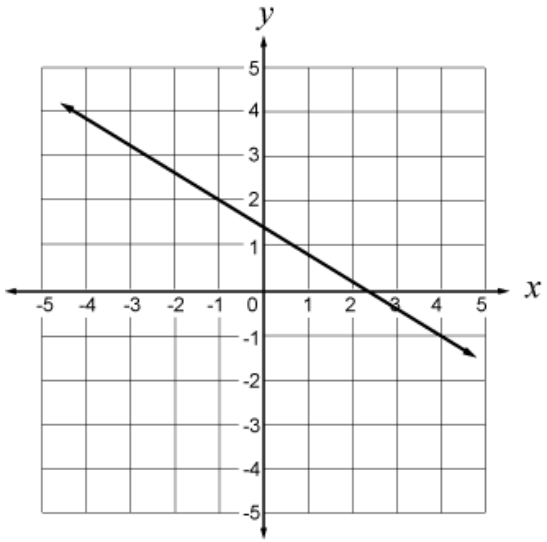

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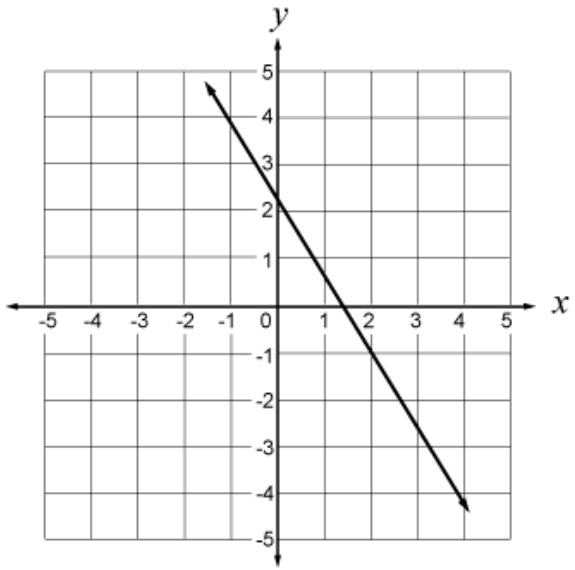

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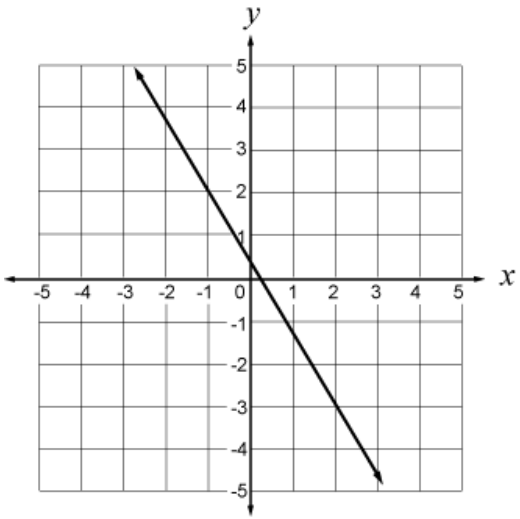
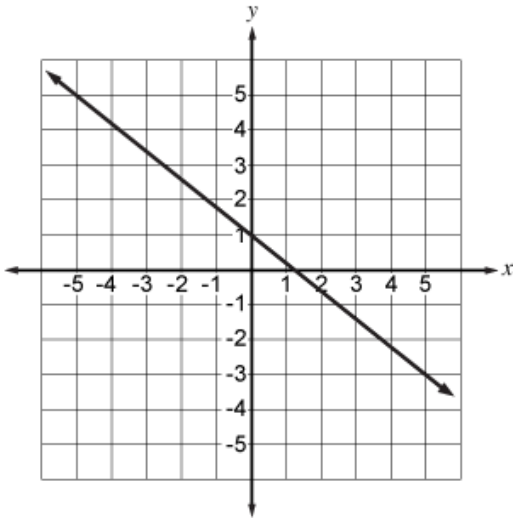


14. Vera graphed a line with slope -1 and containing the point (-2, 3). Which graphed line is **parallel** to the line Vera graphed?

a.



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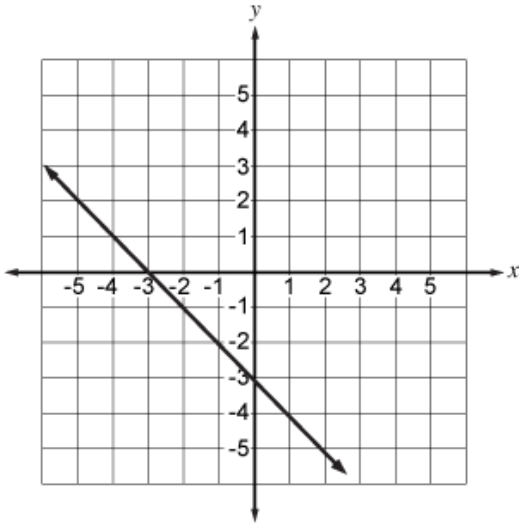

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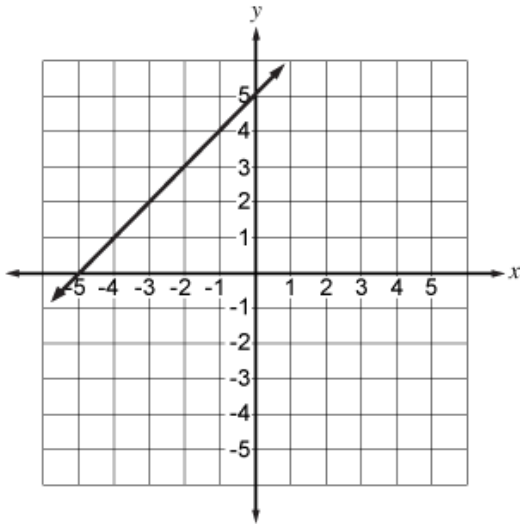

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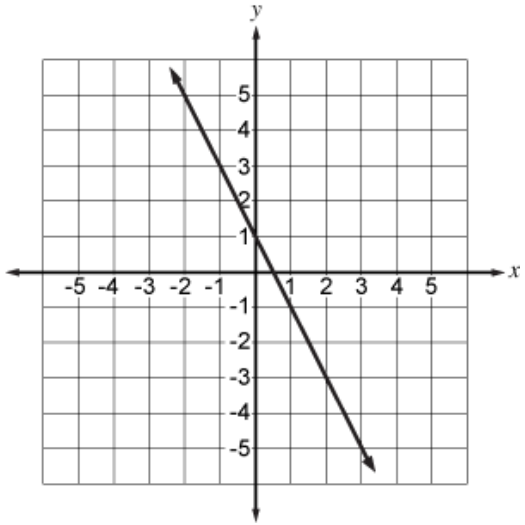
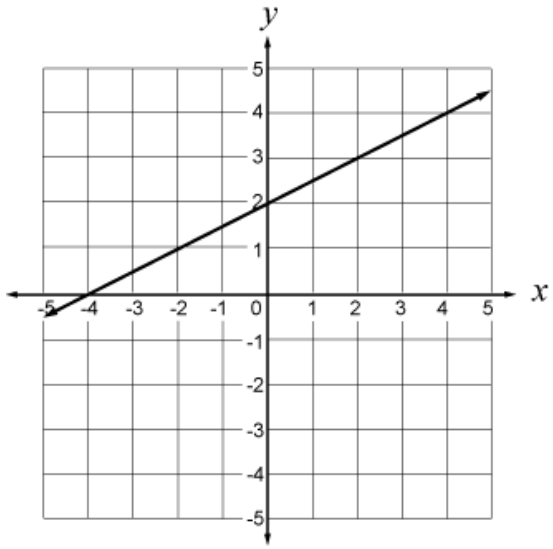


15. Line *a* contains the points (-4, -2) and (-1, 4). Line *b* has the same slope as line *a*, but contains the point (0, 2). Which graph correctly shows line *b*?

a.



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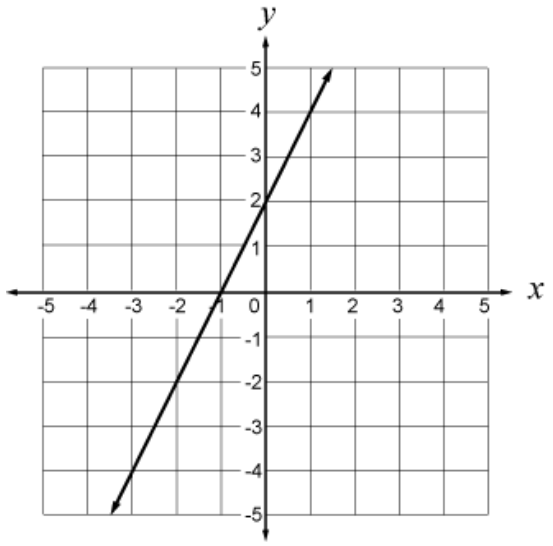
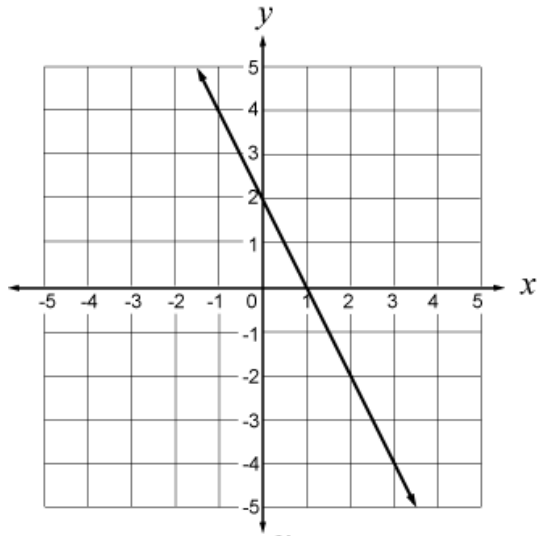
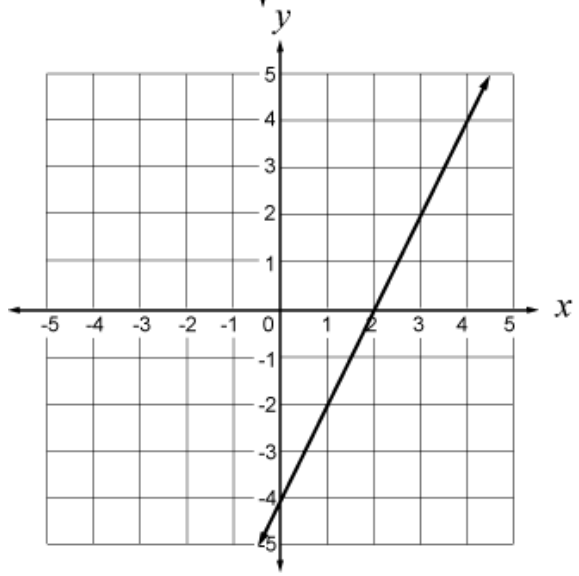


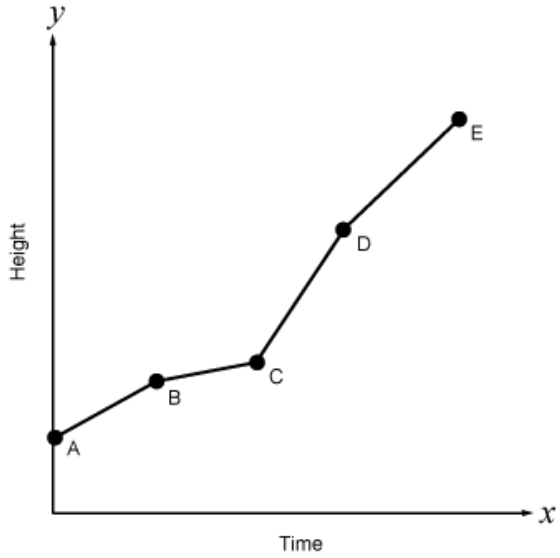
c.



d.



16. Terrence is playing pinball. After each turn, he records how much time he played and his score. For his first turn, he recorded 10 minutes and 1,234,560 points. For his second turn, he recorded 20 minutes and 2,232,780 points. Terrence connects these two data points with a line on a graph. What does the slope of Terrence's line represent?
    a. Total number of turns
    b. Number of points per minute
    c. total number of points after both turns
    d. amount of time spent playing per turn
17. The graph shows the relationship between the height of a ski lift and the time the ski lift travels. Which interval has the steepest rise?
    a. A to B
    b. B to C
    c. C to D
    d. D to E



18. The steepness of a road over certain distances is listed below. Over what part of the road is the steepness the greatest?

0 - 500 ft.	$\frac{1}{50}$
500 - 900 ft.	$\frac{3}{80}$
900 - 1,400 ft.	$\frac{2}{125}$
1,400 - 1,800 ft.	$\frac{1}{40}$

    a. 0 – 500 ft
    b. 500 – 900 ft
    c. 900 – 1,400 ft
    d. 1,400 – 1,800 ft

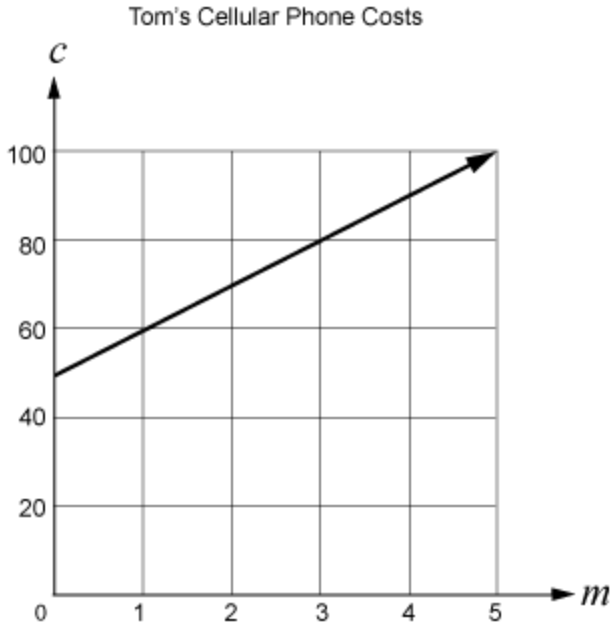
19. Samantha charges an initial fee plus an hourly fee to repair computers. The table below shows the amounts Samantha charges for the first three hours of repair. What amount does Samantha charge per hour?

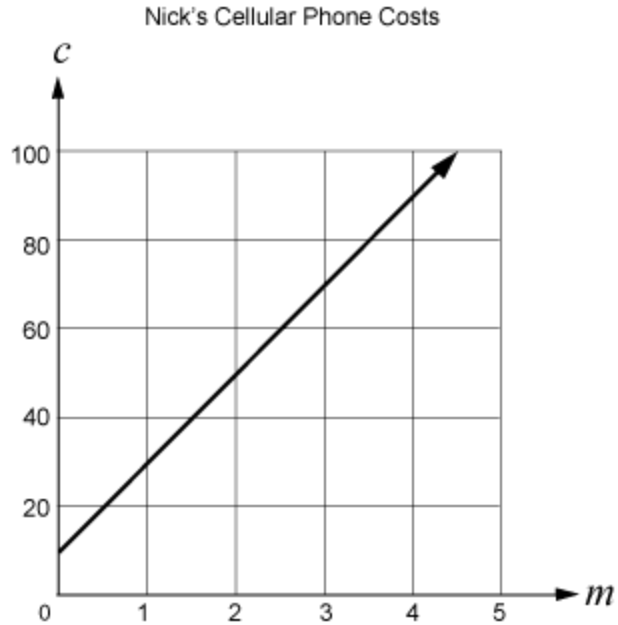
a. $25
b. $50
c. $75
d. $100

Computer Repair

Hours	Fee
1	$50
2	$75
3	$100

20. Tom and Nick each have a different cellular phone plan. The two graphs below show the cost, in cents (*C*), of a phone call lasting *m* minutes. Which person pays a greater amount per minute?





a. Tom, because the slope on his graph is greater.
b. Nick, because the slope on his graph is greater.
c. Tom, because the *y*-intercept on his graph is greater.
d. Nick, because the *y*-intercept on his graph is greater.

21. Jean wants to compare these functions: $f(x) = 2x + 7$ and $g(x) = 0.5x - 9$. Which statement is **true**?
    a. The slope of $g(x)$ is greater than the slope of $f(x)$.
    b. The slope of $g(x)$ is the same as the slope of $f(x)$.
    c. The y-intercept of $g(x)$ is greater than the y-intercept of $f(x)$.
    d. The x-intercept of $g(x)$ is greater than the x-intercept of $f(x)$.
22. Which equation has the same x-intercept as $y = x + 2$?
    a. y = x – 2 b. y = 2x c. y = -x – 2 d. y = 2x + 2
23. Which statement is true regarding the linear functions shown? $f(x) = 2x + 5$ and $g(x) = -2x + 5$
    a. The slopes and y-intercepts of each function are different.
    b. The slopes and y-intercepts of each function are the same.
    c. The slopes of each function are the same and the y-intercepts are different.
    d. The slopes of each function are different and the y-intercepts are the same.
24. Which function has the greatest **positive** rate of change?
    a. $3x - 2y = 5$ b. 2x – 3y = 6 c. x + 4y = 2 d. 5x + y = 9
25. Two local gyms, Star Fitness and Pump-up, charge a one-time enrollment fee and a regular monthly fee. The total amounts charged by both gyms are modeled by the functions below. Which statement is true?

    Star Fitness $f(x) = 25x + 60$
    Pump-Up $f(x) = 30x + 25$

    a. Pump-Up charges a greater enrollment fee than Star Fitness.
    b. Pump-Up charges a greater monthly fee than Star Fitness.
    c. The monthly fee at Star Fitness is the same as the monthly fee at Pump-Up.
    d. The enrollment fee at Star Fitness is the same as the enrollment fee at Pump-Up.

26. Four lines are represented by the functions shown below. Which line has the greatest y-intercept?
    a. line l b. line m c. line n d. line p

    line l $x - 2y = 8$
    line m $3x + y = 1$
    line n $-x - 3y = -6$
    line p $4x + 5y = -4$