Algebra I Semester 1 Study Guide 2017-2018 Name:_____

1. Create a sequence that has a common difference of 3

   Create a sequence that has a common difference of 6

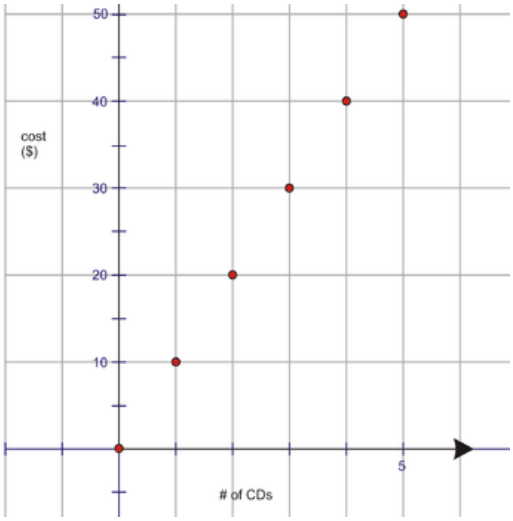
2. The table displays the hourly rental cost of a bowling lane…

Hours	1	2	3	4
Cost	3	5	7	9

Write an expression to model the cost of bowling after *n* hours?

3. The graph below shows the number of CDs purchased and their total cost…

Determine the cost of the CDs when you purchase two, four and five CDs?



4. Jennifer has a lemonade stand. She charges $1.25 for a glass of lemonade. It costs her $0.60 to make each glass of lemonade plus $15 a day for other expenses. Write an equation to determine how many glasses of lemonade, l, Jennifer needs to sell each day in order to break even?

5. Jerry is trying to find a landscaping service for his home. He finds two companies near him that offer what he needs but have different rates.

He sets up the equation $4.55f + 32.50 = 3.80f + 45.00$ to find out after how many square feet, *f*, the companies will charge the same amount. What is the difference in the per square feet costs for the two companies?

6. UPS charges $7 for the delivery fee and $0.20 for each additional pound. FedEx charges $5 for the delivery fee and $0.30 for each additional pound. How many pounds will it take for UPS and FedEx to cost the same?

7. How many solutions do the following equations have?

- $9x + 3x - 10 = 3(3x + x)$
- $-8a + 10 = 2(5 - 4a)$
- $4(x - 4) = 2x + 6$

8. Solve the following for the given variable:

Solve $6w + 12d = 36\ for\ d.$

Solve $4h + 16a = 32$ for h.

9. What is **a** solution of the inequality $3 - 4x \leq 11$?

What is **a** solution of the inequality $6 - 3(x + 2) > 15$?

What is **a** solution to the inequality $2(x + 5) < 8(x - 4)$?

10. Two rival cleaning companies charge to dust houses. Captain Dustsalot charges $20 per house call plus $12 per room, and Dedusters charges $30 per house call plus $10 per room. Abigail wants to know how many rooms she must get dusted so that Captain Dustsalot is more expensive than Dedusters. Set up an inequality showing Captain Dustsalot is more expensive than Dedusters.

11. Graph the following inequalities $-4 < x \leq 4$

$2 \leq x < 7$

$-2 < x \leq 5$

12. Solve the equation $-5|x - 3| = -12$.

13. Function or not a function? Explain why…

- {(5, -2), (-2, 5), (2, -5), (-5, 2)}
- {(5, -2), (-2, 5), (5, 2), (-5, 2)}

14. The function that describes a sequence is $f(x) = 12.3 - 2.6x$. What is $f(4)$?

15. The graph shows the distance Tom traveled in his race.

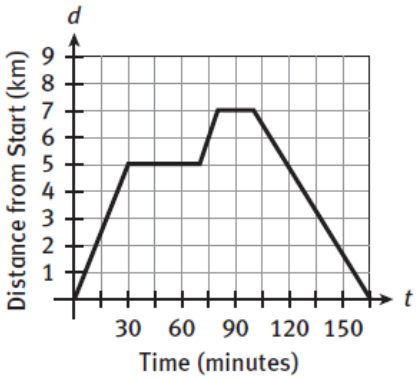
Answer True or False for the following questions:

Tom ran 5 km over the first 30 mins of the race _____

After 60 mins, Tom had run 7 km _____

Tom was 10 km from the start after 120 minutes _____

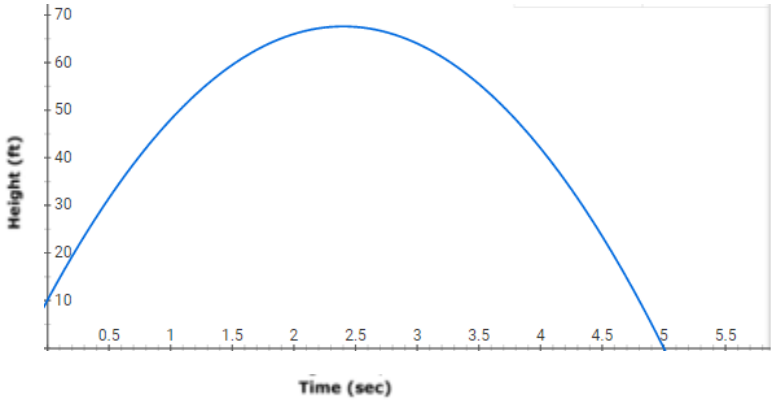
Over his 160 minute run, Tom ran 14 km _____



16. Use a graphing calculator to graph the function $y = x^2 - 4x + 5$. What is the minimum value of the function?

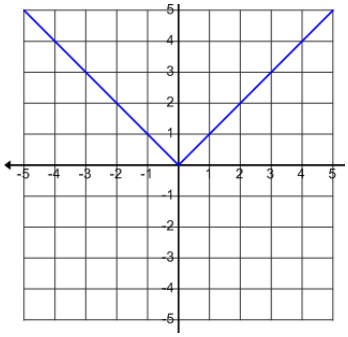
17. A bowling alley charges $2.00 for shoe rental and $3.00 per game bowled. The cost for x games bowled is given by the function $f(x) = 2 + 3x$. What is a reasonable domain and range?

18. The function $h(t) = -10t^2 + 48t + 10$ represents the height of an arrow shot through the air from an initial height.

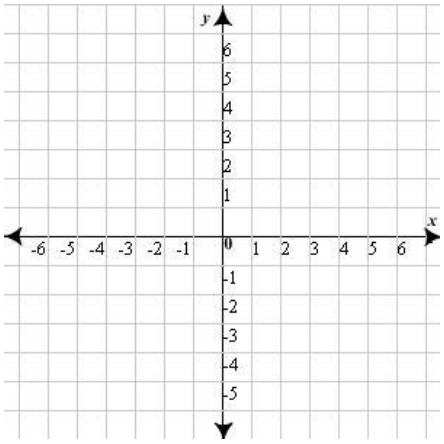


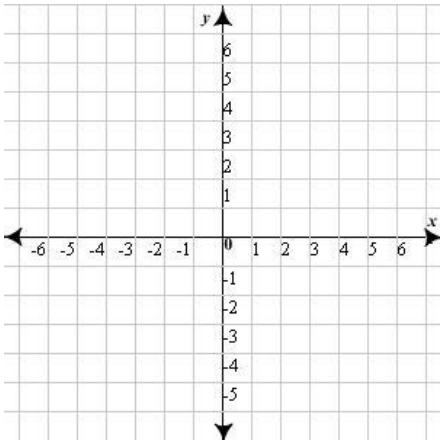
Approximately how long will the arrow be in the air?

19. This is the graph of $f(x) = |x|$.



Graph $g(x) = |x| - 4$ and $h(x) = |x| + 2$





20. The table represents a linear function.

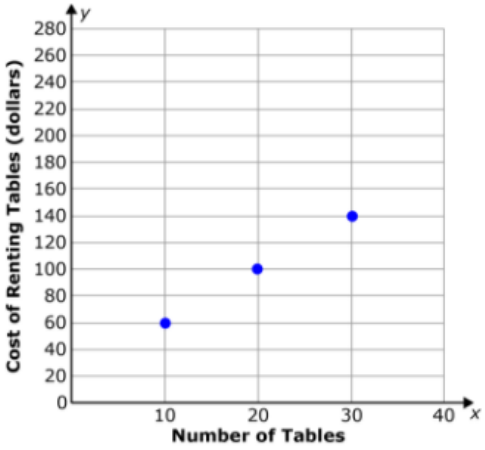
x	y
5	16
7	10
10	1
14	a

What is the value of a?

21. The graph of a direct variation function passes through the point (8, 67). What is the constant of variation for this function?

22. The cost for renting tables at a local flea market is shown on the graph.

How much will it cost to rent 22 tables?



23. What is the inverse of $f(x) = 2x - 7$?

$f^{-1}(x) =$

24. This is an arithmetic sequence.

10, 9.4, 8.8, 8.2, 7.6 ……..

Write a function that describes the sequence?

25. Write an equation in slope-intercept form for the line graphed below.

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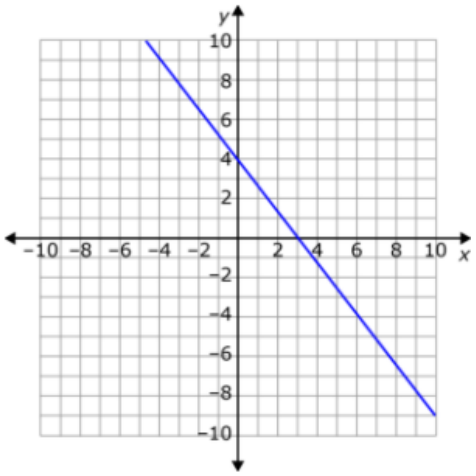


26. Which is the equation of the line, in point-slope form, with a slope of -2 and passes through the point (4, - 2).

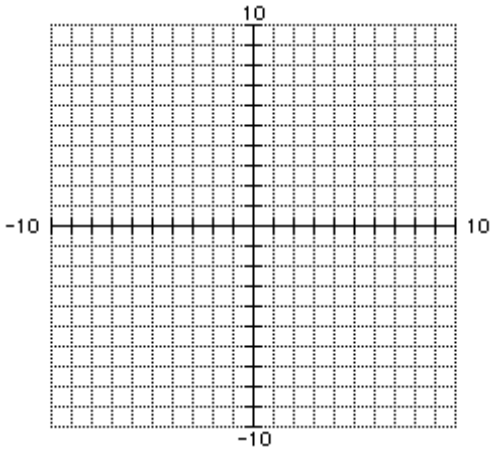
27. Line j passes through the points $(6, -12)$and $(3, -11)$, while line k passes through $(4, 13)$ and $(2, 7)$. How would you describe the relationship between lines j and k?

28. Enter the following data into a graphing calculator.

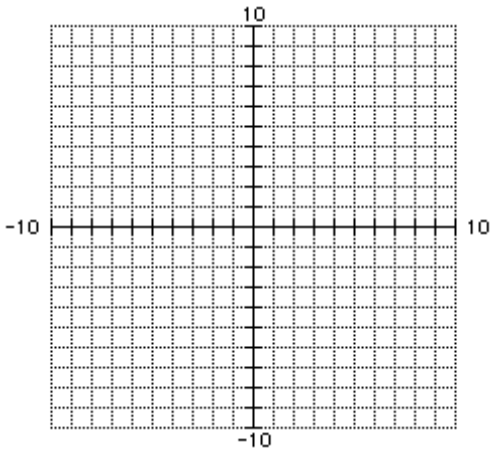
(32, 55), (75, 28), (80, 14), (48, 36) (19, 66)

What is the equation of the line of best fit? Round your answer to the nearest hundredth.

29. Solve the system by graphing. $\begin{cases} y = x + 6 \\ 3x = y - 6 \end{cases}$



30. Solve the system by graphing. $\begin{cases} x + y = -2 \\ y = 4x - 7 \end{cases}$



31. Tell whether the ordered pair is a solution of the given system.

(6,-2); $\begin{cases} 3x - 2y = 14 \\ 5x - y = 32 \end{cases}$

32. Solve using substitution.

$$\begin{cases} 3x - 2y = 7 \\ x + 3y = -5 \end{cases}$$

33. Carla and Benicio work in a men's clothing store. They earn commission from each suit and each pair of shoes they sell. For selling 3 suites and one pair of shoes, Carla has earned $47 in commission. For selling seven suits and two pairs of shoes, Benicio has earned $107 in commission. How much do the salespeople earn for the sale of a suit? How much do they earn for the sale of a pair of shoes?

34. Solve using substitution.

$$\begin{cases} y = x - 2 \\ y = 4x + 1 \end{cases}$$

35. Solve using substitution.

$$\begin{cases} 2x + y = 8 \\ y = x - 7 \end{cases}$$

36. Solve using elimination.

$$\begin{cases} x + 3y = -14 \\ 2x - 4y = 32 \end{cases}$$

37. Solve using elimination.

$$\begin{cases} 4x - 3y = -9 \\ 5x - y = 8 \end{cases}$$

38. Tell which systems have no solution as an answer.

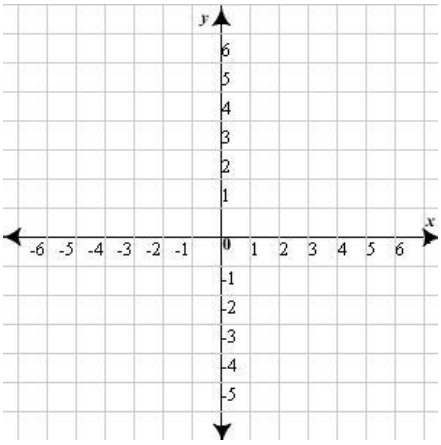
A.) $\begin{cases} 2x + y = 1 \\ 2x + y = -3 \end{cases}$ B.) $\begin{cases} y = 5x + 2 \\ y - 5x = 2 \end{cases}$ C.) $\begin{cases} y = -4x + 1 \\ 4x = -y - 6 \end{cases}$ D.) $\begin{cases} y - 2x = 5 \\ x = y - 3 \end{cases}$

39. Tell whether the ordered pair is a solution of the given inequality.

(-1,-4); $y \geq 2x - 1$

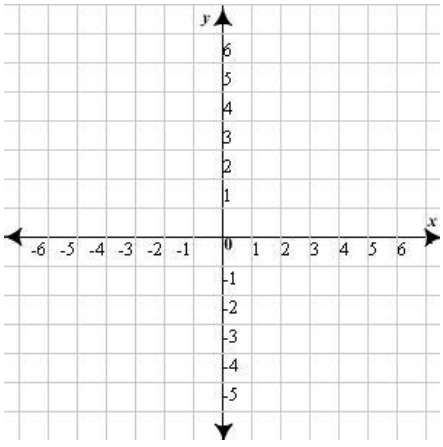
40.) Graph the solutions of each linear inequality. Then tell whether (4,1) is a solution.

$y \leq -\frac{1}{2}x + 3$



41. Solve the system of linear inequality. Tell whether (2,0) is a solution.

$$\begin{cases} y < 2x + 4 \\ y > x - 1 \end{cases}$$



42. Graph the solutions of each linear inequality. Tell whether (5,-4) is a solution.

$x < 5$