

Semester One Review Packet ~ Due: _____

→ Work Must be Shown When Applicable ←

Keep and correct this packet, as it will come in handy when studying for standardized tests: ACT/SAT and college placement exams.

Pace yourself – Do not wait until the night before it is due.

On the exam, you may use a “CHEAT SHEET.”

- Computer / Lined Paper ($8\frac{1}{2}$ inches by 11 inches)
- Front and Back Permitted
- Formulas / Examples / Reminders / Words of Encouragement...
- Handwritten or Printed (for smaller font)
- Nontransferable During Exam
- Advisable to Make Additions While Completing the Packet
- Advisable to Make Items Easy To Find
- Keep for Future Classes/Exams...

*You will most likely find that the cheat sheet will only serve as a “crutch.” If you do not know how to use the formulas, it will not help.

On exam day, bring:

- ✓ Calculator You're Familiar With
- ✓ Cheat Sheet
- ✓ Pencil
- ✓ Scrap Paper
- ✓ Something to Keep You Busy

*Headphones / Phones are only permitted when your exam is submitted and must not be heard by anyone but yourself.

IMPORTANT: NO ASSIGNMENTS WILL BE ACCEPTED AFTER SCHEDULED FINAL EXAMS.

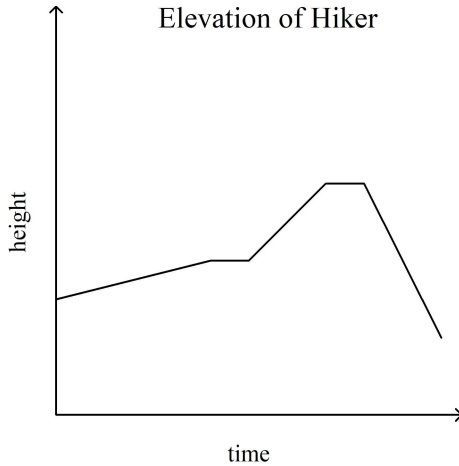
Good luck on the exam and in the future. I hope you learned a lot this semester! ☺

Exam is 15% of your grade.

Algebra I Semester 2 Final REVIEW 2021-2022

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

- _____ 1. The graph shows the height of a hiker above sea level. The hiker walks at a constant speed for the entire trip. What are the variables? Describe how the variables are related at various points on the graph.



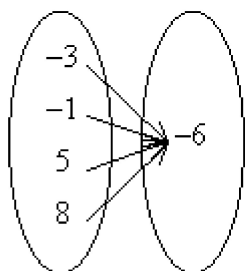
- a. The variables are height and time. For the first part of the graph, the height is increasing slowly, which means the hiker is climbing a steep incline. Flat parts of the graph show where the elevation does not change, which means the hiker stopped to rest. The steep part at the end of the graph shows that the hiker is descending a gentle slope.
 - b. The variables are height and time. For the first part of the graph, the height is increasing slowly, which means the hiker is walking up a gentle slope. Flat parts of the graph show where the elevation does not change, which means the trail is flat here. The steep part at the end of the graph shows that the hiker is descending a steep incline.
 - c. The variables are height and time. For the first part of the graph, the height is increasing slowly, which means the hiker is climbing a steep incline. Flat parts of the graph show where the elevation does not change, which means the trail is flat here. The steep part at the end of the graph shows that the hiker is descending a steep incline.
 - d. All of the above.
- _____ 2. In the following relation, what values are part of the domain?

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

- a. $\{-3, -1, 5, 8\}$
- b. $\{-6\}$
- c. $\{(-3, -6), (-1, -6), (5, -6), (8, -6)\}$
- d. none of these

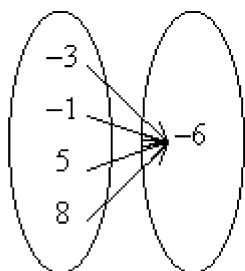
3. Identify the mapping diagram that represents the relation and determine whether the relation is a function.
 $\{(-3, -6), (-1, -6), (5, -6), (8, -6)\}$

a.



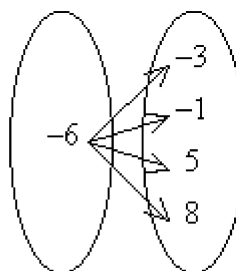
The relation is not a function.

b.



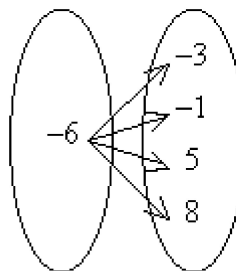
The relation is a function.

c.



The relation is a function.

d.



The relation is not a function.

4. In the following relation, what values are part of the range?

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

a. $\{-3, -1, 5, 8\}$

b. $\{-6\}$

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

d. none of these

5. If $f(x) = 4 + x^2$, what is $f(-2)$?

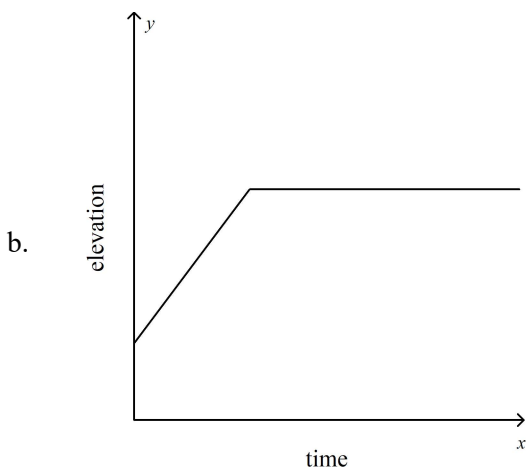
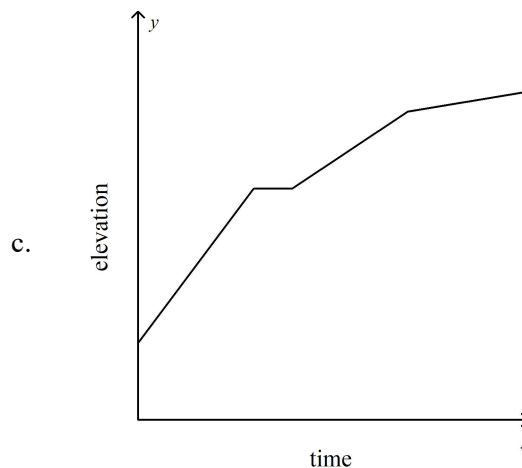
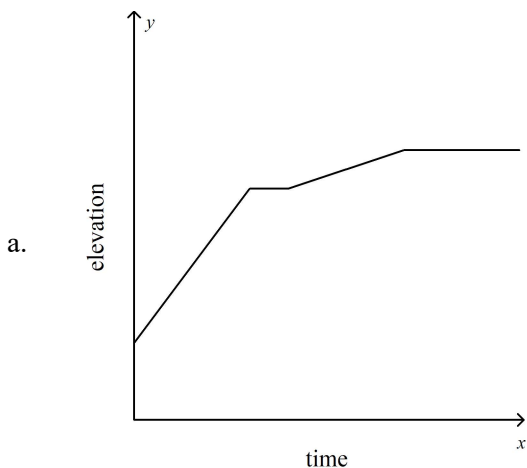
a. 0

b. 8

c. 7

d. -5

6. A hiker climbs up a steep bank and then rests for a minute. He then walks up a small hill and finally across a flat plateau. What sketch of a graph could represent the elevation of the hiker?



- d. Any of the graphs could represent the situation, depending on the hiker's speed.

7. Converting yards to feet is a function $f(n)$ of the length n in yards. Write a function rule to convert yards to feet. There are 3 feet in 1 yard.

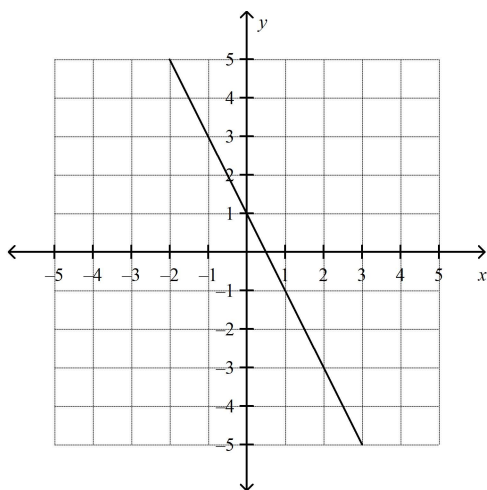
a. $f(n) = 3n$ b. $f(n) = \frac{1}{3}n$ c. $f(n) = 12n$ d. $f(n) = \frac{n}{12}$

8. Write a function rule that gives the total cost $c(p)$ of p pounds of sugar if each pound costs \$.58.

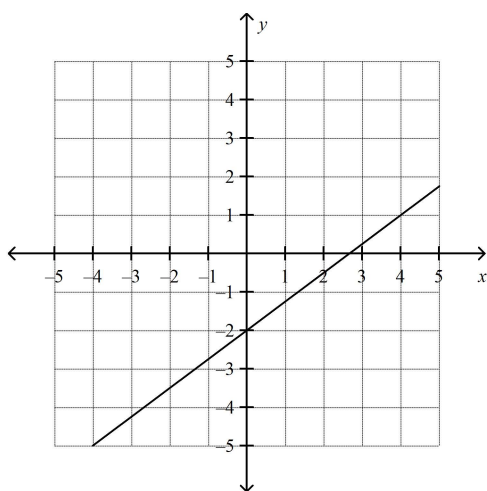
9. A snail travels at a rate of 2.44 feet per minute.
- Write a rule to describe the function.
 - How far will the snail travel in 7 minutes?

Find the slope of the line.

10.



11.

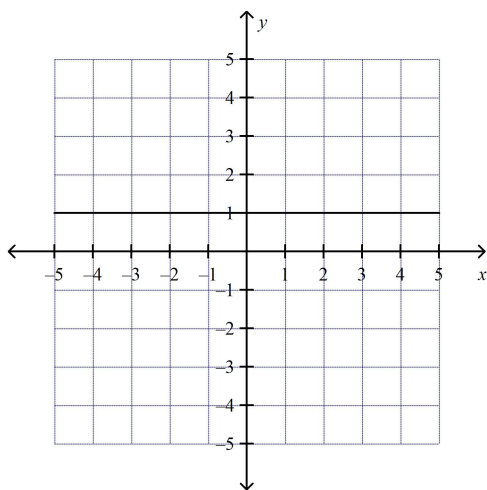


What is the slope of the line that passes through the pair of points?

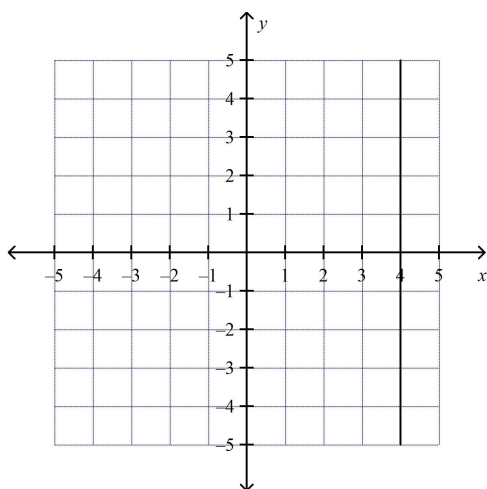
12. $(3, 6), (9, -1)$

What is the slope of the line?

13.



14.



Does the equation represent a direct variation? If so, find the constant of variation.

15. $4x = y$

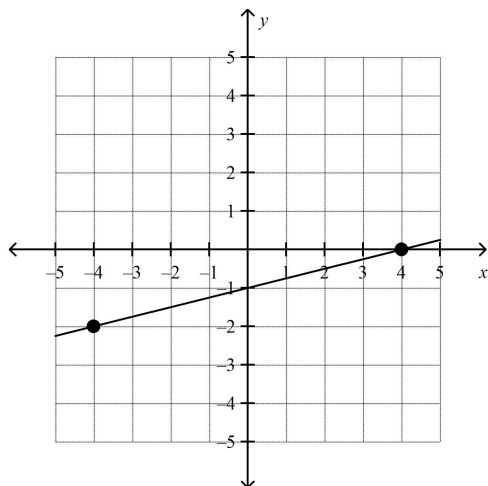
16. The number of sofas a factory produces varies directly with the number of hours the machinery is operational. Suppose the factory can produce 136 sofas in 32 hours. What is an equation that relates the number of sofas produced, n , with the amount of time, t , in hours?

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

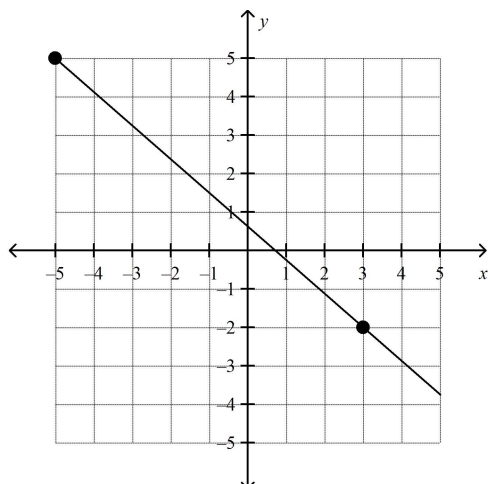
17. $y = 5x + 10$

Write the slope-intercept form of the equation for the line.

- 18.



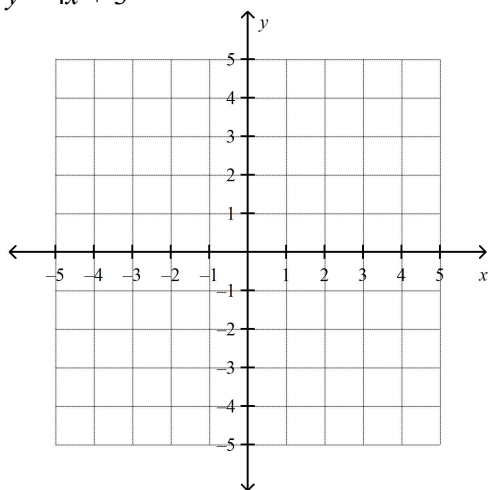
19.



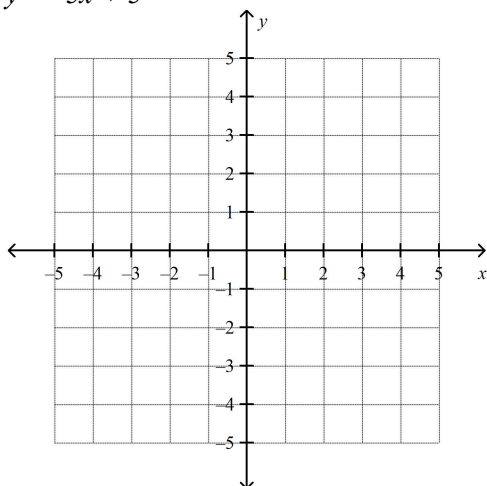
What equation in slope intercept form represents the line that passes through the two points?

20. $(4, 7), (6, -2)$

Graph the equation.

21. $y = 4x + 3$ 

22. $y = -5x + 5$



Write an equation in point-slope form for the line through the given point with the given slope.

23. $(6, 2); m = 3$

Find the x - and y -intercept of the line.

24. $-8x - 3y = 96$

25. The grocery store sells dates for \$4.00 a pound and pomegranates for \$2.00 a pound. Write an equation in standard form for the weights of dates d and pomegranates p that a customer could buy with \$16.

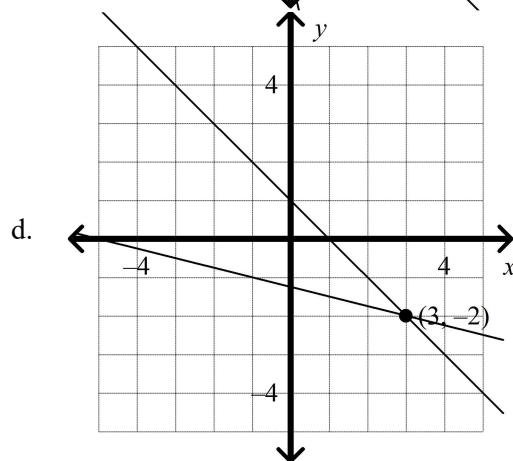
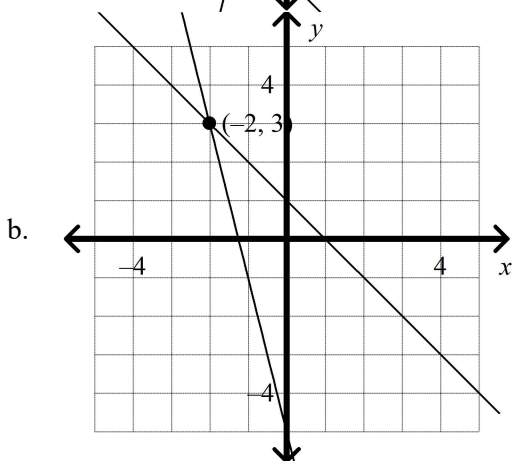
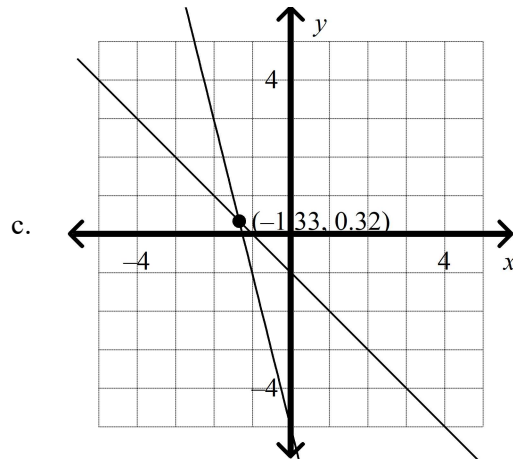
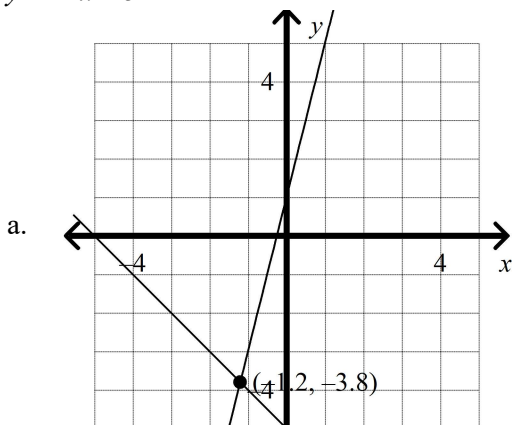
Tell whether the lines for each pair of equations are *parallel*, *perpendicular*, or *neither*.

26. $y = -2x - 11$
 $12x - 24y = 20$

27. $y = -\frac{7}{2}x + 4$
 $-21x - 6y = 6$

What is the solution of the system? Use a graph.

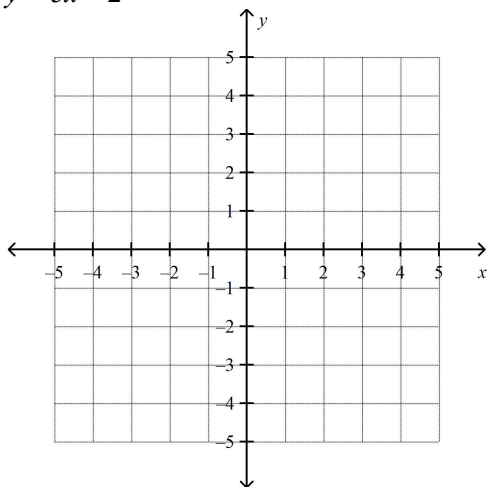
28. $y = -x + 1$
 $y = -4x - 5$



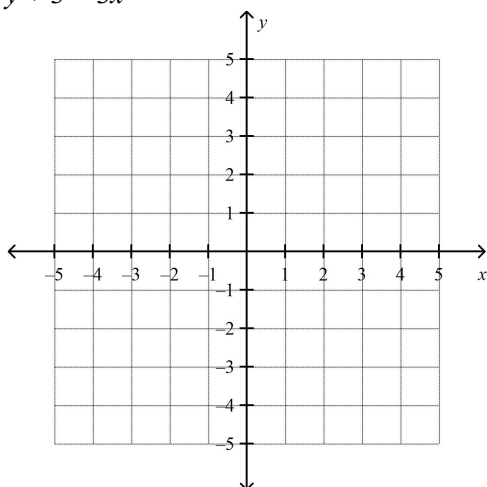
29. Tom has a collection of 21 CDs and Nita has a collection of 14 CDs. Tom is adding 3 CDs a month to his collection while Nita is adding 4 CDs a month to her collection. Find the number of months after which they will have the same number of CDs.

What is the solution of the system? Use a graph.

30. $y = 5x - 5$
 $y = 5x - 2$



31. $y = 3x - 3$
 $y + 3 = 3x$



What is the solution of the system? Use substitution.

32. $y = 4x + 8$
 $y = 5x$

33. $3x + 2y = 7$
 $y = -3x + 11$

34. A corner store sells two kinds of baked goods: cakes and pies. A cake costs \$13 and a pie costs \$11. In one day, the store sold 14 baked goods for a total of \$170. How many cakes did they sell?

What is the solution of the system? Use elimination.

35. $2x - 2y = -8$
 $x + 2y = -1$

What is the solution of the system? Use elimination.

36. $3x - 4y = -24$
 $x + y = -1$

What is the simplified form of each expression?

37. $(-5.2)^0$

38. $-(6)^{-1}$

39. $(3)^{-3}$

40. $5k^3 h^{-2}$

41. $\frac{1}{g^{-5}}$

42. What is the value of $\frac{1}{2^{-2}x^{-3}y^5}$ for $x = 2$ and $y = -4$?

What is each expression written using each base only once?

43. $12^9 \cdot 12^{10}$

44. $(5.96)^{-7} \cdot (5.96)^8$

45. $(-1)^{-4} \cdot (-1)^9$

What is the simplified form of each expression?

46. $g^9 \cdot 5g^{-2}$

47. $-4x^3 \cdot 2y^{-2} \cdot 5y^5 \cdot x^{-8}$

What is the simplified form of the expression?

48. $m^4(m^4)^{-9}$

What is the simplified form of each expression?

49. $(3k^6)^3$

What is the simplified form of each expression?

50. $\frac{x^{-11}y^{-9}}{x^{-1}y^{-19}}$