

Key

Instructional Materials for WCSD Math Common Finals

The Instructional Materials are for student and teacher use and are aligned to the 2018-2019 Course Guides for the following courses:

High School Algebra 1 S1

- #2201 Algebra 1 S1
- #7769 Foundations in Algebra 1 S1

Middle School Algebra 1 S1

- #228 Algebra 1 (Semester 1)
- #217A VMS ALG 1 S1
- #776 ACCEL Algebra 1

#1-5
 #6-10
 #11-15
 #16-20
 #21-25
 #26-30
 #31-35
 #36-40
 #41-45
 #46-50
 #51-55
 #56-60
 61

When used as test practice, success on the Instructional Materials does not guarantee success on the district math common final or the Nevada End of Course Exam.

Students can use these Instructional Materials to become familiar with the format and language used on the district common finals. Familiarity with standards and vocabulary as well as interaction with the types of problems included in the Instructional Materials can result in less anxiety on the part of the students. The length of the actual final exam may differ in length from the Instructional Materials.

Teachers can use the Instructional Materials in conjunction with the course guides to ensure that instruction and content is aligned with what will be assessed. The Instructional Materials are not representative of the depth or full range of learning that should occur in the classroom.

***Students will be allowed to use a non-programmable scientific calculator on Algebra 1 Semester 1 and Algebra 1 Semester 2 final exams.**

Algebra 1 Reference Sheet

Note: You may use these formulas throughout this entire test.

Linear

Slope $m = \frac{y_2 - y_1}{x_2 - x_1}$

Midpoint $M = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$

Distance $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

Slope-Intercept Form $y = mx + b$

Quadratic

Vertex-Form $y = a(x - h)^2 + k$

Standard Form $y = ax^2 + bx + c$

Intercept Form $y = a(x - p)(x - q)$

Exponential

(h, k) Form $y = ab^{x-h} + k$

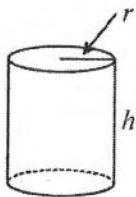
Probability

$$P(A \text{ and } B) = P(A) \cdot P(B)$$

$$P(A \text{ and } B) = P(A) \cdot P(B|A)$$

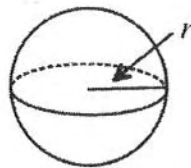
$$P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$$

Volume and Surface Area



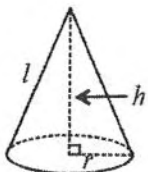
$$V = \pi r^2 h$$

$$SA = 2(\pi r^2) + h(2\pi r)$$



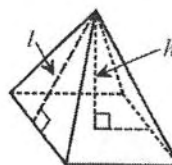
$$V = \frac{4}{3} \pi r^3$$

$$SA = 4\pi r^2$$



$$V = \frac{1}{3} \pi r^2 h$$

$$SA = \pi r^2 + \frac{1}{2} (2\pi r \cdot l)$$

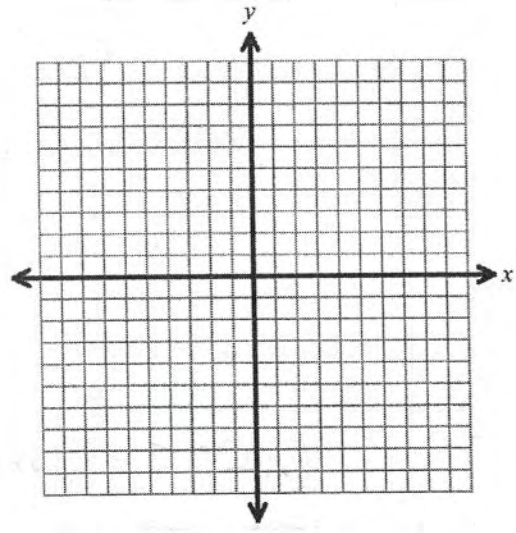
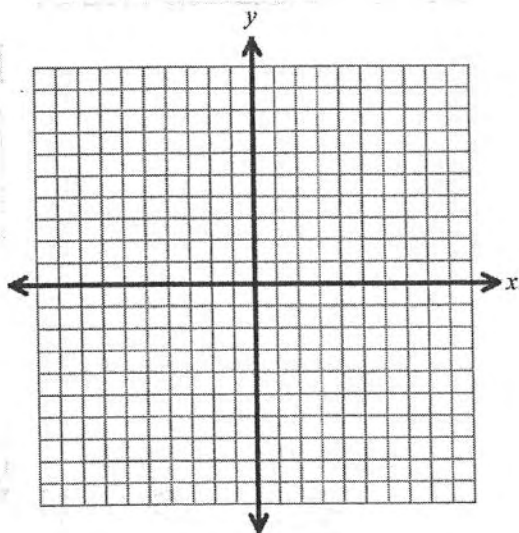
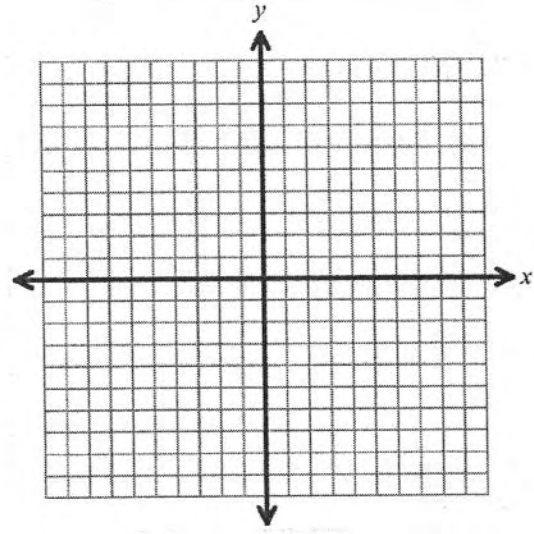
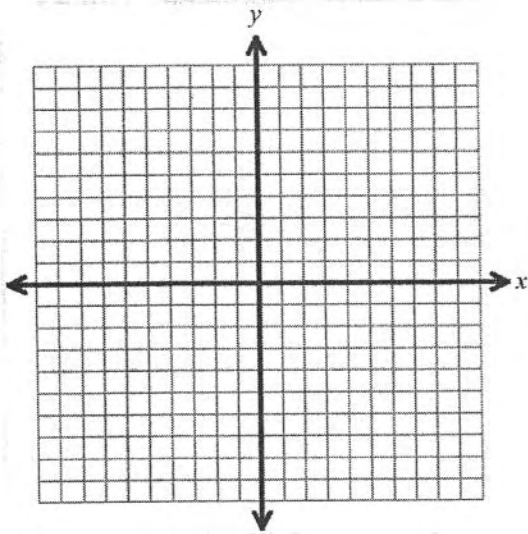
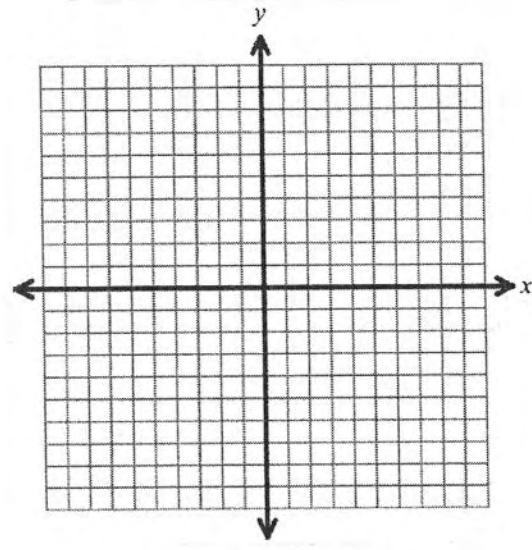
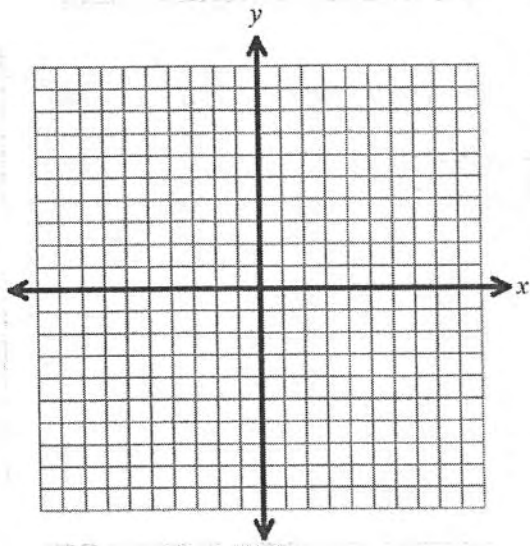


$$V = \frac{1}{3} Bh$$

$$SA = B + \frac{1}{2} (Pl)$$

Where B = base area
and P = base perimeter

Student Work Area



ALGEBRA 1 SEMESTER 1 INSTRUCTIONAL MATERIALS

HS Courses: #2201 Algebra 1 SI and #7769 Foundations in Algebra 1 SI
MS Courses: #218 Algebra 1, #217A VMS ALG 1 SI, and #776 ACCEL Algebra 1

2018-2019

- B 1. Jayden added $\frac{6}{7} + x$ and the result was an irrational number. Which statement about x must be true?
- cannot be represented by $\frac{p}{q}$ } integers
ex) $\sqrt{2}, \pi, \dots$ no pattern ...
- A. x must be a rational number
 - B.** x must be an irrational number
 - C. x must be a natural number
 - D. x must be an integer

FFFF

2. Which of the following could be the first step in solving $\frac{1}{2}(x + 3) = \frac{2}{3}$? Select all that apply.
- F.** Distribute $\frac{1}{2}$ to $(x + 3)$ on the left side of the equation
 - G. Subtract 3 from both sides of the equation
 - H.** Multiply by the reciprocal of $\frac{1}{2}$ on both sides of the equation $\div \frac{2}{1}$
 - I.** Divide by $\frac{1}{2}$ on both sides of the equation
 - J. Distribute $\frac{2}{3}$ to $\frac{1}{2}(x + 3)$ on the left side of the equation

D

3. A chemistry teachers needs 25 liters of a 12% salt solution. The teacher has mixture of a 5% salt solution and a mixture of a 20% salt solution. How many liters of the 5% and 20% mixtures should she mix to get what she needs? Round your answer to the nearest tenth if necessary.
- A. 1 liter of the 5% mixture and 24 liters of the 20% mixture
 - B. 8 liters of the 5% mixture and 17 liters of the 20% mixture
 - C. 12.5 liters of the 5% mixture and 12.5 liters of the 20% mixture
 - D.** 13.3 liters of the 5% mixture and 11.7 liters of the 20% mixture

↓ mult

$$(.12)25 = (.05)x + (.20)(25 - x)$$

$$3 = .05x + 5 - .20x$$

$$3 = -.15x + 5$$

$$\begin{array}{r} 3 \\ -5 \\ \hline -2 = -.15x \end{array}$$

$$\begin{array}{r} -2 \\ -15 \\ \hline 13.\bar{3} = x \end{array}$$

D 4. Which properties can be used to transform the equation $\frac{1}{2}(4x - 8) = 10 + 7x$ into the equivalent equation $2x - 4 = 7x + 10$?

- A. Division Property and Commutative Property of Addition
 - B. Distributive Property and Addition Property of Equality
 - C. Multiplication Property of Equality and Addition Property of Equality
 - D. Distributive Property and Commutative Property of Addition
- rearrange the terms.*

-2.05. Solve the equation $34.8x + 0.2(x - 4) = -16.8 + 27x$. Bubble your answer in the grid provided below.

34.8x + 0.2(x - 4) = -16.8 + 27x

34.8x + 0.2x - 0.8 = -16.8 + 27x

-27x + 0.8 + 0.8 - 27x

$\frac{8x}{8} = \frac{-16}{8}$

x = -2

-	2	.	0			
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D 6. What is the solution for x in $5x - 2 + 2x = 7x - 2$?

- A. x = 0
- B. x = 1
- C. no solution
- D. infinitely many solutions

7x - 2 = 7x - 2

-7x -7x

-2 = -2

True

∞ solutions

ALGEBRA 1 SEMESTER 1 INSTRUCTIONAL MATERIALS

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2018-2019

A7. In the equation, $m = \frac{y_2 - y_1}{x_2 - x_1}$ solve for y_2 .

$$m \cdot (x_2 - x_1) = y_2 - y_1$$

$$\frac{m(x_2 - x_1) + y_1}{m} = \frac{y_2 - y_1 + y_1}{m}$$

(A) $y_2 = m(x_2 - x_1) + y_1$

C. $y_2 = \frac{m}{x_2 - x_1} + y_1$

B. $y_2 = -\frac{y_1}{m(x_2 - x_1)}$

D. $y_2 = mx_2 + \frac{y_1}{x_1}$

8. Which of the following inequalities represents the solution to $3a + 3 - 6a > 15$?

A. $a < -6$

(C) $a < -4$

B. $a > 4$

D. $a > -4$

$$3a + 3 - 6a > 15$$

$$-3a + 3 > 15$$

$$\underline{-3} \quad \underline{-3}$$

$$-3a > 12$$

$$\ast \underline{-3} \quad \underline{-3}$$

$$a < -4$$

9. The soccer club president is planning to order shirts for each of the club's 15 members. It will cost \$45 for the design to be created and an additional cost for each shirt. The cost of each shirt varies depending on the type of shirt chosen with the prices shown below. The club president must order the same type of shirt for all of the members and cannot spend more than \$135. Based on this information, which type(s) of shirts can the club president choose to purchase?

Tank Top	\$3 each
Short Sleeve	\$4 each
Long Sleeve	\$6 each
Sweatshirt	\$9 each

A. Sweatshirt

B. Long Sleeve

C. Sweatshirt, Long Sleeve, Short Sleeve or Tank Top

(D) Long Sleeve, Short Sleeve or Tank Top

45

$$\leq 135$$

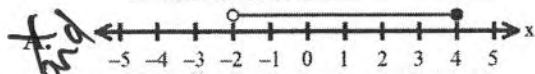
$$\underline{-45}$$

$$\$90$$

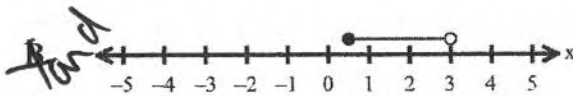
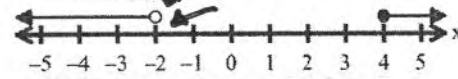
15 members

$$\frac{9}{135}$$

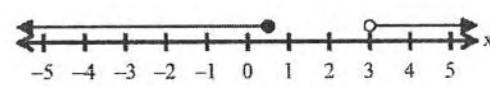
- C 10. Which of the following represents the solution to the compound inequality, $2x + 5 < 1$ or $x - 7 \geq 9$?



or



or



$$\begin{array}{r}
 2x + 5 < 1 \\
 -5 \quad -5 \\
 \hline
 2x < -4 \\
 \frac{2x}{2} < \frac{-4}{2} \\
 x < -2
 \end{array}$$

open
 $x < -2$

- A 11. Which of the following is the solution for x in the equation $-2|x + 3| + 6 = 10$?
- A. no solution
B. $x = -5, x = -1$
C. $x = 1$
D. $x = -5$

absolute value
isolate ||
Split into two equations

$$\begin{array}{r}
 -2|x + 3| + 6 = 10 \\
 -6 \quad -6 \\
 \hline
 -2|x + 3| = 4 \\
 \frac{-2|x + 3|}{-2} = \frac{4}{-2} \\
 |x + 3| = -2
 \end{array}$$

negative #

- B 12. Which of the following is the solution for x in the equation $-3|x + 4| = -6$?
- A. $x = -2$
B. $x = -6$ and $x = -2$
C. $x = -2$ and $x = 6$
D. no solution

$$\begin{array}{r}
 -3|x + 4| = -6 \\
 \frac{-3|x + 4|}{-3} = \frac{-6}{-3} \\
 |x + 4| = 2 \\
 x + 4 = 2 \quad \text{or} \quad x + 4 = -2 \\
 \begin{array}{r}
 x + 4 = 2 \\
 -4 \quad -4 \\
 \hline
 x = -2
 \end{array}
 \quad \text{or} \quad
 \begin{array}{r}
 x + 4 = -2 \\
 -4 \quad -4 \\
 \hline
 x = -6
 \end{array}
 \end{array}$$

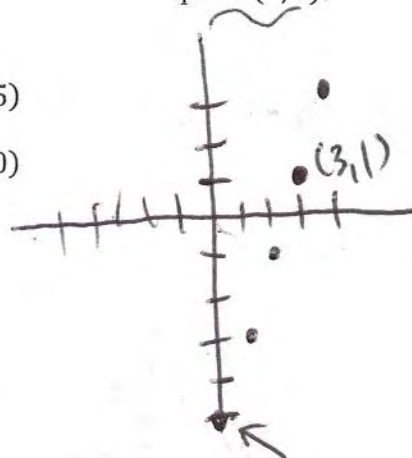
C 13. A line graphed on the coordinate plane has a slope of 2 and contains the point (3, 1). Which of the following points is on the same line?

A. (-3, -5)

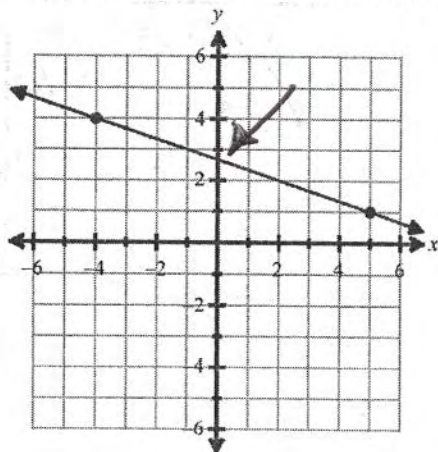
C. (0, -5)

B. (-3, -2)

D. (-5, 0)



B 14. What is the equation of the line graphed below?



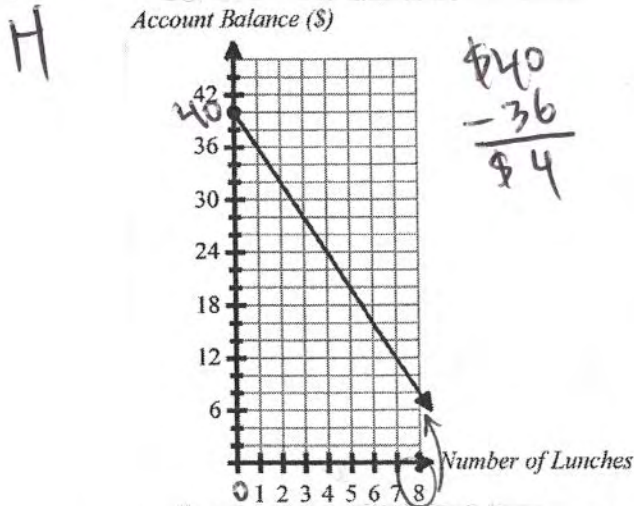
A. $y = -\frac{1}{3}x + \frac{16}{3}$ ← $5\frac{1}{3}$

C. $y = -3x - 8$

B. $y = -\frac{1}{3}x + \frac{8}{3}$ ← $2\frac{2}{3}$

D. $y = -3x + 16$

- F 15. The graph below shows the account balance of a student's lunch money account.



Which of the following statements are true? Select all that apply.

- F. Each lunch costs \$4.
- G. Each lunch costs \$5.
- H. The account started with a balance of \$40.
- I. The student won't have any money left in the account after eating 8 lunches.
- J. The student has enough money in the account to pay for 40 lunches.

- D 16. Which equation of the line passes through the points $(\frac{3}{2}, 5)$ and $(-\frac{1}{2}, 8)$?

A. $y = \frac{3}{2}(x + \frac{1}{2}) + 8$

B. $y = \frac{3}{2}(x + \frac{3}{2}) + 5$

C. $y = -\frac{3}{2}(x - \frac{1}{2}) + 8$

D. $y = -\frac{3}{2}(x - \frac{3}{2}) + 5$

$a(x-h)+k$

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2018-2019

17. Which of the following equations has a slope of $\frac{1}{2}$ and goes through the point $(-6, 2)$?

Select all that apply

F. $y - 6 = \frac{1}{2}(x - 2)$

G. $y - 2 = \frac{1}{2}(x + 6)$

H. $x + 2y = 5$

I. $y = \frac{1}{2}x + 5$

J. $x - 2y = -10$

K. $y = \frac{1}{2}x + 2$

$y - y_1 = m(x - x_1)$

Standard?
 $2(y = \frac{1}{2}x + 5)$
 $2y = x + 10$

$y = mx + b$
 $2 = \frac{1}{2}(-6) + b$
 $2 = -3 + b$
 $+3 \quad +3$
 $5 = b$

☆ ☆ ☆
 G
 H
 J
 Ax + By = C

18. What are the coordinates of the x-intercept of the equation $6x - 3y = 24$?

A. $(0, -8)$

B. $(0, 4)$

C. $(-8, 0)$

D. $(4, 0)$

Set
 $y = 0$

$6x - 3(0) = 24$
 $6x = 24$
 $x = 4$

19. A teacher has \$75 to spend on paint sets and marker sets. Paint sets cost \$3.75 each and marker sets cost \$1.25 each. What is the greatest number of marker sets the teacher can purchase?

A. 60 sets

B. 30 sets

C. 20 sets

D. 15 sets

$\frac{\$75}{\$1.25} = 60$

20. Given the graph and the equation, which line has a larger slope?

Line A	Line B
	$3x - y = 12$ $\begin{array}{r} 3x - y = 12 \\ -3x = -3x \\ \hline -y = -3x + 12 \\ = + 12 \\ = - 12 \end{array}$ $y = 3x - 12$

- A. Line A has a larger value for slope
- B. Line B has a larger value for slope
- C. Line A and Line B have the same slope
- D. Cannot be determined

21.

A linear function passes through the points (10, 5) and (-15, -5). A second function is represented by the equation $4x - 3y = 6$. What is the y-intercept of the function with the greater rate of change?

- A. -20
- B. $\frac{3}{2}$

$$-3y = -4x + 6$$

$$y = \frac{4}{3}x - 2$$

C. -2

D. 1

$$m = \frac{5 - (-5)}{10 - (-15)} = \frac{10}{25} = \frac{2}{5}$$

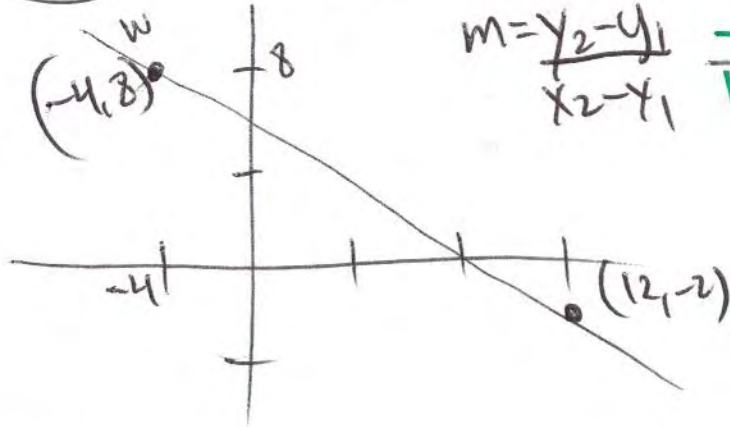
ALGEBRA 1 SEMESTER 1 INSTRUCTIONAL MATERIALS

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2018-2019

22. Line w and line v are perpendicular to each other. Line w passes through the points $(-4, 8)$ and $(12, -2)$. What is the slope of line v ? Bubble your answer in the grid provided below.

		8	5				
+	-	·	÷	·	·	·	·
·	·	·	·	·	·	·	·
0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2
3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4
5	5	5	5	5	5	5	5
6	6	6	6	6	6	6	6
7	7	7	7	7	7	7	7
8	8	8	8	8	8	8	8
9	9	9	9	9	9	9	9



opposite reciprocal

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-2 - 8}{12 - (-4)} = \frac{-10}{16} = -\frac{5}{8}$$

23. Which line is parallel to the graph of $4x + 8y = 32$? *same slope* $\rightarrow mx + b$

A. $y = -\frac{1}{2}x$

B. $y = 8$

$8y = -4x + 32$

C. $x + 1 = 2(x - 6)$

$y = \frac{1}{2}x + \frac{32}{8}$

D. $y + 5 = \frac{81}{8}(x + 2)$

$m = -\frac{1}{2}$

24. Which of the following represents a function?

I.

domain	range
2	5
3	5
4	5
5	5

II.

domain	range
2	4
3	6
3	8
5	10

III.

domain	range
1	1
2	2
3	3
4	4

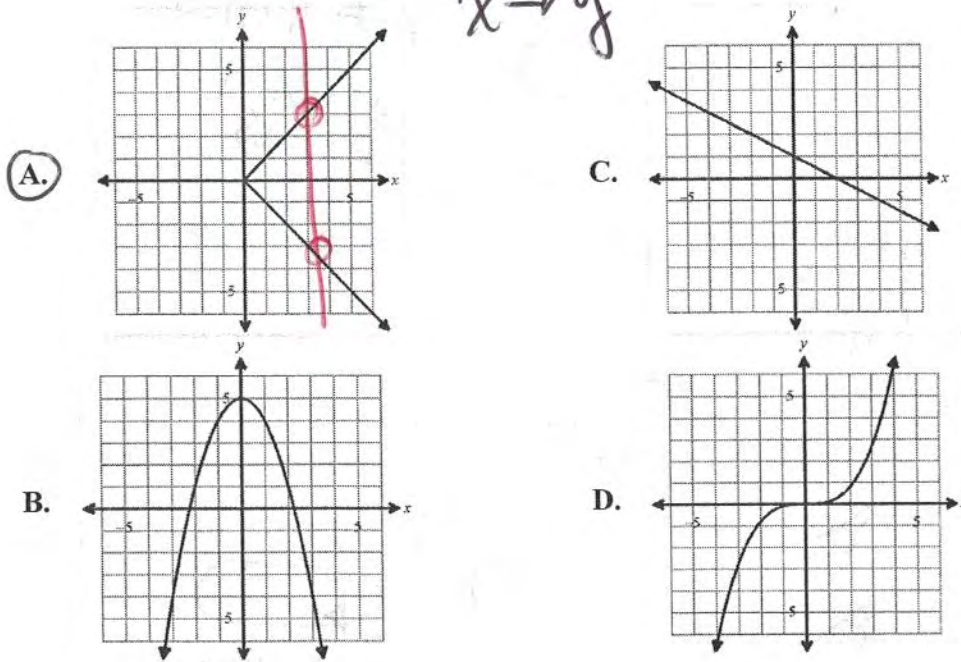
A. All of the above

B. I and II

C. I and III

D. II and III

A 25. Which graph does **not** represent a function?



B 26. Kaj needs to build 15 birdhouses for a class project. It takes 20 minutes to build each birdhouse. The number of minutes it takes Kaj to build birdhouses is a function of the number of birdhouses she builds. Which statement correctly describes the domain or range of this function?

- A. The domain is the set of all real numbers.
- B. The domain is the set of all integers from 0 to 15.**
- C. The range is the set of all real numbers.
- D. The range is the set of all integers 0 to 300.

A 27. If $h(x) = -\frac{1}{2}x + 3$, find $h(-29)$.

- A. $\frac{35}{2}$**
- B. $\frac{32}{3}$
- C. 64
- D. $\frac{29}{2}x - 87$

Subst for x

$$\frac{35}{2} = -\frac{1}{2}(-29) + 3$$

$$\frac{29}{2} + 3 \cdot 2$$

$$\frac{29}{2} + \frac{6}{2} \rightarrow \frac{35}{2}$$

a/b/c

28. The point $(-12, n)$ is an ordered pair of the function $f(x) = 3x - 9$. What is the value of n ?

A. $n = -1$

B. $n = -7$

C. $n = -45$

D. $n = -63$

$y = 3x - 9$
 $n = 3(-12) - 9$
 $n = -36 - 9$
 $n = -45$

29. A cell phone company charges a monthly fee of \$45 for a single phone line and \$15 for every gigabyte (GB) of data used per month. Write a function that models the total monthly cost of the cell phone line.

A. $f(x) = 30x$

B. $f(x) = 60x$

C. $f(x) = 15 + 45x$

D. $f(x) = 45 + 15x$
Static

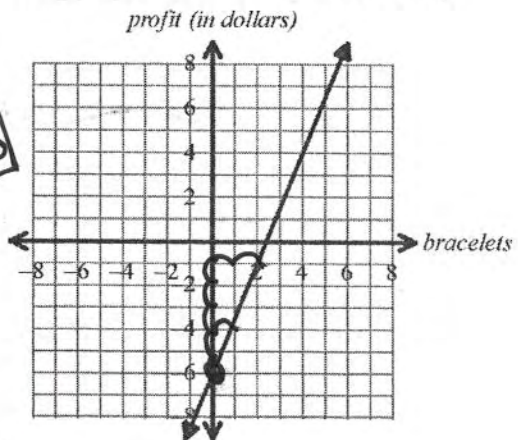
30. The graph below represents the amount of profit (in dollars) a company expects to make from selling bracelets. According to this model, how much money would the company make if they sell 400 bracelets? Round your answer to the nearest dollar if necessary.

A. \$994

B. \$400

C. \$162

D. \$154

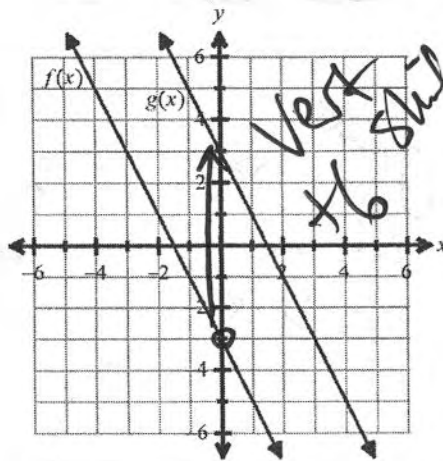


$y = mx + b$
 $y = \frac{5}{2}x - 6$
 $y = 5 \cdot 200 - 6$
 $y = 1000 - 6$
 $y = 994$

31. An apple orchard allows people to come and pick their own apples. Customers pay \$5 for a basket and \$0.10 for each apple. The function $f(x) = 0.10x + 5$ gives the cost for x apples picked. What is the range of the function?

- A. ~~{all real numbers}~~ C. {0, 0.10, 0.20, 0.30, 0.40, 0.50 ... }
- B. {0, 1, 2, 3, 4, 5 ... } D. {5, 5.10, 5.20, 5.30, 5.40, 5.50 ... }

32. Given the graph of $f(x)$ and $g(x)$ below, describe how the graph of $f(x)$ is transformed to produce the graph of $g(x)$.



- A. $f(x)$ is translated left 6 units C. $f(x)$ is translated up 6 units
- B. $f(x)$ is translated left 3 units D. $f(x)$ is translated up 3 units

33. A student graphed the line $6x + y = 8$. If she substitutes the number 3 in for the number 8 in the equation, how will the graph of the line change?

- A. The graph of the line will shift up five.
- B. The graph of the line will shift down five.
- C. The graph of the line will rise less steeply.
- D. The graph of the line will rise more steeply.

$y = mx + b$ y-intercept

$y = -6x + 8$

$y = -6x + 3$

↓ 5

- A 34. $d = -4$
The first five terms of a sequence are given below:

29	25	21	17	13
----	----	----	----	----

Which equation describes the n^{th} term of the sequence?

A. $f(n) = -4n + 33$

B. $f(n) = 4n + 28$

C. $f(n) = 4n + 17$

D. $f(n) = -4n - 23$

- H
L
K
J
A 35. An exercise program begins the first week with 30 minutes of daily exercise. Each week, the daily exercise is increased by 5 minutes. Which function, explicit formula or recursive formula represents the number of minutes of daily exercise in the n^{th} week? Select all that apply.

F. $f(1) = 30, f(n) = 5f(n-1), \text{ for } n \geq 2$

G. $f(n) = 5n + 30$

H. $a_n = a_{n-1} + 5, a_1 = 30$

I. $a_n = 5 + 30n$

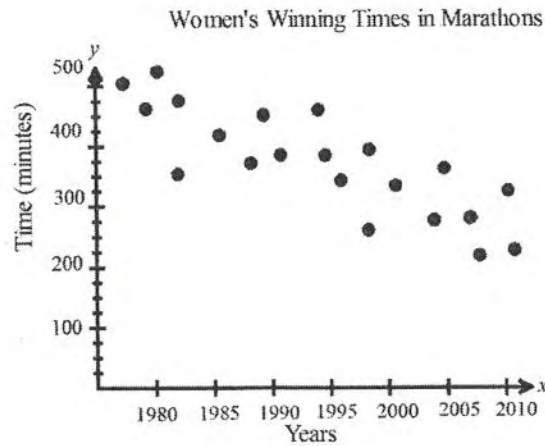
J. $a_n = 25 + 5n$

K. $f(n) = 5n + 25$

L. $f(1) = 30, f(n) = f(n-1) + 5, \text{ for } n \geq 2$

30, 35, 40, ...

36. Describe the relationship between the two variables based on the scatterplot below.

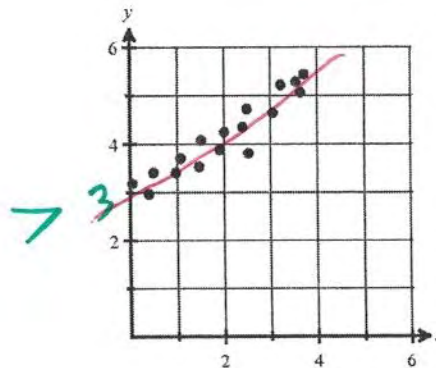


- A. As the winning times (x) increase, the years (y) decrease.
- B. As the years (x) increase, the winning times (y) increase.
- C. As the years (x) decrease, the winning times (y) decrease.
- D.** As the years (x) increase, the winning times (y) decrease.

$x \uparrow$ $y \downarrow$

37. Which of the following is a reasonable trend line (line of best fit) for the scatterplot below?

- ~~A.~~ $y = \frac{1}{3}x + 8$ *Shallow*
- B. $y = \frac{1}{2}x - 3$
- C.** $y = \frac{2}{3}x + 3$
- ~~D.~~ $y = 3x + 3$ *steep*



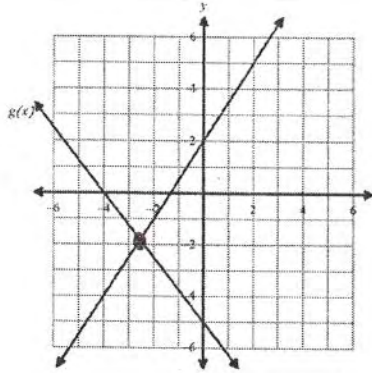
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38. The functions $f(x)$ and $g(x)$ are graphed below. Approximate the value x when $f(x) = g(x)$?

- A. $x = -4$
- B. $x = -2.5$**
- C. $x = -1.8$
- D. $x = 2$



39. The equations of four lines are given below. Which two equations form a system with no solutions?

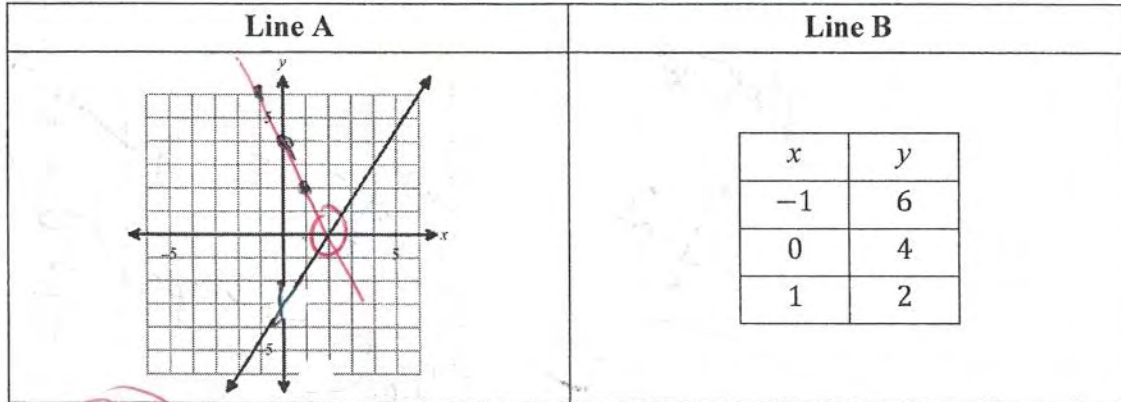
- A. Line 1 and Line 2
- B. Line 2 and Line 3
- C. Line 2 and Line 4
- D. Line 1 and Line 3**

Line 1	$x - 3y = 9$
Line 2	$y = -2(x + 1) - 7$
Line 3	$y = \frac{1}{3}x + 2$
Line 4	$y = -\frac{1}{2}(x - 4) - 1$

Handwritten work for Line 1: $-3y = -x + 9$
 $\frac{-3y}{-3} = \frac{-x + 9}{-3}$
 $y = \frac{1}{3}x - 3$

parallel lines) same slope

40. The graph and a table of values are given to represent two linear equations in a system of equations. Which of the following is the solution to the system?



- A. (2, 0)
- B. (0, -3)
- C. (-1, -5)
- D. (-2, -6)

41. Which equation would make this system have an infinite number of solutions?

∞ same line
 $\left\{ \begin{array}{l} y = x + 2 \\ \underline{\hspace{2cm}} \end{array} \right.$

- A. $2y = 2x + 4$
- B. $y - x = 3$
- C. $y = 2x$
- D. $y = 3x - 1$

42. The equation and a table of values are given to represent two linear equations in a system of equations. Which of the following is the solution to the system?

Line A	Line B								
$y = -3x - 4$ <i>same slope</i> <i>y-int</i>	<table border="1"> <thead> <tr> <th>x</th> <th>y</th> </tr> </thead> <tbody> <tr> <td>-1</td> <td>4</td> </tr> <tr> <td>1</td> <td>-2</td> </tr> <tr> <td>2</td> <td>-5</td> </tr> </tbody> </table> <i>run +1</i> <i>y-int</i> <i>rse</i> <i>Slope = $\frac{-3}{1}$</i>	x	y	-1	4	1	-2	2	-5
x	y								
-1	4								
1	-2								
2	-5								

- A. (0, 1)
 B. (-2, 2)
 C. infinite number of solutions
 D. no solution

Parallel lines

43. Which x-coordinate is in the solution to the system of equations?

$$\begin{cases} x - 2y = 5 \\ 3x + 8y = 1 \end{cases}$$

LCM = 8

- A. $x = -1$
 B. $x = 3$
 C. $x = 19$
 D. no solution

$$4x - 8y = 20$$

$$7x = 21$$

$$x = 3$$

44. Which y-coordinate is in the solution to the system of equations?

$$\begin{cases} y = 0.5x + 2 \\ -y = 3 - x \end{cases}$$

- A. $y = 5$
 B. $y = 8$
 C. $y = 7$
 D. $y = 14$

$$-y - 3 = -x$$

$$y + 3 = x$$

$$y = 0.5(y + 3) + 2$$

$$y = 0.5y + 1.5 + 2$$

$$-0.5y - 0.5y = 3.5$$

$$0.5y = 3.5$$

$$\frac{1}{2}y = 3.5$$

$$y = 7$$

45. You invited friends over to your house to watch a movie. You let each person decide if they wanted to snack on popcorn, which cost \$2.50 per person, or candy, which cost \$1.75 per person. You spent \$17.75 to buy snacks for 8 people. Write a system of equations that you could use to determine how many people chose popcorn (p) and how many chose candy (c).

A. $f(x) = \begin{cases} 2.50p + 1.75c = 8 \\ p + c = 17.75 \end{cases}$

C. $f(x) = \begin{cases} 17.75 - 2.5p = 8 \\ 17.75 - 1.5c = 8 \end{cases}$

B. $f(x) = \begin{cases} 2.50p + 8p = 17.75 \\ 1.75c + 8c = 17.75 \end{cases}$

D. $f(x) = \begin{cases} 2.50p + 1.75c = 17.75 \leftarrow \$\$ \\ p + c = 8 \quad * \# \text{ people} \end{cases}$

- 2.50 46. Two different families bought general admission tickets for a Reno Aces baseball game. One family paid \$71 for 6 adults and 2 children. The other family paid \$56.50 for 3 adults and 4 children. How much more does an adult ticket cost than a child's ticket? Bubble your answer in the grid provided below.

+	2	.	5	0		
+	0	0	0	0	0	0
-	7	7	7	7	7	7
0	0	0	0	0	0	0
1	1	1	1	1	1	1
2	2	2	2	2	2	2
3	3	3	3	3	3	3
4	4	4	4	4	4	4
5	5	5	5	5	5	5
6	6	6	6	6	6	6
7	7	7	7	7	7	7
8	8	8	8	8	8	8
9	9	9	9	9	9	9

$$\begin{aligned} 71 &= 6x + 2y \\ 56.5 &= 3x + 4y \end{aligned}$$

$$-113 = -6x - 8y$$

$$-42 = -6y$$

\$7 child y

$$71 = 6x + 2(7)$$

$$71 = 6x + 14$$

$$\frac{57}{6} = \frac{6x}{6}$$

9.50 = x adult

$$9.50 - 7.00 = 2.50$$

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HS Courses: #2201 Algebra 1 S1 and #7769 Foundations in Algebra 1 S1
MS Courses: #218 Algebra 1, #217A VMS ALG 1 S1, and #776 ACCEL Algebra 1

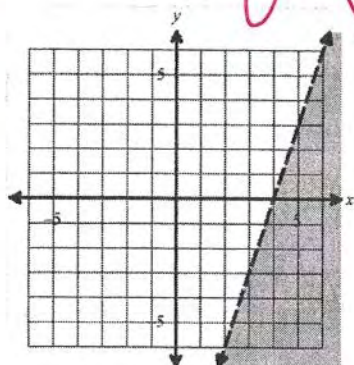
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47. Which is the graph of $y < 3x + 4$?

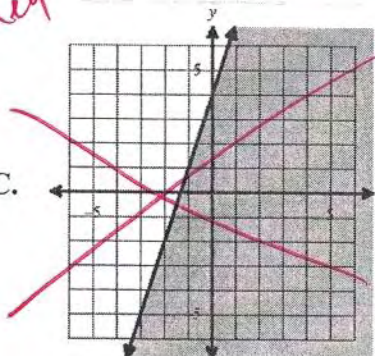
B

below & dashed

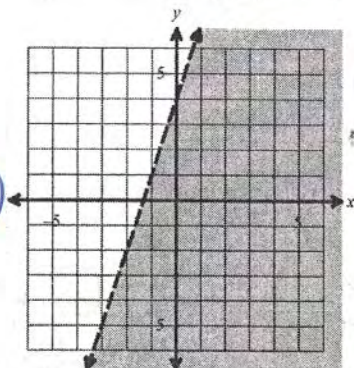
A.



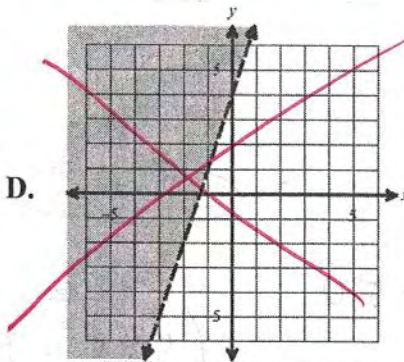
C.



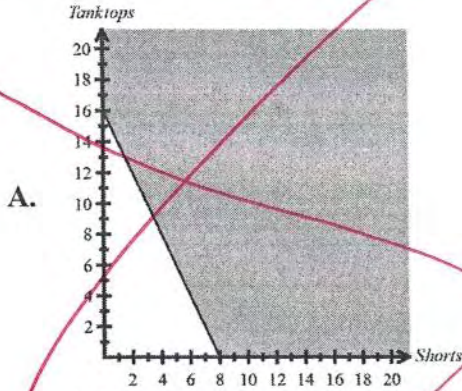
B.



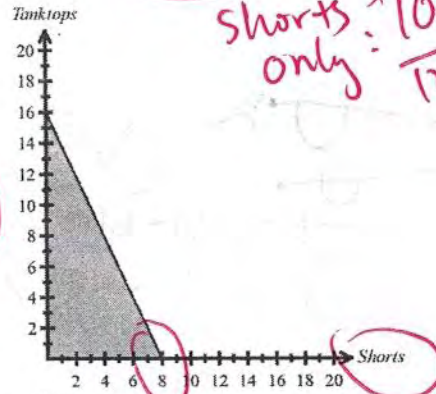
D.



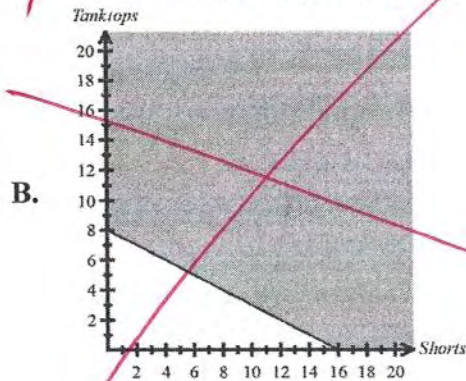
48. Tandy has at most \$100 to spend on summer clothes. If shorts cost \$12.50 a pair and tanktops cost \$6.25 each, which graph represents the possible combinations of shorts and tanktops that Tandy can buy?



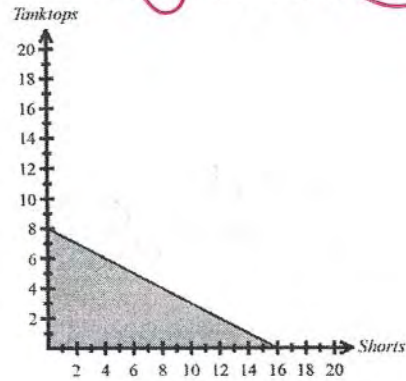
C.



Shorts \$100 only: $\frac{100}{12.50} = 8$



D.



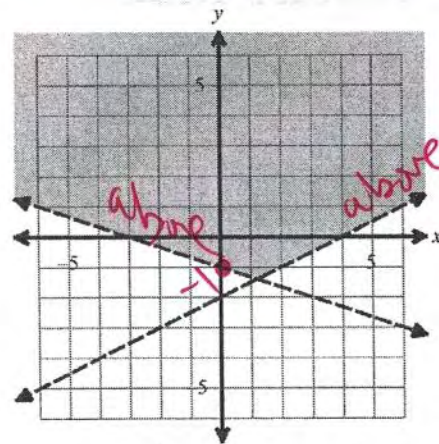
49. Which system of inequalities models the graph below?

~~A.~~
$$\begin{cases} y < \frac{1}{3}x - 1 \\ 2x + 4y > 8 \end{cases}$$

~~B.~~
$$\begin{cases} y < -\frac{1}{3}x - 1 \\ 2x - 4y > 8 \end{cases}$$

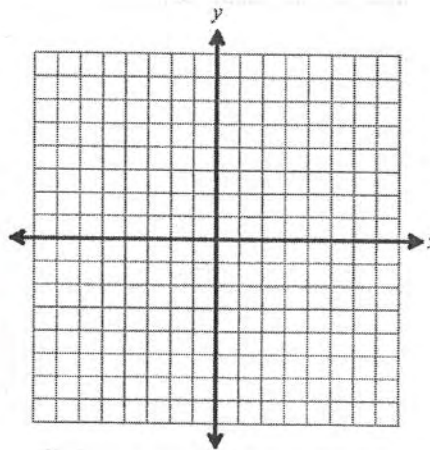
C.
$$\begin{cases} y > -\frac{1}{3}x - 1 \\ 2x - 4y < 8 \end{cases}$$

D.
$$\begin{cases} y > \frac{1}{3}x - 1 \\ 2x + 4y < 8 \end{cases}$$



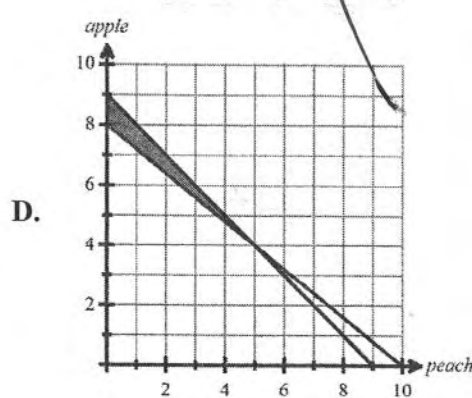
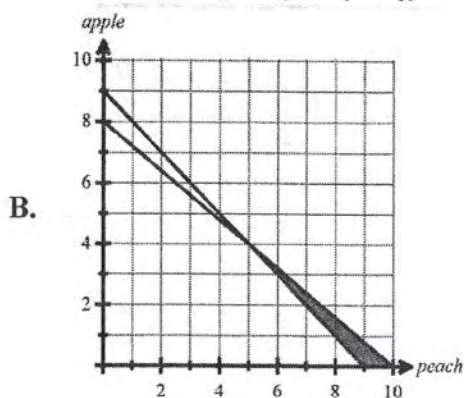
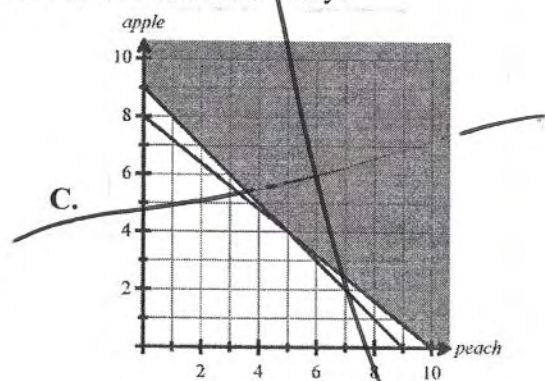
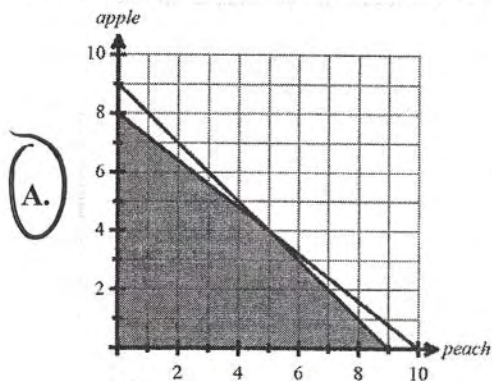
50. Which of the following points is a possible solution to the following system?

$$\begin{cases} y \geq -4 \\ 3x - 6y > 12 \end{cases}$$

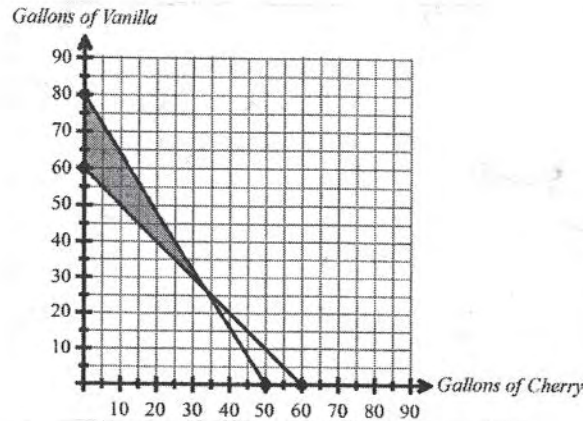


- A. (1, -6)
 B. (6, 1)
 C. (-3, 2)
 D. (3, -2)
- Handwritten notes:*
 12 > 12 (next to B)
 3(-3) - 6(2) > 12 (next to C)
 -9 - 12 > 12 (next to D)
 Check points (written in red)

51. Jesse wants to plant peach and apple trees in his backyard. He can fit at most 9 trees. Each peach tree costs \$60, and each apple tree costs \$75. If he only has \$600 to spend, make a graph showing the number of each kind of tree that he can buy.



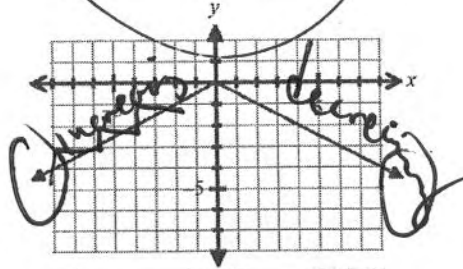
52. An ice cream manufacturer is making cherry and vanilla ice cream to be packaged in various sized containers. The manufacturer wants to produce at least 60 gallons of ice cream total but cannot spend more than \$400 to do so. Cherry ice cream costs \$8 per gallon to produce and vanilla ice cream costs \$5 per gallon to produce. The graph below models the possible amounts of ice cream that can be produced. Is it viable for the manufacturer to produce 10.5 gallons of cherry ice cream and 55 gallons of vanilla ice cream? Explain your answer.



- A. No, it would not be viable to produce 10.5 gallons of cherry ice cream and 55 gallons of vanilla ice cream. It is possible to make partial gallons but the point (10.5, 55) lies outside of the solution region.
- B. No, it would not be viable to produce 10.5 gallons of cherry ice cream and 55 gallons of vanilla ice cream. It is not possible to make partial gallons of ice cream even though the point (10.5, 55) lies inside of the solution region.
- C. Yes, it would be viable to produce 10.5 gallons of cherry ice cream and 55 gallons of vanilla ice cream. It is possible to make partial gallons and the point (55, 10.5) lies outside of the solution region.
- D.** Yes, it is viable to produce 10.5 gallons of cherry ice cream and 55 gallons of vanilla ice cream. It is possible to make partial gallons and the point (10.5, 55) lies inside of the solution region.

53. Given the graph of $f(x)$ below, which of the following statements are true? Select all that apply.

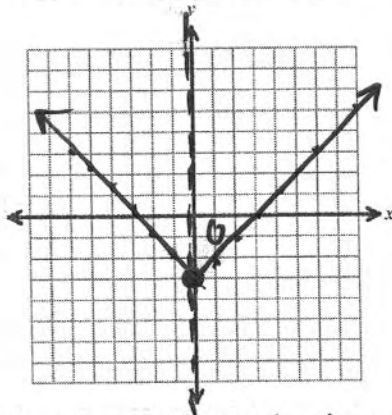
G
H
K



- F. The function increases over the interval $[0, 6]$. ~~Y~~
- G. The rate of change over the interval $[-8, -2]$ is $\frac{1}{2}$. *slope*
- H. The domain is all real numbers. *Y*
- I. The domain is $x \neq 0$. *Y*
- J. The range is all real numbers. *Y*
- K. The range is $y \leq 0$. *not stretch*
- L. The function $f(x) = -2|x|$ represents the graph.
- M. The function $f(x) = \frac{1}{2}|x|$ represents the graph.

no negative
right closed

54. Graph the piecewise function $f(x) = \begin{cases} x - 3, & x \geq 0 \\ -x - 3, & x < 0 \end{cases}$ on the graph below.



Which of the following functions is equivalent to the piecewise function?

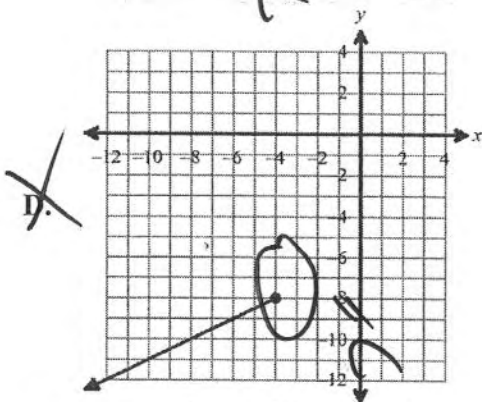
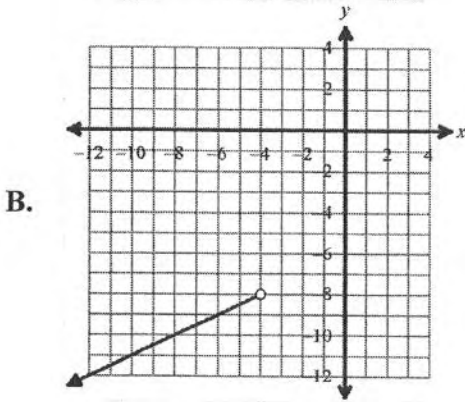
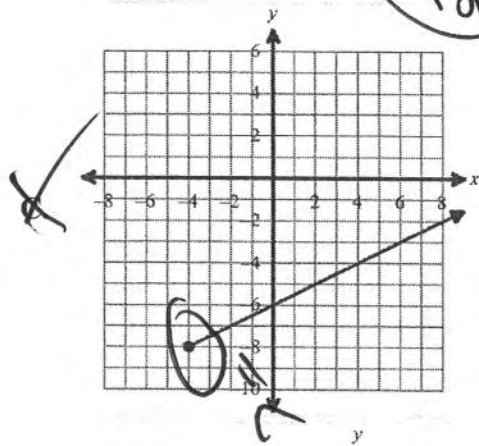
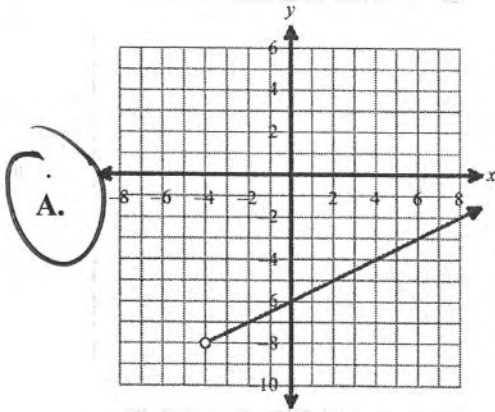
- A. $f(x) = |x| - 3$
- B. $f(x) = -|x| - 3$
- C. $f(x) = x - 3$
- D. $f(x) = -x - 3$

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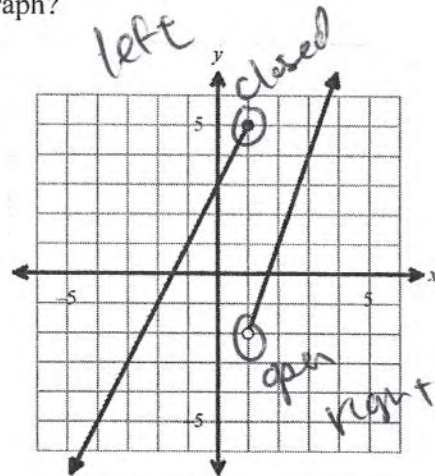
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55. Which of the following graphs represents the function $f(x) = \frac{1}{2}x - 6$ for $x > -4$? right
↑ open

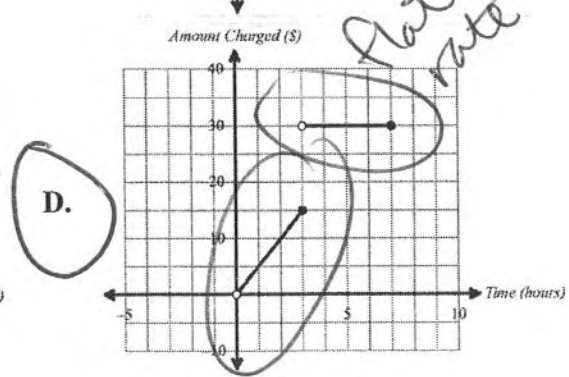
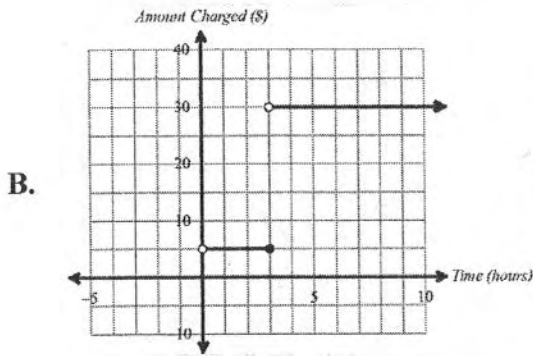
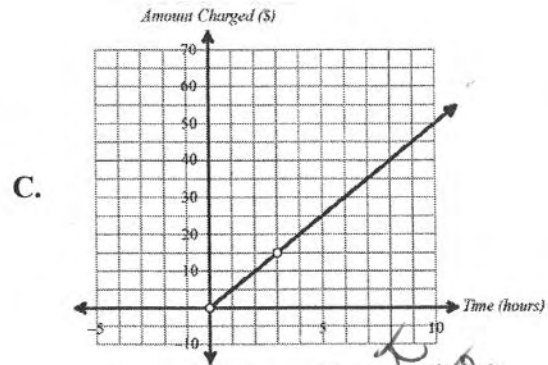
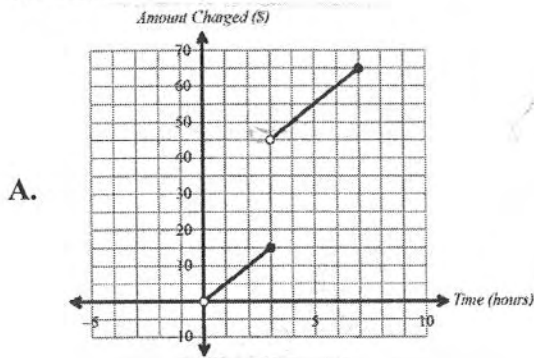


56. Which piecewise function is represented by the graph?

- ~~A.~~ $f(x) = \begin{cases} 2x - 3, & x < 1 \\ 3x - 5, & x > 1 \end{cases}$
- B. $f(x) = \begin{cases} 2x + 3, & x \leq 1 \\ 3x - 5, & x > 1 \end{cases}$ close
- C. $f(x) = \begin{cases} 2x + 3, & x \geq 1 \\ 3x - 5, & x > 1 \end{cases}$ open
- D. $f(x) = \begin{cases} 2x - 3, & x < 1 \\ 3x - 5, & x \geq 1 \end{cases}$

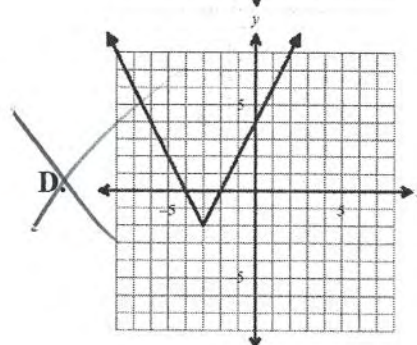
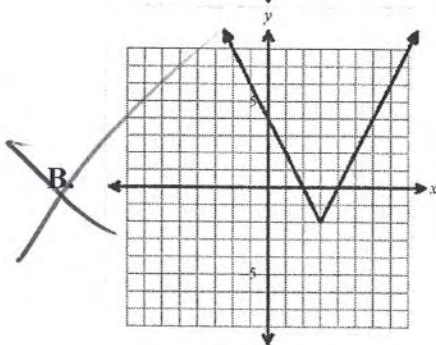
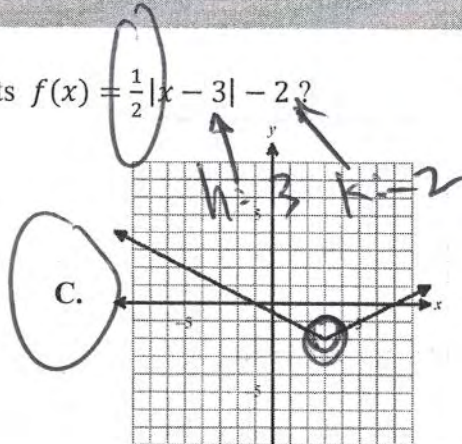
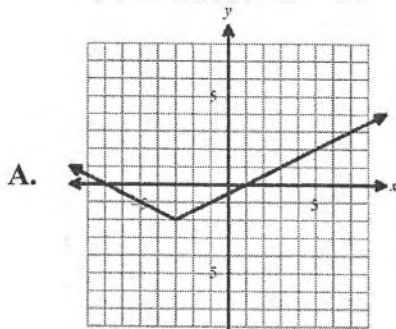


57. During weekends, Jodie will babysit for a maximum of 7 hours. For the first 3 hours, Jodie charges her customers a rate of \$5 per hour. If she babysits for more than 3 hours, then Jodie charges her customers a flat rate of \$30. Which of the following graphs models the situation?



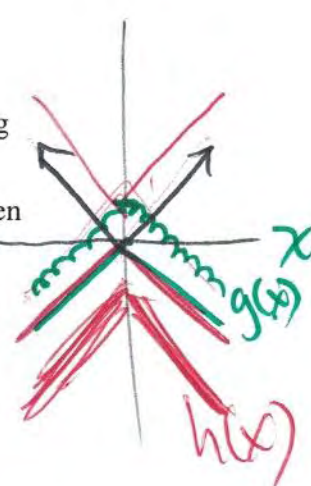
58. Which of the following graphs represents $f(x) = \frac{1}{2}|x - 3| - 2$?

$V = (h, k)$



59. Which of the following functions represent $g(x)$ and $h(x)$ based on the following information:

- $g(x)$ is the result of reflecting the graph of $f(x) = |x|$ over the x -axis, then translating the function up one unit.
- $h(x)$ is the result of translating the graph of $f(x) = |x|$ up one unit, then reflecting the function over the x -axis.



A. $g(x) = -|x| + 1$
 $h(x) = -|x| + 1$

C. $g(x) = -|x + 1|$
 $h(x) = -|x - 1|$

B. $g(x) = -|x| - 1$
 $h(x) = -|x| + 1$

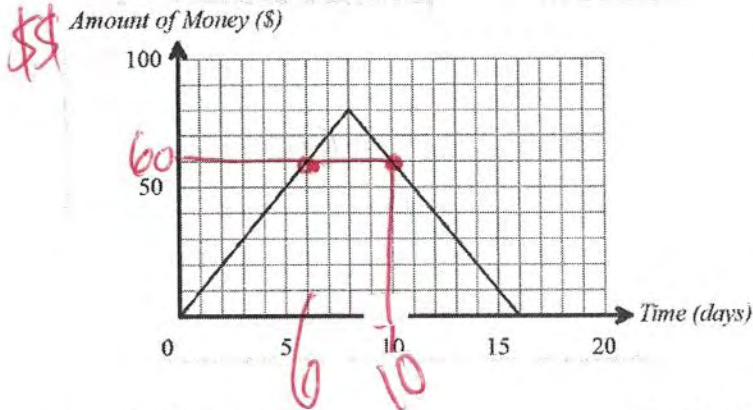
D. $g(x) = -|x| + 1$
 $h(x) = -|x| - 1$

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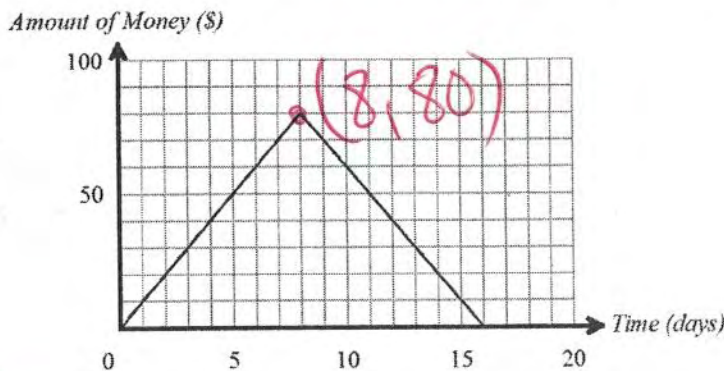
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- 60.** Julian wants to save \$10 per day for 8 days. He then plans to spend \$10 per day for another 8 days. The graph below models the amount of money Julian has each day. On which days will Julian have \$60?



- A. On day 6
 B. On day 6 and day 10
 C. On day 6 and day 12
 D. On day 6 and day 14

- 61.** Julian wants to save \$10 per day for 8 days. He then plans to spend \$10 per day for another 8 days. The graph below models the amount of money Julian has each day. Which of the following functions can be used to represent this situation?



- A. $y = 10(x + 8) - 10$ if $0 \leq x \leq 16$
 B. $y = 8(x - 10) + 10$ if $0 \leq x \leq 80$
 C. $y = -10|x + 80| + 8$ if $0 \leq x \leq 80$
 D. $y = -10|x - 8| + 80$ if $0 \leq x \leq 16$