

## **Instructional Materials for WCSD Math Common Finals**

The Instructional Materials are for student and teacher use and are aligned to the 2017-2018 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

When used as test practice, success on the Instructional Materials does not guarantee success on the district math common final.

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**  $y = ab^{x-h} + k$

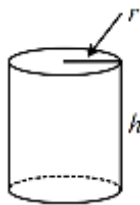
## Probability

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

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

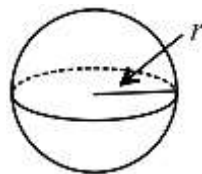
$$P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$$

## Volume and Surface Area



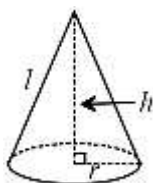
$$V = \pi r^2 h$$

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



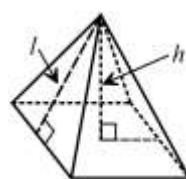
$$V = \frac{4}{3}\pi r^3$$

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



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

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

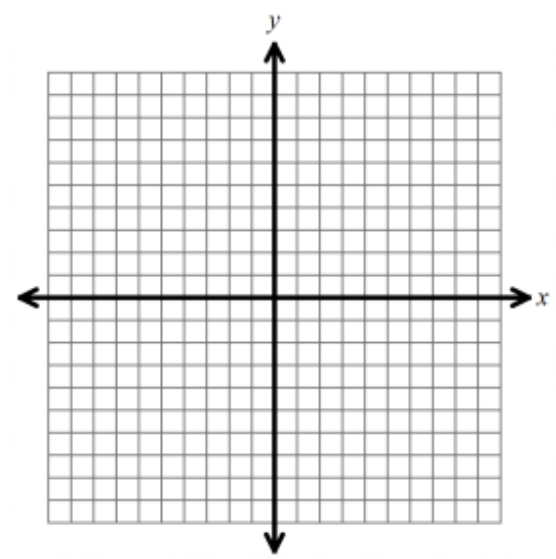
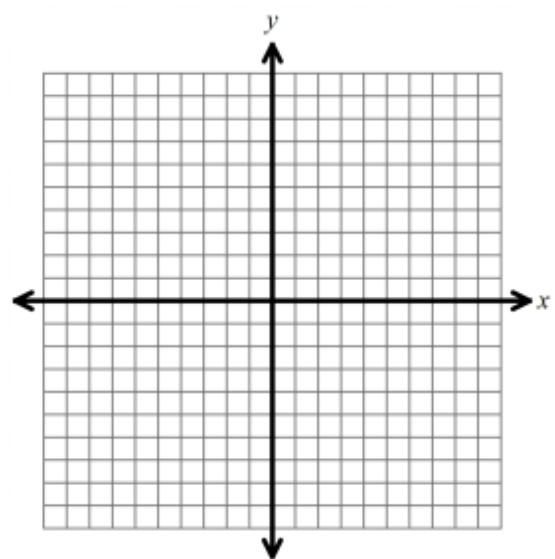
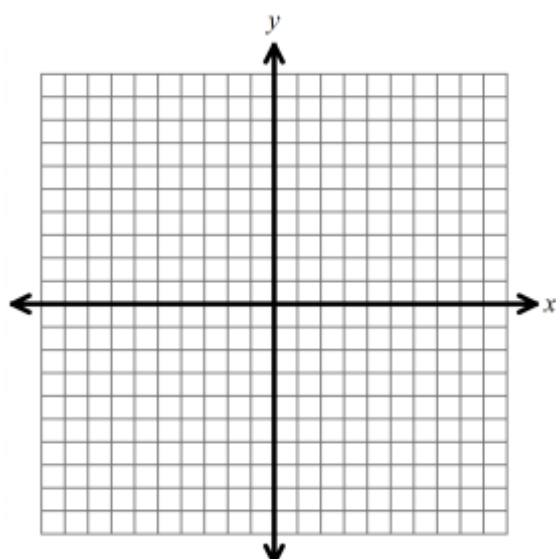
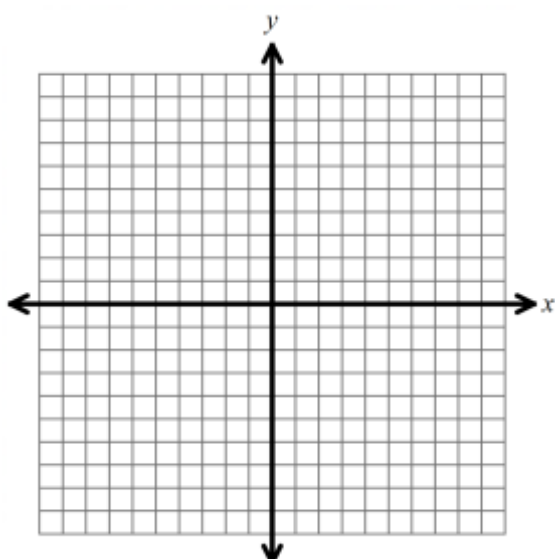
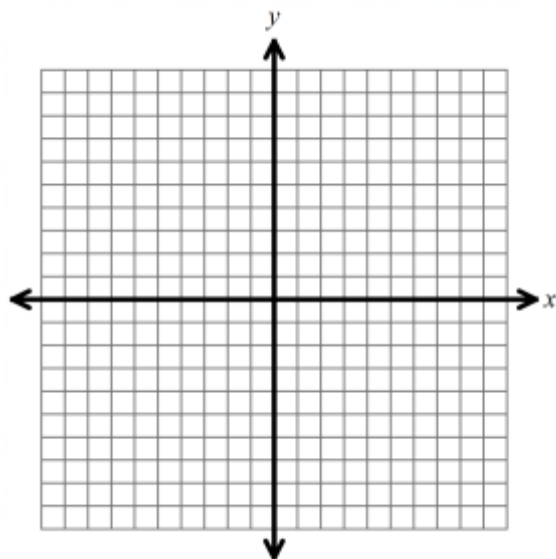
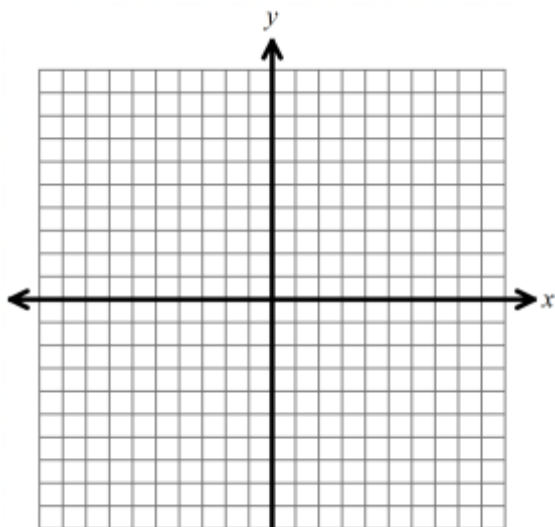


$$V = \frac{1}{3}Bh$$

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

Where  $B$  = base area  
and  $P$  = base perimeter

## Student Work Area



**Multiple Choice:** *Identify the choice that best completes the statement or answers the question.*

1. 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*
  
2. What is the solution for  $x$  in the equation,  $\frac{3}{8}x - \frac{1}{12} = -\frac{3}{4}$ ?
  - A.  $x = -\frac{20}{3}$
  - B.  $x = -\frac{16}{9}$
  - C.  $x = \frac{3}{16}$
  - D.  $x = -\frac{1}{3}$
  
3. Solve the equation  $34.8x + 0.2(x - 4) = -16.8 + 27x$ 
  - A.  $x = -1.6$
  - B.  $x = -2.6$
  - C.  $x = -8.8$
  - D.  $x = -2.0$
  
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

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2017-2018

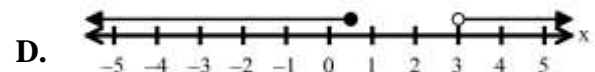
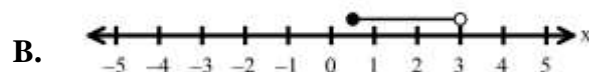
5. Which of the following could be the first step in solving  $\frac{1}{2}(x + 3) = \frac{2}{3}$ ?

I.	Distribute $\frac{1}{2}$ to $(x + 3)$ on the left side of the equation
II.	Subtract 3 from both sides of the equation
III.	Multiply by the reciprocal of $\frac{1}{2}$ on both sides of the equation
IV.	Divide by $\frac{1}{2}$ on both sides of the equation
V.	Distribute $\frac{2}{3}$ to $\frac{1}{2}(x + 3)$ on the left side of the equation

- A. All of the above  
B. I and V  
C. I, III, and IV  
D. I and IV
6. Suppose  $a$  is less than 10. Which of the following must be true?  
A.  $3a + 7 < 40$   
B.  $a \leq 9$   
C.  $-a > 10$   
D.  $|a| < 10$

7. Which of the following represents the solution to the compound inequality,  $2x + 5 < 1$  or  $4x - 7 \geq 9$ ?

- A.  $-2 < x \leq 4$   
C.  $x < -2$  or  $x \geq 4$



8. Which of the following situations would represent the expression  $\frac{10}{d}$ ?
- A. The amount paid for  $d$  boxes cookies at a price of \$10 per box
  - B. The total cost for a shirt  $d$  and a \$10 surcharge
  - C. The amount each person pays when a \$10 fee is split  $d$  ways
  - D. The total cost for a book  $d$  with a \$10 discount
9. Ramal goes to the grocery store and buys  $a$  pounds of apples and  $b$  pounds of bananas. Apples cost  $x$  dollars per pound and bananas cost  $y$  dollars per pound. The total cost,  $C$ , that Ramal pays for the fruit is represented by the equation:
- $$C = ax + by - 0.10(ax + by)$$
- What could  $0.10(ax + by)$  represent in the equation above?
- A. the amount of a 10% discount
  - B. the total cost after a \$0.10 discount
  - C. the amount of sales tax paid if the sales tax rate is 10%
  - D. the cost of buying 0.10 pounds of apples and bananas
10. The number of calories a person burns doing an activity can be approximated using the formula  $C = kmt$ , where  $m$  is the person's weight in pounds and  $t$  is the duration of the activity in minutes. Find the units for the coefficient  $k$ .
- A.  $k = \frac{\text{pounds}}{\text{minutes} \cdot \text{calories}}$
  - B.  $k = \frac{\text{calories}}{\text{pounds} \cdot \text{minutes}}$
  - C.  $k = \frac{\text{calories}}{\text{pounds}}$
  - D.  $k = \frac{\text{calories}}{\text{minutes}}$

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12. 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

- 13.** Students in the Italian Club are calculating the cost of renting a van for their upcoming trip to Rome. The students have found the following information, but some of the money amounts are listed in Euros (€) instead of dollars (\$).
- The van will cost €300 plus the cost of 60 liters of gas
  - The cost of gas in Rome is €1.44 per liter
  - \$1.00 = €0.91
- Based on the information above, how much will it cost to rent the van in dollars (\$)?
- A. \$327.60                      C. \$395.60  
B. \$375.46                      D. \$424.62

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2017-2018

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

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

15. Which of the following represents a function?

I.

<i>domain</i>	<i>range</i>
2	5
3	5
4	5
5	5

II.

<i>domain</i>	<i>range</i>
2	4
3	6
3	8
5	10

III.

<i>domain</i>	<i>range</i>
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



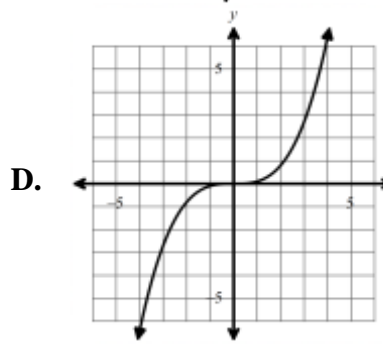
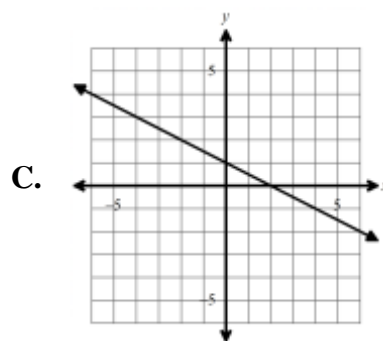
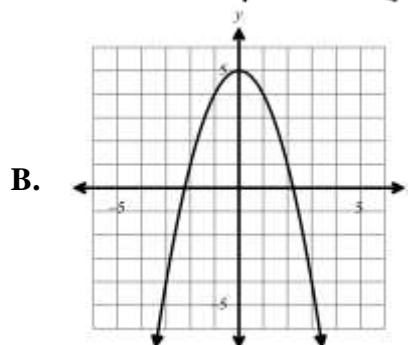
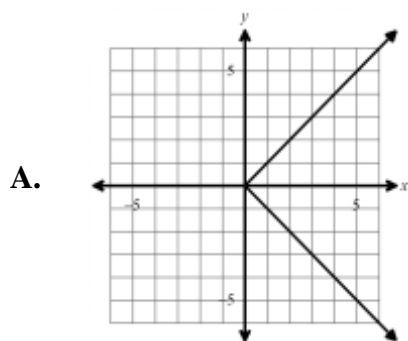
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16. Which graph does **not** represent a function?



17. 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.  $\{0, 0.10, 0.20, 0.30, 0.40, 0.50 \dots\}$

B.  $\{0, 1, 2, 3, 4, 5 \dots\}$

D.  $\{5, 5.10, 5.20, 5.30, 5.40, 5.50 \dots\}$

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

A.  $\frac{35}{2}$

C. 64

B.  $\frac{32}{3}$

D.  $\frac{29}{2}x - 87$

19. 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 multiples of 20 from 0 to 15.

20. 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.  $f(n) = -4n - 23$
21. 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 represents the number of minutes of daily exercise in the  $n^{th}$  week?
- A.  $f(1) = 30, f(n) = 30n, \text{ for } n \geq 2$
  - B.  $f(1) = 30, f(n) = 5n + 30, \text{ for } n \geq 2$
  - C.  $f(1) = 30, f(n) = f(n - 1) + 5, \text{ for } n \geq 2$
  - D.  $f(1) = 30, f(n) = 5f(n - 1), \text{ for } n \geq 2$

22. Write a recursive formula for the sequence below, assuming  $f(1)$  is the first term in the sequence:

$$3, -6, 12, -24, 48 \dots$$

- A.  $f(1) = 3$  and  $f(n) = f(n - 1) - 9$ , for  $n \geq 2$
- B.  $f(1) = 3$  and  $f(n) = f(n - 1) \cdot (-2)$ , for  $n \geq 2$
- C.  $f(1) = -2$  and  $f(n) = f(n - 1) \cdot 3$ , for  $n \geq 2$
- D.  $f(1) = -6$  and  $f(n) = f(n - 1) \cdot (-2)$ , for  $n \geq 2$
23. Write an explicit formula for the geometric sequence given  $a_3 = 1$  and  $a_5 = 0.25$ . Assume the common ratio is positive.

A.  $a_n = 8(0.25)^{n-1}$

C.  $a_n = 0.5(4)^{n-1}$

B.  $a_n = 4(0.5)^{n-1}$

D.  $a_n = 0.25(8)^{n-1}$

24. At the beginning of the year, Jason had \$40 in his savings account. He plans to deposit \$20 into his account each month. By the end of January, he will have \$60, \$80 by the end of February, \$100 by the end of March, and so on. Which equation describes the amount  $A(m)$  in his savings at any given month ( $m$ )?

A.  $A(m) = 40(20m)$

C.  $A(m) = 40 + 12m$

B.  $A(m) = 40(20)^m$

D.  $A(m) = 40 + 20m$

25. Which of the following best describes the data in the table?

$x$	1	2	3	4
$y$	3	9	27	81

- A. Exponential with a growth factor of 3
  - B. Linear with a rate of change of 6
  - C. Quadratic with a second difference of 12
  - D. none of the above
26. Use the table below to help determine which function has the greatest value as  $x$  gets larger and larger.

$x$	$f(x) = x + 3$	$g(x) = 3x$	$h(x) = x^3$	$i(x) = 3^x$
3				
4				
5				
6				

- A.  $f(x)$  has the greatest value as  $x$  gets larger and larger.
- B.  $g(x)$  has the greatest value as  $x$  gets larger and larger.
- C.  $h(x)$  has the greatest value as  $x$  gets larger and larger.
- D.  $i(x)$  has the greatest value as  $x$  gets larger and larger.

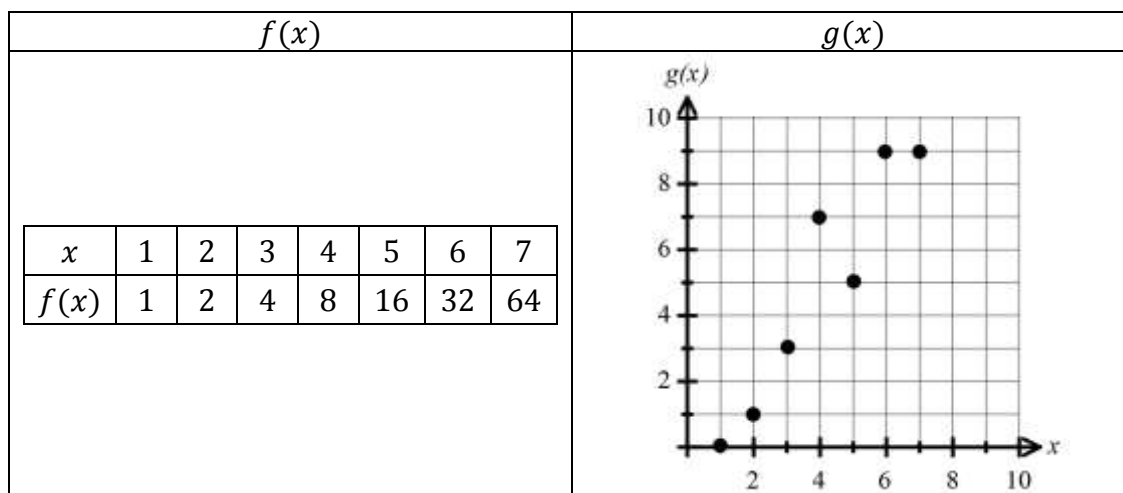
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27. The functions  $f(x)$  and  $g(x)$  are shown below. Calculate the average rate of change for each function over the interval from  $x = 2$  to  $x = 6$ .



Which of the following statements is correct?

- A. The average rate of change of  $f(x)$  is greater than  $g(x)$ .
- B. The average rate of change of  $g(x)$  is greater than  $f(x)$ .
- C. The average rate of change of  $f(x)$  and  $g(x)$  are the same.
- D. The average rate of change of  $g(x)$  cannot be calculated.
28. John bought  $x$  pounds of beef for a barbeque. The price for the beef was \$1.49 for the first pound and \$1.09 for each additional pound. Write an equation that shows how the cost of ground beef depends on the number of pounds  $x$ .
- A.  $cost = 1.49x + 1.09$
- B.  $cost = (1.09 + 1.49)x$
- C.  $cost = 1.09(x - 1) + 1.49$
- D.  $cost = 1.09x + 1.49$

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

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

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

B.  $f(x) = \frac{3}{2}\left(x + \frac{3}{2}\right) + 5$

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

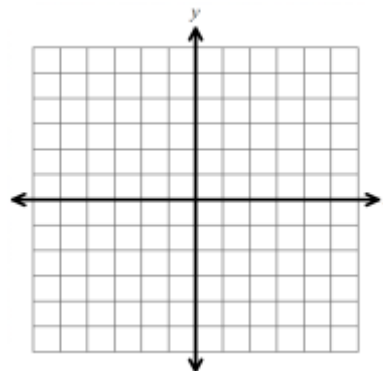
30. A line graphed on the coordinate plane has a slope of 2 and contains the point  $(3, 1)$ . Which of the following points is on the same line?

A.  $(-3, -5)$

B.  $(-3, -2)$

C.  $(0, -5)$

D.  $(-5, 0)$



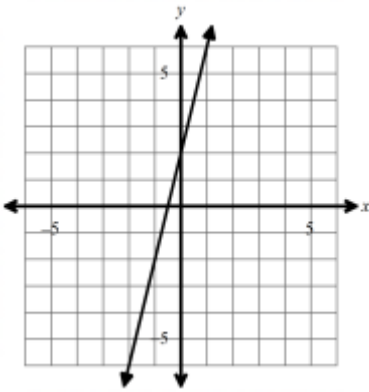
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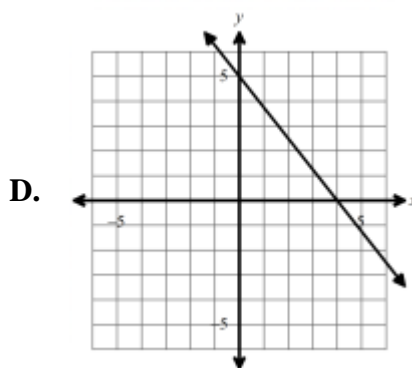
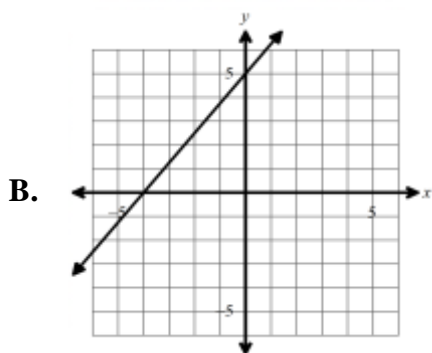
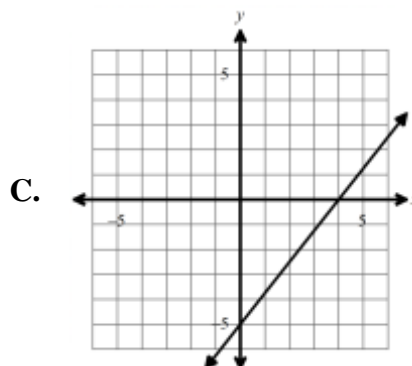
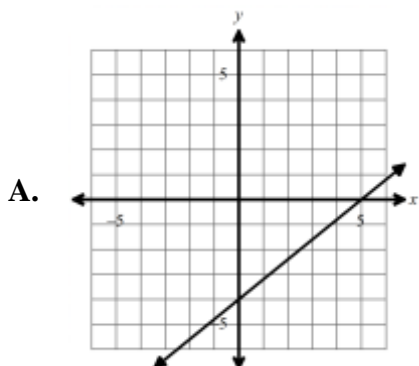
2017-2018

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

Line A	Line B
	$3x - y = 12$

- 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
32. 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.

33. Which is the graph of  $5x = 4y + 20$ ?



34. 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.  $-2$

C.  $-20$

B.  $\frac{3}{2}$

D.  $1$



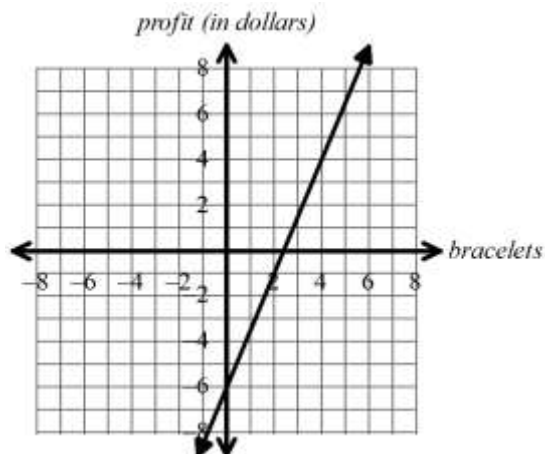
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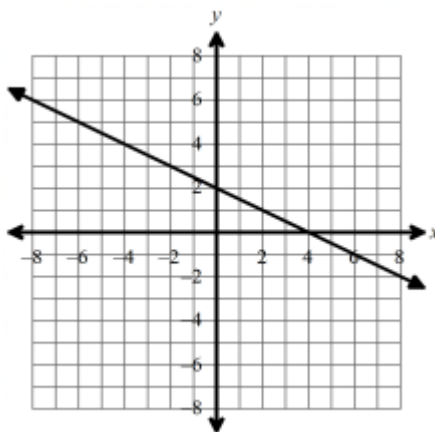
2017-2018

35. 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

36. A function is graphed below. Which of the following statements are correct?



- A. The domain of the function is  $D = \{-8 \leq x \leq 8\}$ .
- B. The range of the function is  $R = \{-8 \leq y \leq 8\}$
- C. The function is always increasing.
- D. The function is always decreasing.

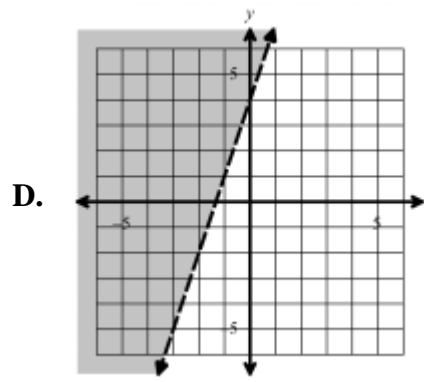
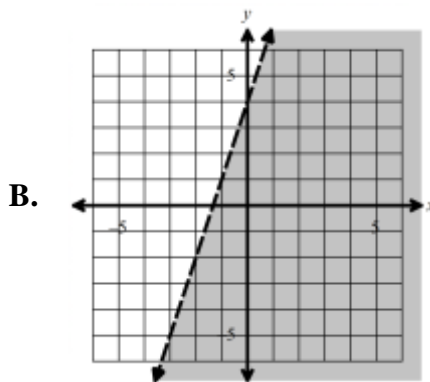
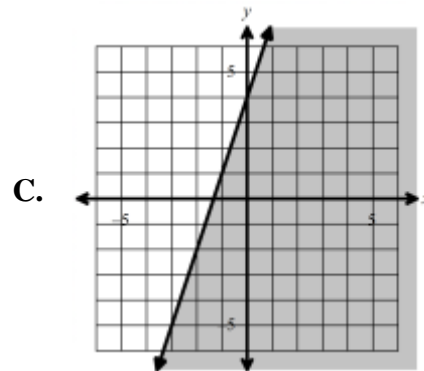
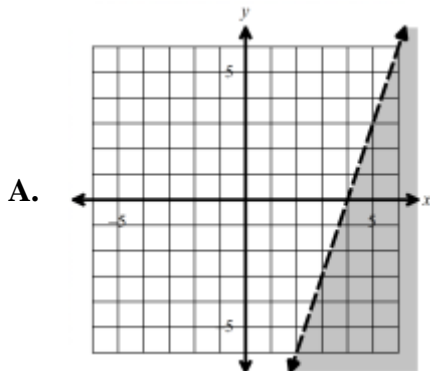
# ALGEBRA 1 SEMESTER 1 INSTRUCTIONAL MATERIALS

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

2017-2018

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



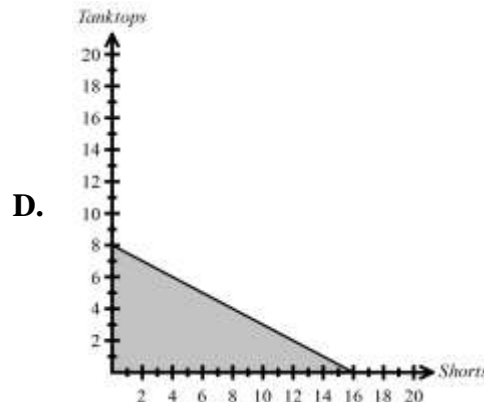
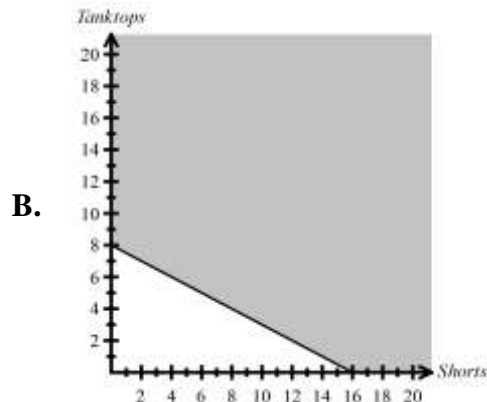
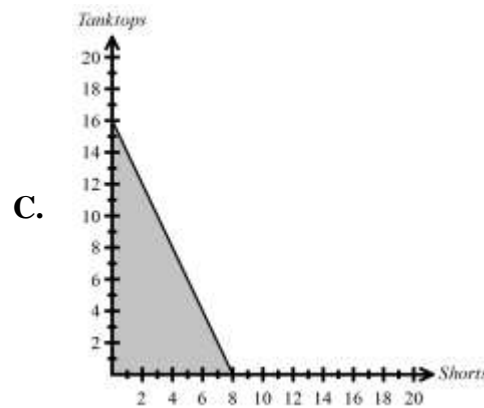
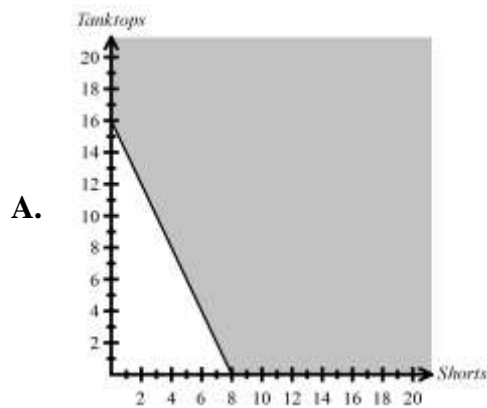
38. When traveling for work a salesperson is reimbursed for expenses according to the following rules:

- \$0.50 per mile driven
- \$40 per day for meals

For any reimbursement of \$1000 or greater a district manager must approve the request for reimbursement. Determine the maximum number of miles a salesperson can travel in 5 days without getting approval from the district manager.

- |                         |                        |
|-------------------------|------------------------|
| A. Less than 1600 miles | C. Less than 400 miles |
| B. More than 1600 miles | D. More than 400 miles |

39. 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?



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

A.  $n = -1$

C.  $n = -45$

B.  $n = -7$

D.  $n = -63$

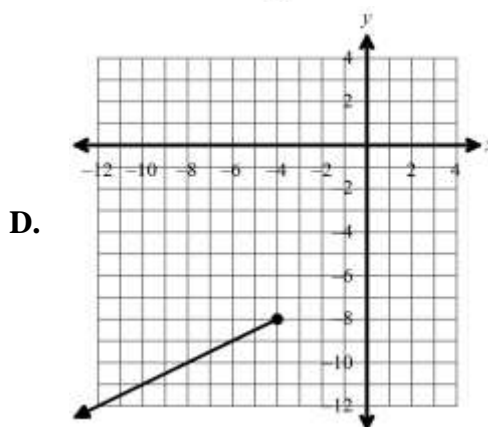
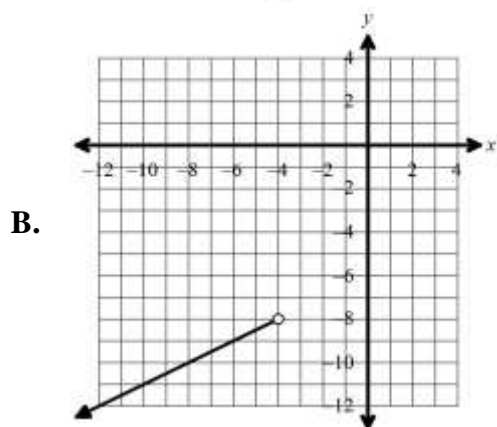
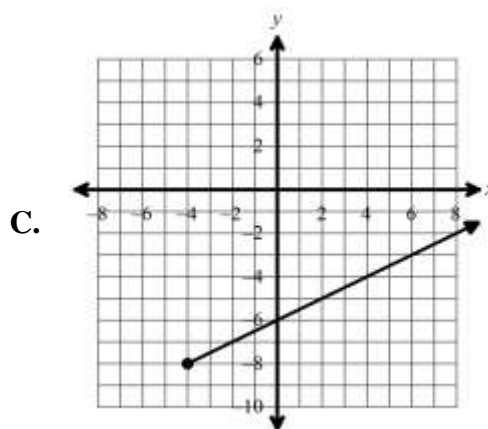
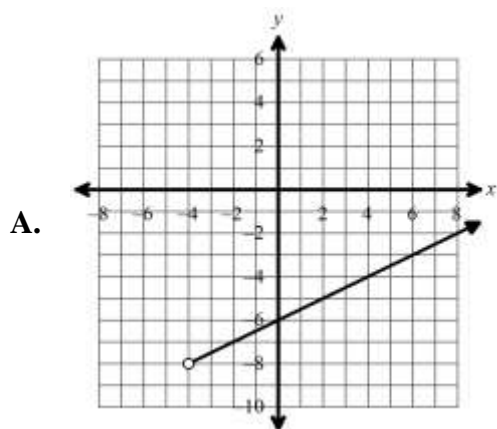
# ALGEBRA 1 SEMESTER 1 INSTRUCTIONAL MATERIALS

HS Courses: #2201 Algebra 1 S1 and #7769 Foundations in Algebra 1 S1

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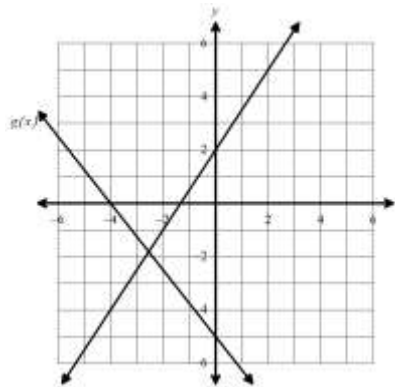
2017-2018

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



42. 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.  $x = 2$



# ALGEBRA 1 SEMESTER 1 INSTRUCTIONAL MATERIALS

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2017-2018

43. 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	$y = -\frac{1}{2}(x - 4) - 1$

44. 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?

Line A	Line B								
	<table border="1"> <thead> <tr> <th>x</th><th>y</th></tr> </thead> <tbody> <tr> <td>-1</td><td>6</td></tr> <tr> <td>0</td><td>4</td></tr> <tr> <td>1</td><td>2</td></tr> </tbody> </table>	x	y	-1	6	0	4	1	2
x	y								
-1	6								
0	4								
1	2								

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

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

$$\begin{cases} y = x + 2 \\ \underline{\hspace{2cm}} \end{cases}$$

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

**ALGEBRA 1 SEMESTER 1 INSTRUCTIONAL MATERIALS**

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2017-2018

46. 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								
$y = -3x - 4$	<table><tr><td><math>x</math></td><td><math>y</math></td></tr><tr><td>-1</td><td>4</td></tr><tr><td>1</td><td>-2</td></tr><tr><td>2</td><td>-5</td></tr></table>	$x$	$y$	-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*
47. Which  $x$ -coordinate is in the solution to the system of equations?

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

- A.  $x = -1$   
B.  $x = 3$   
C.  $x = 19$   
D. *no solution*
48. 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.  $y = 14$

**ALGEBRA 1 SEMESTER 1 INSTRUCTIONAL MATERIALS**

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2017-2018

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

50. Two different families bought general admission tickets for a Reno Aces baseball game. One family paid \$70 for 6 adults and 2 children. The other family paid \$59 for 3 adults and 4 children. How much does an adult ticket cost?

A. \$8

C. \$11.67

B. \$9

D. \$19.67

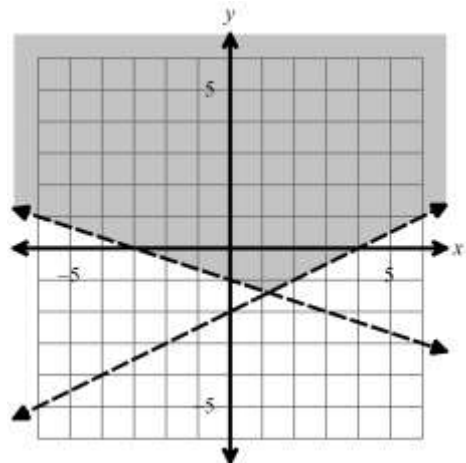
51. Which system of inequalities models the graph below?

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



# ALGEBRA 1 SEMESTER 1 INSTRUCTIONAL MATERIALS

HS Courses: #2201 Algebra 1 S1 and #7769 Foundations in Algebra 1 S1

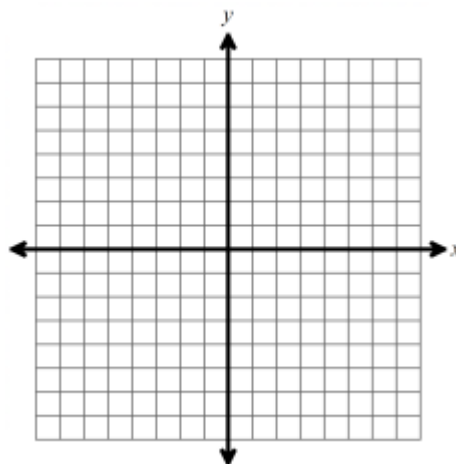
MS Courses: #218 Algebra 1, #217A VMS ALG 1 S1, and #776 ACCEL Algebra 1

2017-2018

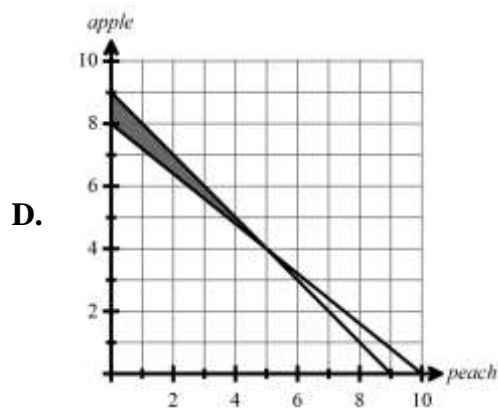
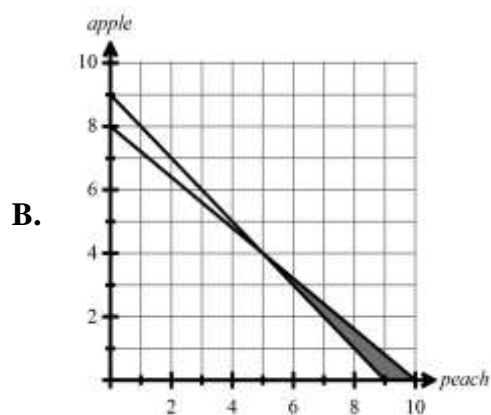
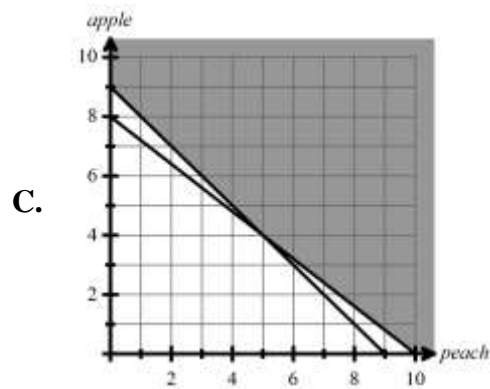
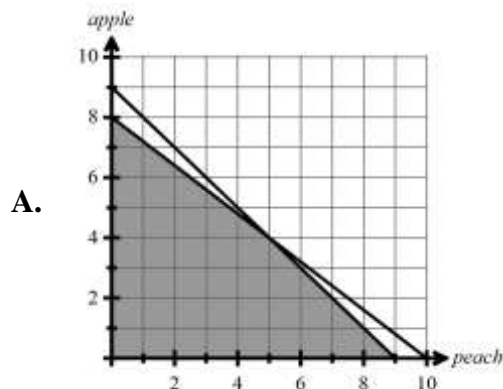
52. Which of the following points is a possible solution to the following system?

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

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



53. 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.





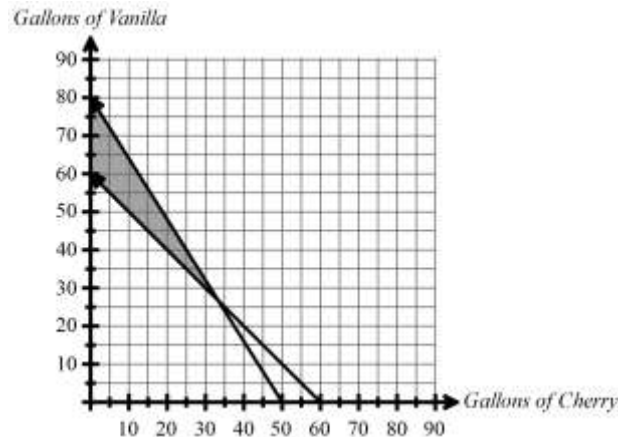
## ALGEBRA 1 SEMESTER 1 INSTRUCTIONAL MATERIALS

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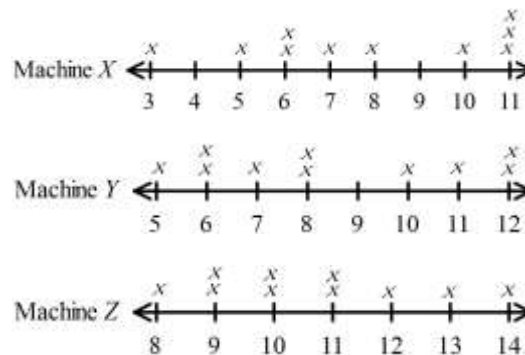
2017-2018

- 54.** 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.

55. A supervisor at a factory is testing the company's packaging machines for accuracy. The machines are labeled X, Y, and Z. The company standard for packaging a product is that each bag should contain 6 to 10 *ounces*. The supervisor randomly chose 10 bags from each machine and recorded the results in the table below. Based on the dot plots below, which statement is correct?

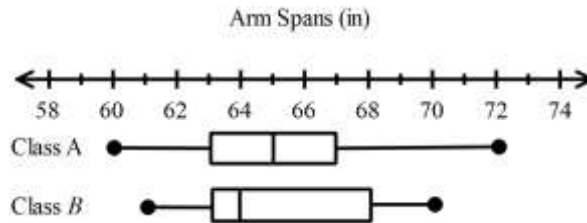


- A. Machine X is both the most consistent and the most accurate.
- B. Machine X and Y are equally consistent, but Machine Y is the most accurate.
- C. Machine Z is both the most consistent and the most accurate.
- D. Machine Z is the most consistent, but Machine Y is the most accurate.
56. A fast food chain took a random survey of some of their stores to find the average number of sodas they sell per day. The data collected is given below. Which measure of central tendency best represents the data? Justify your answer.

{165, 142, 153, 160, 135, 140, 155, 30, 162, 157}

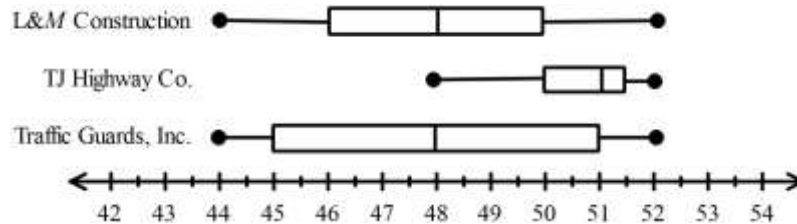
- A. The mean would be best because there is an outlier.
- B. The mean would be best because there is not an outlier.
- C. The median would be best because there is an outlier.
- D. The median would be best because there is not an outlier.

57. In the box-and-whisker plots below, which class has the greater interquartile range? What is the interquartile range for that class?



- A. Class A; 12 inches  
B. Class B; 5 inches  
C. Class A; 4 inches  
D. Class B; 9 inches

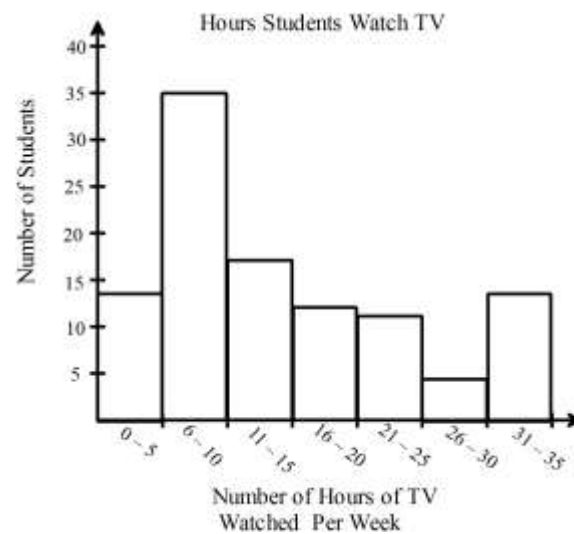
The Department of Transportation requires guardrails to be constructed at a height of 48 inches with a tolerance of 3 inches. The boxplots below show the measurements for three different companies on their last 100 projects. Using the formula  $|a - 48| \leq 3$ , where  $a$  is the actual measurement.



58. Which company is most accurate in their guardrail construction?
- A. L&M Construction  
B. TJ Highway Co.  
C. Traffic Guards, Inc.  
D. L&M Construction and Traffic Guards, Inc.
59. Which company is most consistent in their guardrail construction?
- A. L&M Construction  
B. TJ Highway Co.  
C. Traffic Guards, Inc.  
D. L&M Construction and Traffic Guards, Inc.

- 60.** What type of histogram is shown below?

- A.** skewed left
- B.** skewed right
- C.** symmetric
- D.** uniform



- 61.** The two-way frequency table shows all of the grades for males and females in a science class. If the females were to have the same percent of B's as the males, how many more females would need to get a B in the class?

- A.** 2
- B.** 3
- C.** 4
- D.** 5

	A	B	C	D	F
Females	6	3	4	2	1
Males	3	6	1	0	2

**ALGEBRA 1 SEMESTER 1 INSTRUCTIONAL MATERIALS**

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2017-2018

62. A company surveyed their employees about which method of transportation they use to get to work each morning. Part of the survey results are shown below. Complete the table and determine what percentage of men drive a car to work.

- A. 15.89%
- B. 18.98%
- C. 42.86%
- D. 51.19%

	Women	Men	Total
Walk	56	34	
Car			56
Bus		54	82
Bike		39	67
TOTAL	144		295

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2017-2018

**Algebra 1 Semester 1 Instructional Materials 2017-18 Answers**

<u><b>Unit 1</b></u>		<u><b>Unit 2</b></u>		<u><b>Unit 3</b></u>		<u><b>Unit 4</b></u>		<u><b>Unit 5</b></u>	
<b>1.</b>	D	<b>15.</b>	C	<b>28.</b>	C	<b>42.</b>	B	<b>55.</b>	D
<b>2.</b>	B	<b>16.</b>	A	<b>29.</b>	D	<b>43.</b>	D	<b>56.</b>	C
<b>3.</b>	D	<b>17.</b>	D	<b>30.</b>	C	<b>44.</b>	A	<b>57.</b>	B
<b>4.</b>	D	<b>18.</b>	A	<b>31.</b>	A	<b>45.</b>	A	<b>58.</b>	A
<b>5.</b>	C	<b>19.</b>	B	<b>32.</b>	B	<b>46.</b>	D	<b>59.</b>	B
<b>6.</b>	A	<b>20.</b>	A	<b>33.</b>	C	<b>47.</b>	B	<b>60.</b>	B
<b>7.</b>	C	<b>21.</b>	C	<b>34.</b>	A	<b>48.</b>	C	<b>61.</b>	D
<b>8.</b>	C	<b>22.</b>	B	<b>35.</b>	A	<b>49.</b>	D	<b>62.</b>	A
<b>9.</b>	A	<b>23.</b>	B	<b>36.</b>	D	<b>50.</b>	B		
<b>10.</b>	B	<b>24.</b>	D	<b>37.</b>	B	<b>51.</b>	C		
<b>11.</b>	C	<b>25.</b>	A	<b>38.</b>	A	<b>52.</b>	D		
<b>12.</b>	D	<b>26.</b>	D	<b>39.</b>	C	<b>53.</b>	A		
<b>13.</b>	D	<b>27.</b>	A	<b>40.</b>	C	<b>54.</b>	D		
<b>14.</b>	A			<b>41.</b>	A				



# ALGEBRA 1 SEMESTER 1 INSTRUCTIONAL MATERIALS

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2017-2018

3. Solve the equation  $34.8x + 0.2(x - 4) = -16.8 + 27x$

alt

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

5. 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
- 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



# ALGEBRA 1 SEMESTER 1 INSTRUCTIONAL MATERIALS

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2017-2018

**15/16.** Which of the following represents a function? Select all that apply.  
**alt**

**F.**

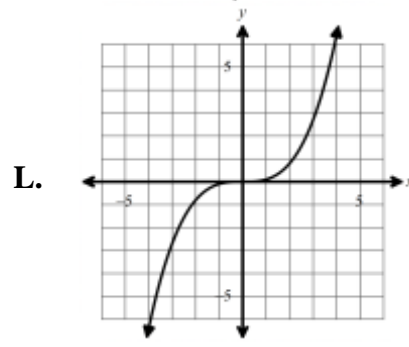
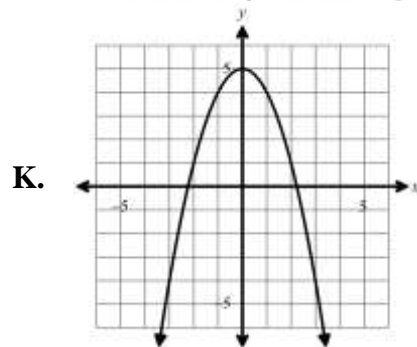
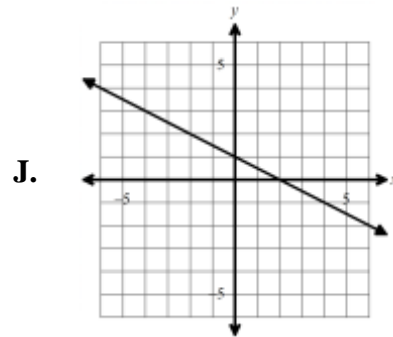
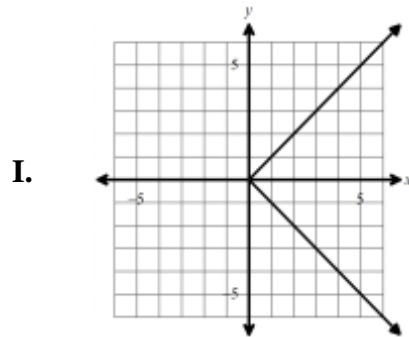
<i>domain</i>	<i>range</i>
2	5
3	5
4	5
5	5

**G.**

<i>domain</i>	<i>range</i>
2	4
3	6
3	8
5	10

**H.**

<i>domain</i>	<i>range</i>
1	1
2	2
3	3
4	4



**19.** 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. Select all statements that correctly describe the domain or range of this function.  
**alt**

- F.** The domain is the set of all real numbers.
- G.** The domain is the set of all integers from 0 to 15.
- H.** The domain is the set of all integers from 20 to 300.
- I.** The range is the set of all real numbers.
- J.** The range is the set of all multiples of 20 from 20 to 300.
- K.** The range is the set of all multiples of 20 from 0 to 15.

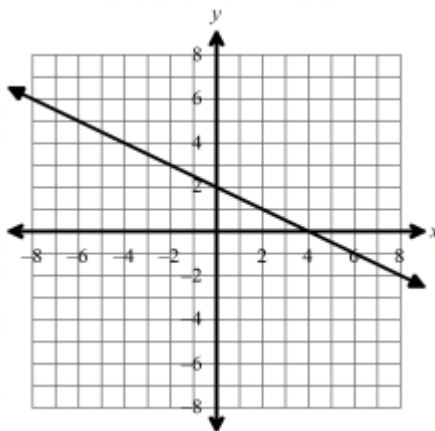
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2017-2018

36. A function is graphed below. Which of the following statements are correct? Select all that apply.



- F. The domain of the function is  $D = \{-8 \leq x \leq 8\}$ .
- G. The domain of the function is  $D = \{all\ real\ numbers\}$ .
- H. The function has a y-intercept at 2.
- I. The function has a y-intercept at 4.
- J. The function is always increasing.
- K. The function is always decreasing.
48. What is the value of the y-coordinate in the solution to the system of equations?

alt

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

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

# ALGEBRA 1 SEMESTER 1 INSTRUCTIONAL MATERIALS

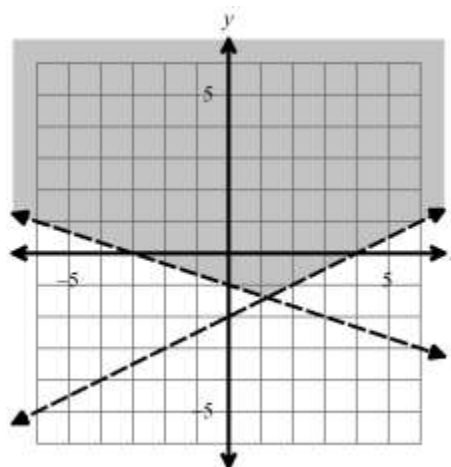
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2017-2018

**51.** Which inequalities model the system graphed below? Select two that apply  
alt

- F.  $y < \frac{1}{3}x - 1$
- G.  $y \leq \frac{1}{3}x - 1$
- H.  $y > -\frac{1}{3}x - 1$
- I.  $y \geq -\frac{1}{3}x - 1$
- J.  $2x + 4y > 8$
- K.  $2x + 4y < 8$
- L.  $2x - 4y \leq 8$
- M.  $2x - 4y < 8$



Alternative Item Answers		
#	Std	IM Ans
3. alt	A.REI.3	-2.00
5. alt	A.REI.3 A.REI.1	F, H, I
15/16. alt	F.IF.1	F, H, J, K, L
19. alt	F.IF.5	G, J
36. alt	F.IF.4	G, H, K
48. alt	A.REI.5 A.REI.6	+7.00
51. alt	A.REI.12	I, M