

Algebra 2A

Midterm Review

Name: _____

Date: _____

- 1 Evaluate the expression for the given value of the variable.

$$-2x^3 - x^2 + 5x + 2$$

$$x = -3$$

- A -76
- B 62
- C 32
- D 30

- 2 Simplify by combining like terms.

$$-3(-4y + 3) + 7y$$

- A $19y - 9$
- B $10y$
- C $-19y + 3$
- D $-19y - 9$

- 3 Evaluate the expression for the given value of the variables.

$$5a + 5b$$

$$a = -6$$

$$b = -5$$

- A -55
- B 55
- C 5
- D -5

- 4 Solve the equation for U .

$$T = \frac{2U}{E}$$

- A $U = \frac{T - E}{2}$
- B $U = T + \frac{E}{2}$
- C $U = 2T - E$
- D $U = \frac{TE}{2}$

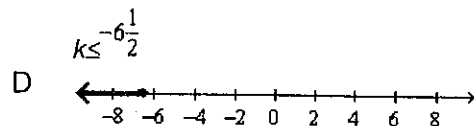
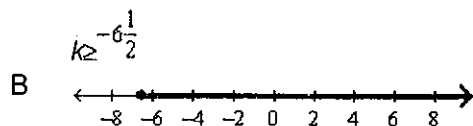
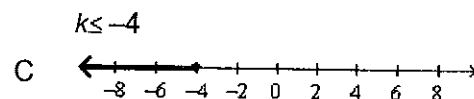
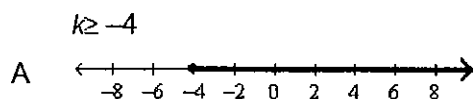
- 5 Solve the equation.

$$6(x - 0.8) - 0.2(5x - 4) = 6$$

- A -0.5
- B -2
- C 0.5
- D 2

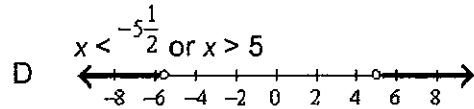
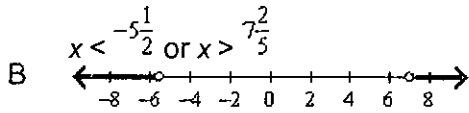
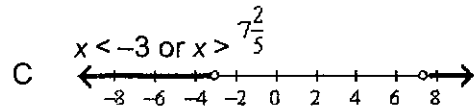
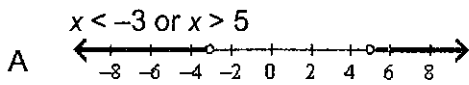
- 6 Solve the inequality and choose the correct graph of the solution set.

$$-4k + 5 \leq 21$$



7 Solve the compound inequality and choose the correct graph of the solution set.

$$4x - 5 < -17 \text{ or } 5x + 6 > 31$$



8 A furniture maker uses the given specification for the width w in inches of a desk drawer.
 $21.88 \leq w \leq 22.12$

What is this specification expressed as an inequality?

- A $|w - 0.24| \leq 22.12$
- B $|w - 0.12| \leq 22$
- C $|w - 22| \leq 0.24$
- D $|w - 22| \leq 0.12$

9 Solve the equation.

$$-6|h - 4| = -24$$

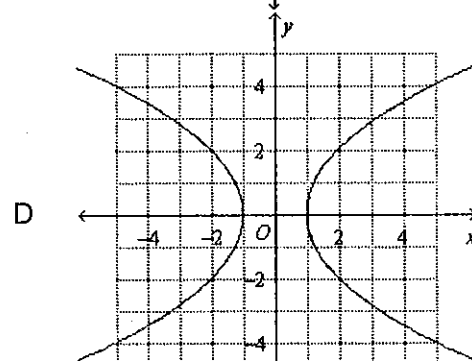
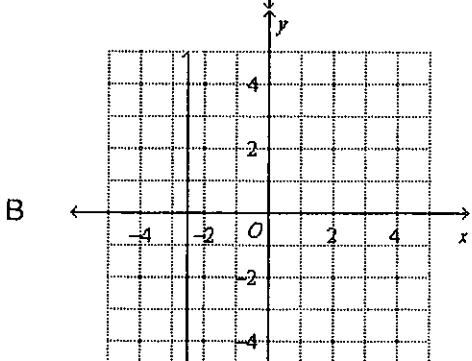
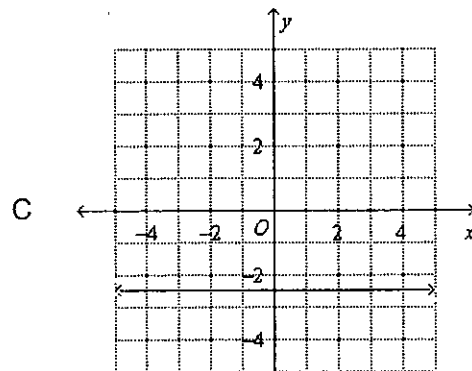
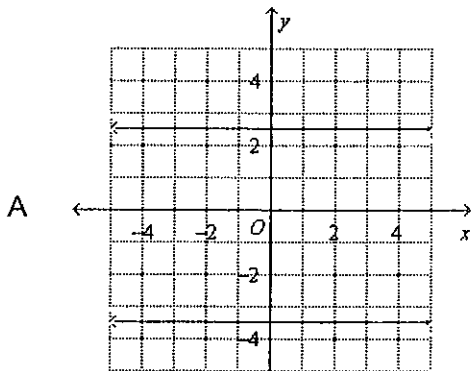
- A 0, 8
- B 8
- C 0, -8
- D no solution

10 Find the slope of a line containing the two points.

(1, 2), (8, 11)

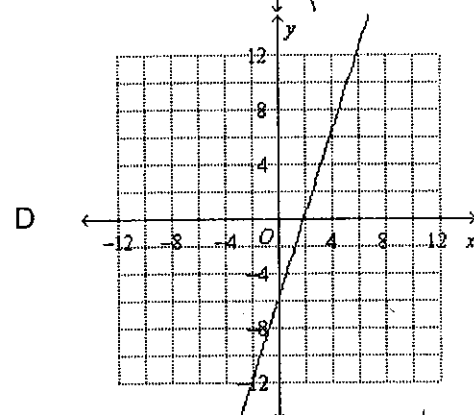
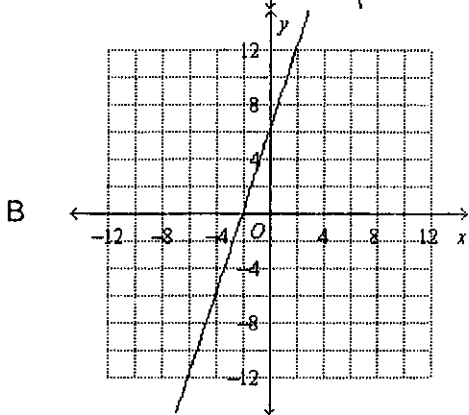
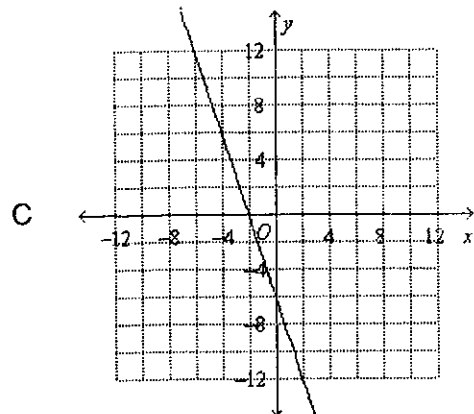
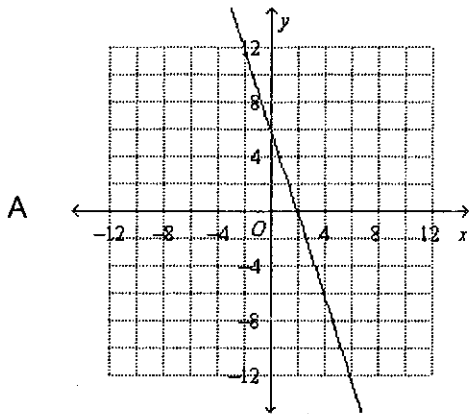
- A $-\frac{7}{9}$
- B $\frac{9}{7}$
- C $-\frac{9}{7}$
- D $\frac{7}{9}$

11 Use the vertical-line test to determine which graph represents a function.



2

12 What is the graph of the equation $-3x - y = 6$?



13 Does y vary directly with x ? If so, find the constant of variation k and choose the correct equation for the direct variation.

x	y
6	7.2
11	13.2
16	19.2
21	25.2

- A yes; $k = 1.2$; $y = 1.2x$
- B yes; $k = 5$
- C yes; $k = 6$
- D no

14 Does y vary directly with x ? If so, find the constant of variation k .

$$-6y = -5x$$

- A yes; $\frac{5}{6}$
- B yes; $\frac{6}{5}$
- C yes; -5
- D no

- 15 Plot the data points and the four lines given below on the same axes. Which line do you think fits the data best?

Input	Output
1	9.8
2	12.2
3	14.2
4	16.1
5	17.9

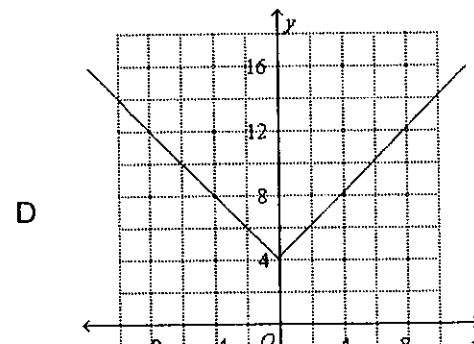
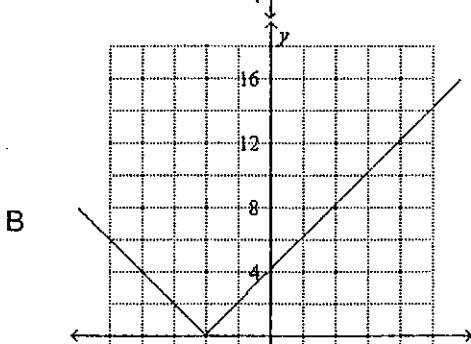
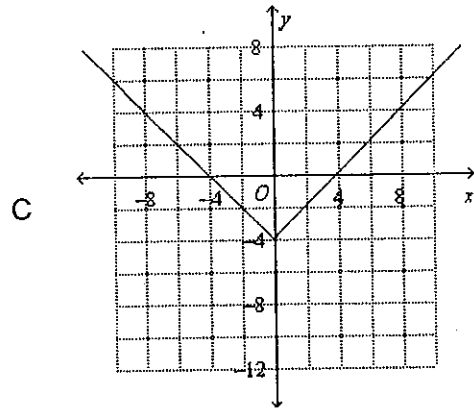
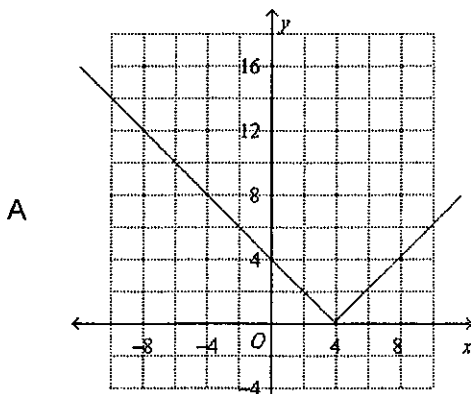
- A $y = 2x + 8$
 B $y = 3x + 10$
 C $y = 0.5x + 7$
 D $y = x + 8$

- 16 A 3-mi cab ride costs \$3.00. A 6-mi cab ride costs \$4.80. Choose the linear equation that models cost c as a function of distance d .

- A $c = 0.80d + 1.20$
 B $c = 1.00d + 1.80$
 C $d = 0.60c + 1.80$
 D $c = 0.60d + 1.20$

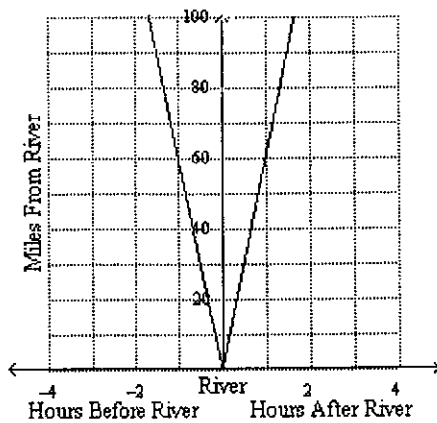
- 17 What is the graph of the absolute value equation?

$$y = |x + 4|$$



4

- 18 The graph models a train's distance from a river as the train travels at a constant speed. Which equation best represents the relation?

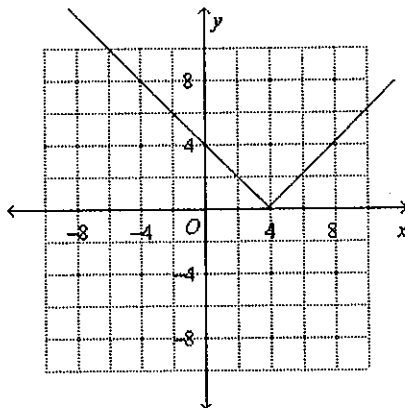


- A $y = |x| + 60$
 B $y = |x + 60|$
 C $y = |60x|$
 D $y = \left| \frac{1}{60}x \right|$

- 19 What is the vertex of the graph of the function?
 $y = |-3x + 2| - 4$

- A $\left(-\frac{2}{3}, -4\right)$
 B $\left(\frac{2}{3}, -4\right)$
 C $\left(\frac{2}{3}, 4\right)$
 D $\left(-\frac{2}{3}, 4\right)$

- 20 Choose an equation that is represented in the graph where $y = |x|$ is translated.



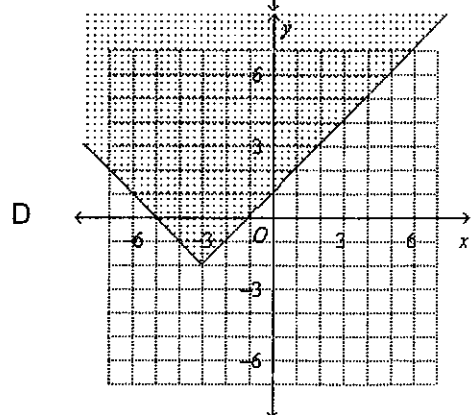
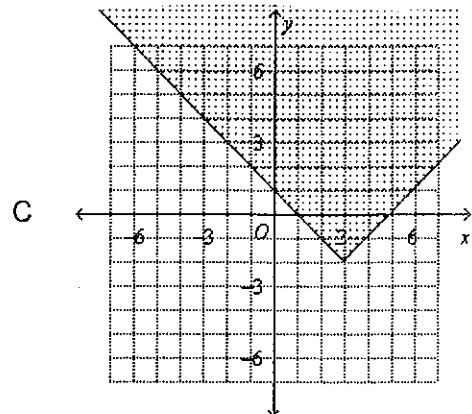
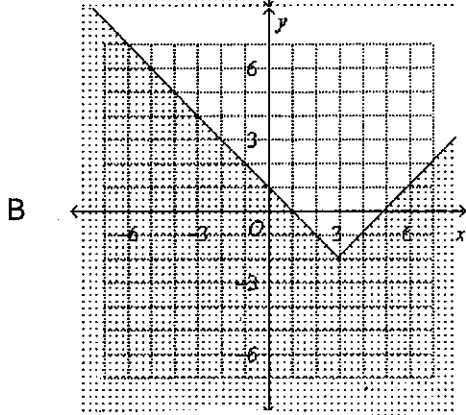
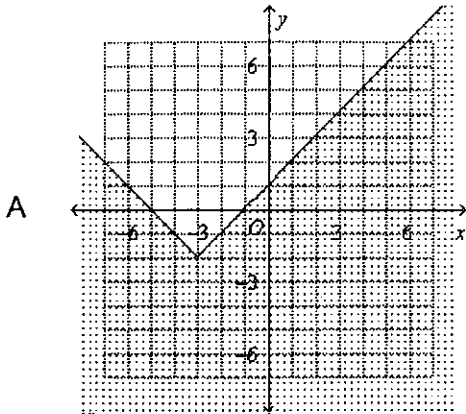
- A $y = |x + 4|$
 B $y = |x - 4|$
 C $y = -|x + 4|$
 D $y = -|x - 4|$

- 21 Choose the translation equation when you translate the equation below left 1 unit and up 2 units.

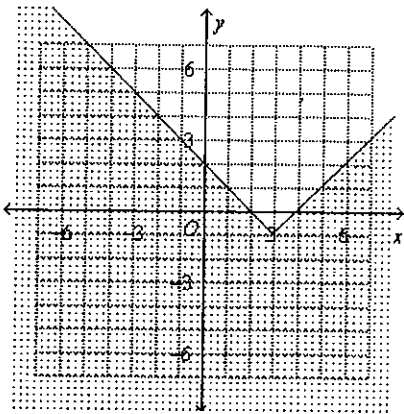
$y = |x|$

- A $y = |x - 2| - 1$
 B $y = |x + 1| + 2$
 C $y = |x - 1| + 2$
 D $y = |x + 2| - 1$

- 22 Choose the graph of the absolute-value inequality.
 $y \geq |x + 3| - 2$

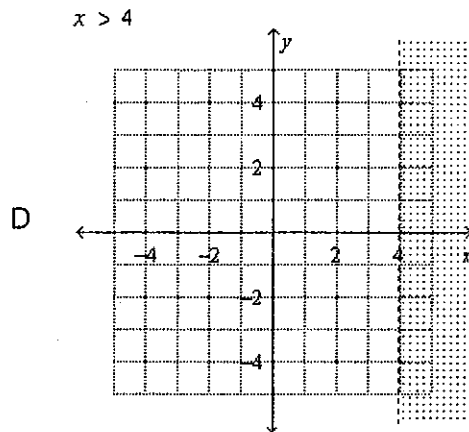
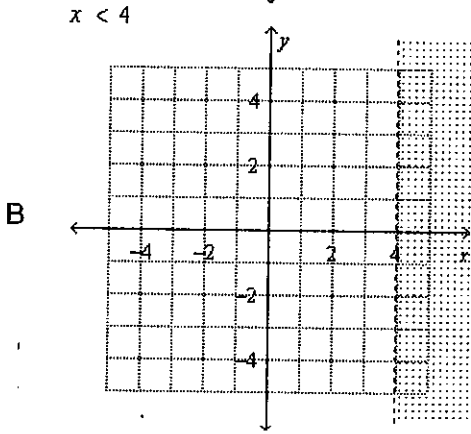
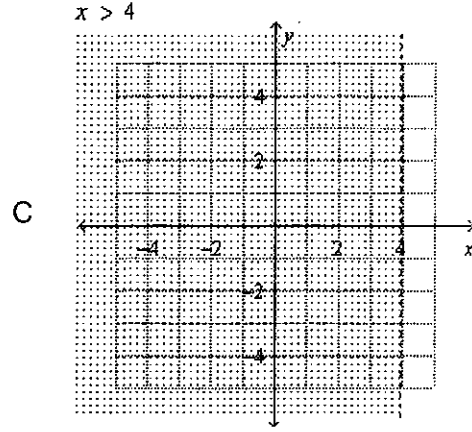
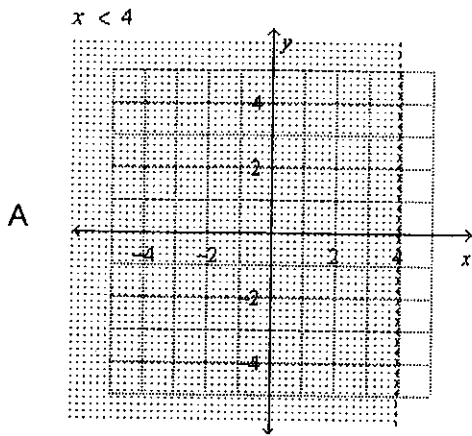


- 23 Choose the inequality that corresponds to the graph.

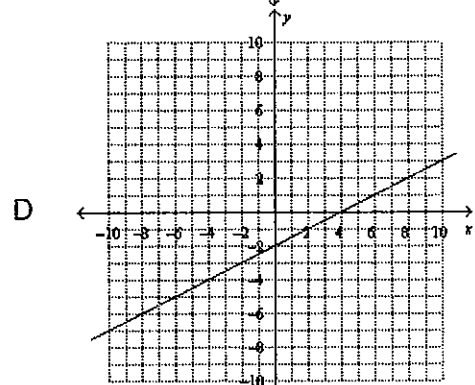
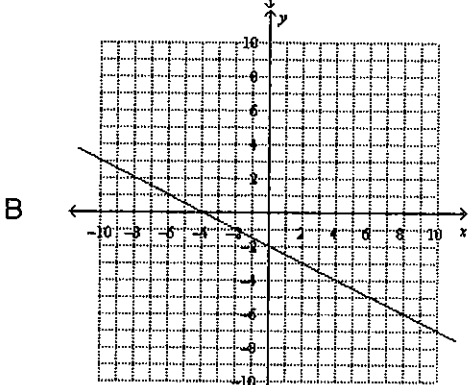
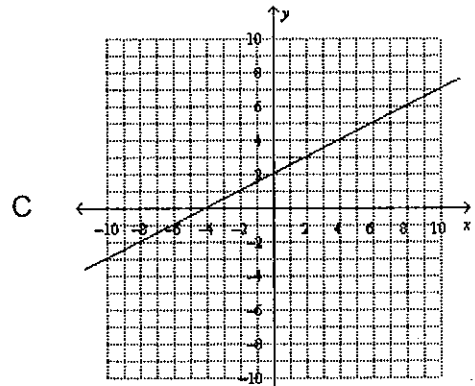
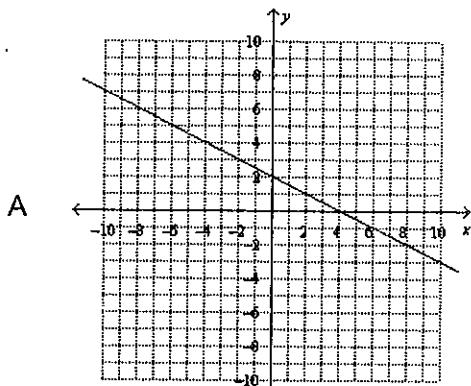


- A $y \leq |x + 3| - 1$
- B $y \leq |x - 3| + 1$
- C $y \leq |x - 3| - 1$
- D $y \geq |x - 3| - 1$

24 For any y -value, choose the correct solution and graph for the inequality.
 $4x - 2 < 14$

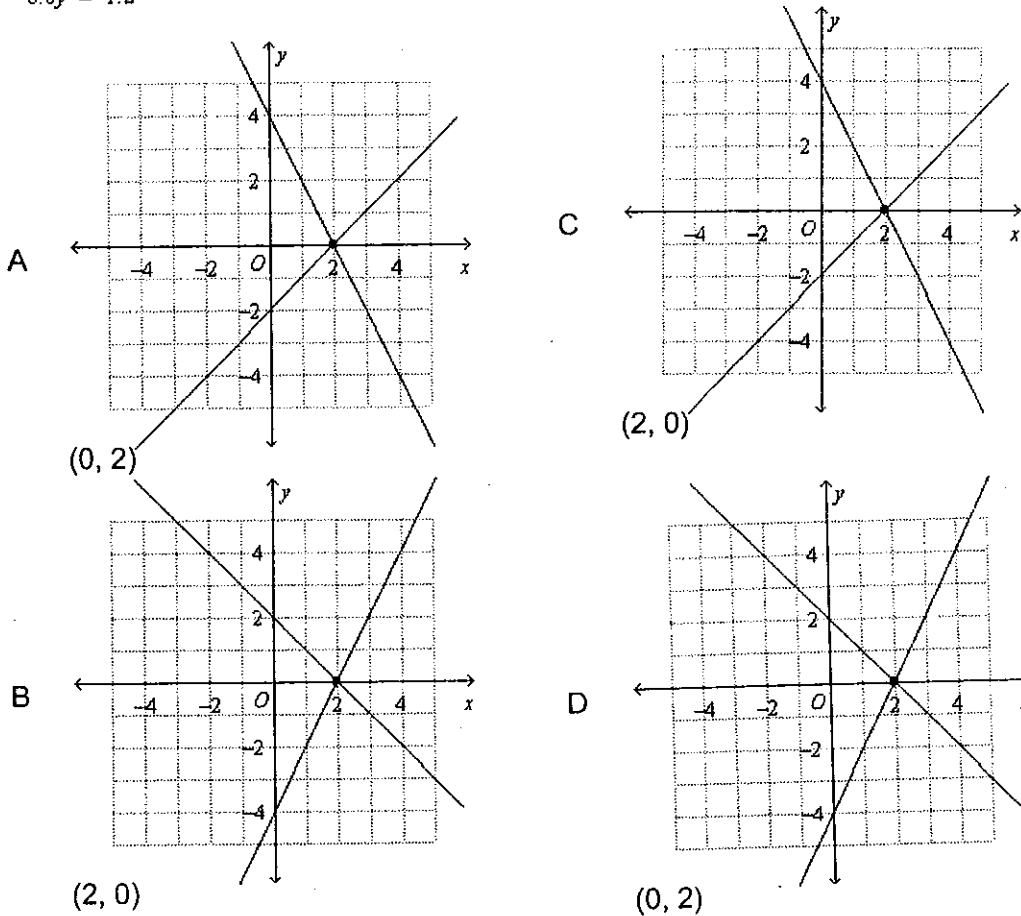


25 What is the graph of the inequality?
 $2x - 4y = 8$



26 Choose the correct graph of the system. Identify the solution(s).

$$\begin{cases} -0.6x - 0.3y = -1.2 \\ 0.6x - 0.6y = 1.2 \end{cases}$$



27 A rental car agency charges a flat fee of \$32.00 plus \$3.00 per day to rent a certain car. Another agency charges a fee of \$30.50 plus \$3.25 per day to rent the same car.

a.	Choose the system of equations that represents the cost c for renting a car at each agency for d days.
b.	Find the number of days for which the costs are the same. Round your answer to the nearest whole day.

A a. $\begin{cases} c = 3.00d + 32.00 \\ c = 3.25d + 30.50 \end{cases}$
 b. 11

C a. $\begin{cases} c = 3.00d + 32.00 \\ c = 3.25d + 30.50 \end{cases}$
 b. 6

B a. $\begin{cases} c = 3.00d + 30.50 \\ c = 3.25d + 32.00 \end{cases}$
 b. 6

D a. $\begin{cases} c = 3.00d + 30.50 \\ c = 3.25d + 32.00 \end{cases}$
 b. 11

28 Solve the system using substitution or elimination.

$$\begin{cases} 4x + 2y = 22 \\ 5x - 2y = 14 \end{cases}$$

- A (2, 5)
 B (5, 1)

29 Use the elimination method to solve the system.

$$\begin{cases} -x + 2y = 10 \\ -3x + 6y = 11 \end{cases}$$

- A infinite solutions
- B $(-5, 2)$
- C $(5, -2)$
- D no solutions

31 Identify the value for the matrix.

$$a_{2,3} \begin{pmatrix} -1 & 2 & 5 & 0 \\ -5 & 0 & 4 & 7 \\ 9 & 9 & -2 & -1 \\ 8 & -5 & 0 & 0 \end{pmatrix}$$

- A 9
- B 0
- C 4
- D -2

30 Solve the system using substitution or elimination.

$$\begin{cases} 3x + 5y = -28 \\ x + 10y = -51 \end{cases}$$

- A $(1, 3)$
- B $(-5, -1)$
- C $(-1, -5)$
- D $(-1, 2)$

33 Solve the matrix equation.

$$X + \begin{bmatrix} 2 & -5 & 8 \\ -8 & 3 & 0 \end{bmatrix} = \begin{bmatrix} 6 & -1 & 9 \\ -5 & 2 & 8 \end{bmatrix}$$

- A $\begin{bmatrix} -4 & 4 & 1 \\ 3 & -1 & -8 \end{bmatrix}$
- B $\begin{bmatrix} 4 & 4 & 1 \\ 3 & 1 & -8 \end{bmatrix}$
- C $\begin{bmatrix} -4 & -4 & 1 \\ -3 & -1 & 8 \end{bmatrix}$
- D $\begin{bmatrix} 4 & 4 & 1 \\ 3 & -1 & 8 \end{bmatrix}$

32 In May, Bradley bought 48 Styrofoam balls and decorated them as toy figurines. In June, he sold 19 figurines. In May, Lupe bought 44 Styrofoam balls to decorate, and in June, she sold 21 figurines. Which matrix represents all of their May purchases and their June sales?

A

	May	June
Bradley	48	19
Lupe	44	21

C

	May	June
Bradley	48	44
Lupe	-29	-23

B

	May	June
Bradley	48	44
Lupe	19	21

D

	May	June
Bradley	48	29
Lupe	44	23

34 A, B, C, and D are matrices. Determine if the statement is false, true, or you need more information.

$$(C + D) + A = C + (D + A)$$

- A False
- B True
- C need more information

35 Find the values of the variables.

$$\begin{bmatrix} 8 & -w^2 \\ 7f & 3 \end{bmatrix} = \begin{bmatrix} 2k & -121 \\ 28 & 3 \end{bmatrix}$$

- A $f = 4, k = 4, w = 11$
- B $f = 4, k = 4, w = 11$ or -11
- C $f = 4, k = -4, w = 11$ or -11
- D $f = 4, k = 4, w = 121$ or -121

36 Find the product.

$$\begin{bmatrix} 2 & 5 & -8 \end{bmatrix} \begin{bmatrix} -6 \\ 8 \\ 2 \end{bmatrix}$$

- A $\begin{bmatrix} 2 & -6 \\ 5 & 8 \\ -8 & 2 \end{bmatrix}$
- B $\begin{bmatrix} -12 \\ 40 \\ -16 \end{bmatrix}$
- C $\begin{bmatrix} 2 & 5 & -8 \\ -6 & 8 & 2 \end{bmatrix}$
- D $[12]$

37 Determine whether the product is defined or undefined. If defined, give the dimensions of the product matrix.

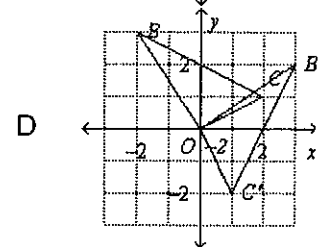
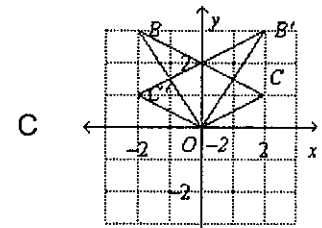
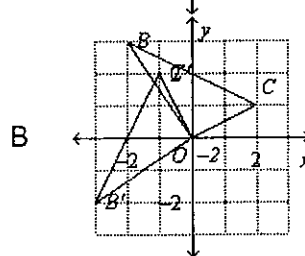
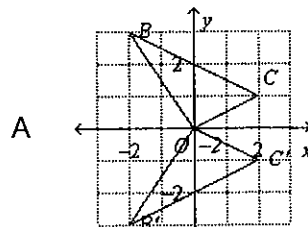
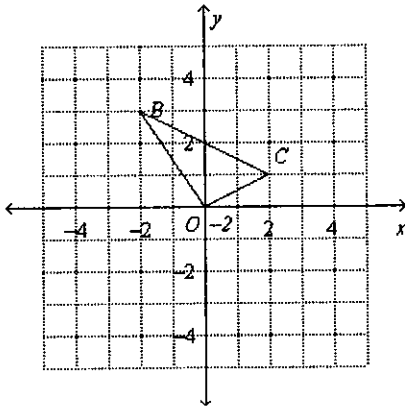
$$\begin{bmatrix} 1 & 1 & -4 \\ 5 & 6 & 0 \end{bmatrix} \begin{bmatrix} 9 \\ 1 \\ -7 \end{bmatrix}$$

- A defined; 3×3
- B defined; 2×1
- C defined; 2×3
- D undefined

38 The points represent the vertices of a polygon. Use a matrix to find the coordinates of the image after the given transformation. Choose the correct graph of the pre-image and the image.

$A(0, 0), B(-2, 3),$ and $C(2, 1)$; a reflection across the y -axis

Note: consider the point labeled O in the answer choices as A' .



39 Determine whether the matrix has an inverse. If an inverse exists, find it.

$$\begin{bmatrix} -1 & 2 \\ 2 & -3 \end{bmatrix}$$

A $\begin{bmatrix} -3 & -2 \\ 2 & 1 \end{bmatrix}$

B $\begin{bmatrix} 3 & 2 \\ 2 & 1 \end{bmatrix}$

C $\begin{bmatrix} 3 & 2 \\ -2 & -1 \end{bmatrix}$

D $\begin{bmatrix} 2 & 1 \\ 3 & 2 \end{bmatrix}$

40 Evaluate the determinant of the matrix.

$$\begin{vmatrix} 4 & -1 \\ -9 & 2 \end{vmatrix}$$

- A 17
- B 1
- C -1
- D -17

41 Evaluate the determinant.

$$\begin{vmatrix} 8 & -11 \\ -2 & -10 \end{vmatrix}$$

- A -58
- B 58
- C -102
- D 102

42 Use an augmented matrix to solve the system.

$$\begin{cases} x + 2y = 6 \\ 2x + 3y = -3 \end{cases}$$

Cramer's Rule

- A $\begin{bmatrix} -24 \\ 15 \end{bmatrix}$
- B no solution
- C $\begin{bmatrix} 24 \\ -15 \end{bmatrix}$
- D $\begin{bmatrix} 15 \\ -24 \end{bmatrix}$

43 Choose <, >, or = to make the sentence true.

$$|-22 + 44| \quad ? \quad |-22 - 2|$$

- A <
- B >
- C =

45 Choose <, >, or = to make the sentence true.

$$20.48 \quad ? \quad \sqrt{256}$$

- A <
- B =
- C >

44 Find the opposite and the reciprocal of the number.

500

- A $-500, -\frac{1}{500}$
- B $-500, \frac{1}{500}$
- C $500, \frac{1}{500}$
- D $500, -\frac{1}{500}$

46 Choose the property of real numbers illustrated by the equation.

$$-6 + 6 = 0$$

- A Identity Property of Multiplication
- B Inverse Property of Multiplication
- C Associative Property of Addition
- D Inverse Property of Addition