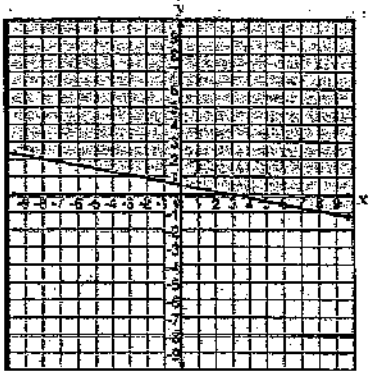
Unit 2 Review KEY

1. Which graph represents the solution set of the inequality $-4y \leq \frac{2}{3}x - 2$?

$-12y \leq 2x - 6$

$y \geq -\frac{1}{6}x + \frac{1}{2}$

(A)



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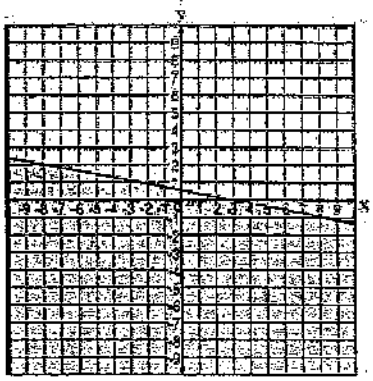

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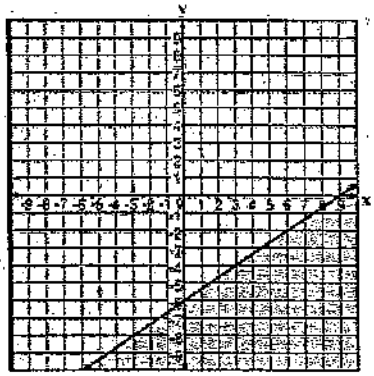

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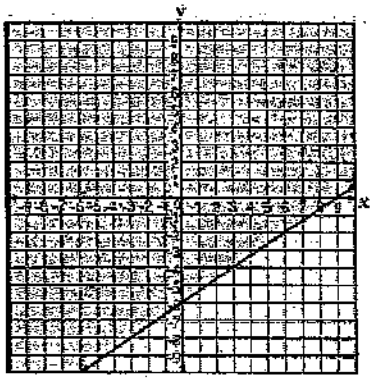
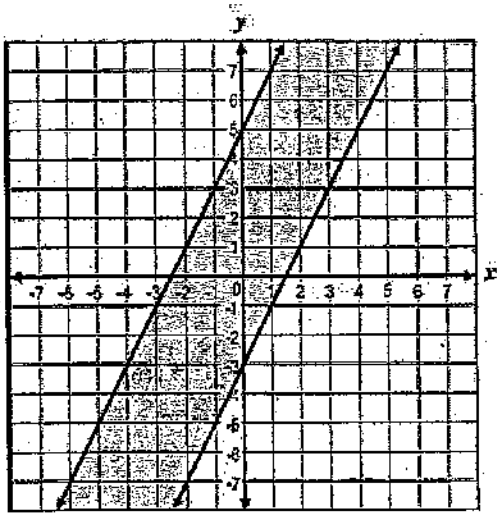


2. Which graph represents the solution to the system of inequalities?

$$\begin{cases} y \le 2x + 5 \\ y \ge 2x - 3 \end{cases}$$

A



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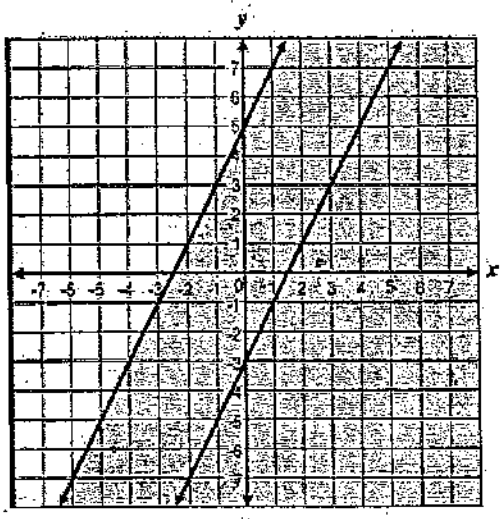

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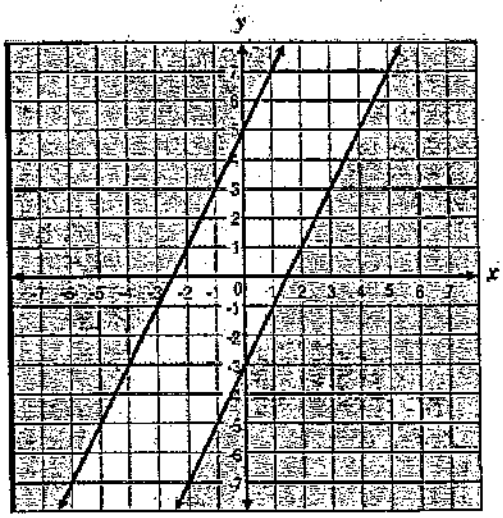

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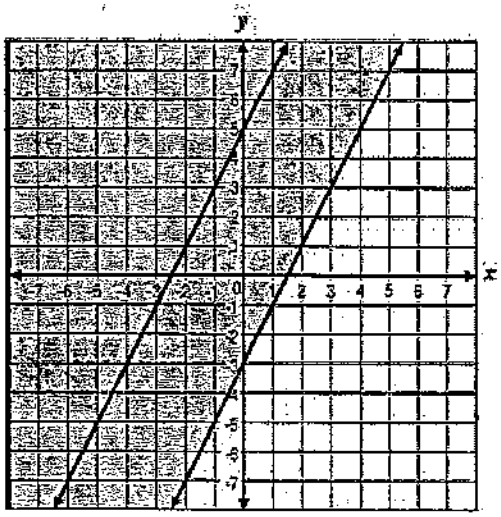


3. **Which graph best represents the solution to the system of linear inequalities below?**

$3x - 7y > 14$
$5x + 2y < -10$

$3x - 7y > 14$

$-7y > -3x + 14$

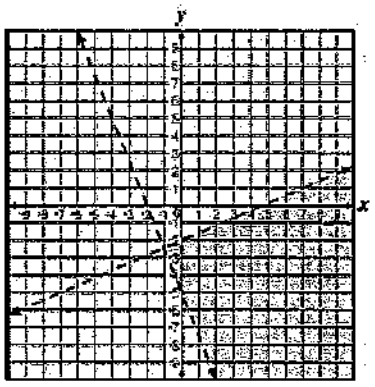
$y < \frac{3}{7}x - 2$

$5x + 2y < -10$

$2y < -5x - 10$

$y < -\frac{5}{2}x - 5$

A



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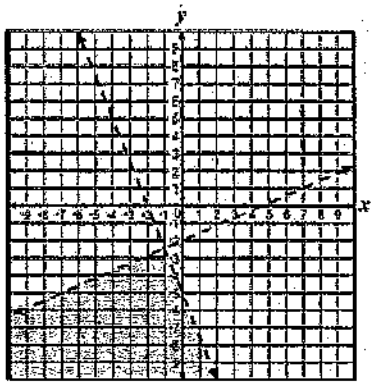

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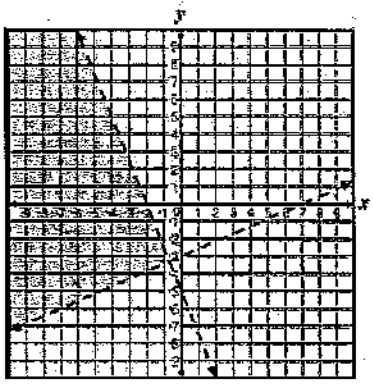

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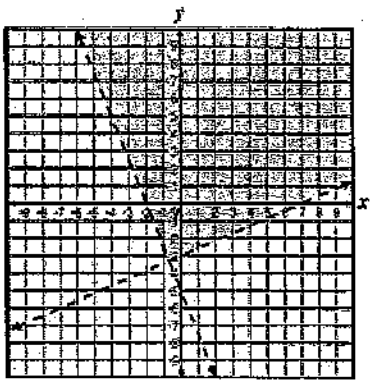


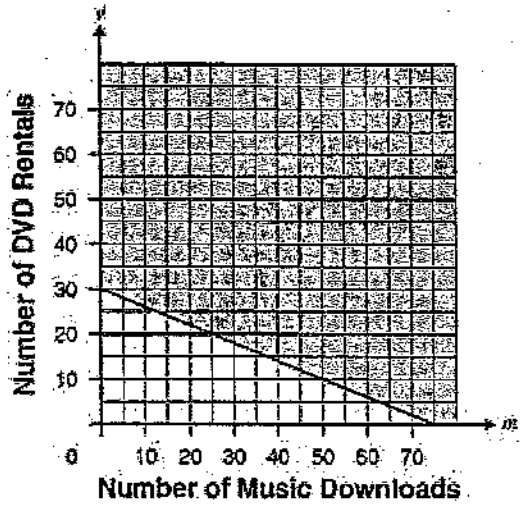
4. Charles has a budget of $75 to spend on a combination of music downloads and DVD rentals. Each music download costs $1.00 and each DVD rental costs $2.50. This information can be represented by the inequality below:

$1.00m + 2.50v \leq 75$

where m represents the number of music downloads
v represents the number of DVD rentals

Which graph represents the possible combination of music downloads and DVD rentals Charles could choose and still spend no more than $75?

A.



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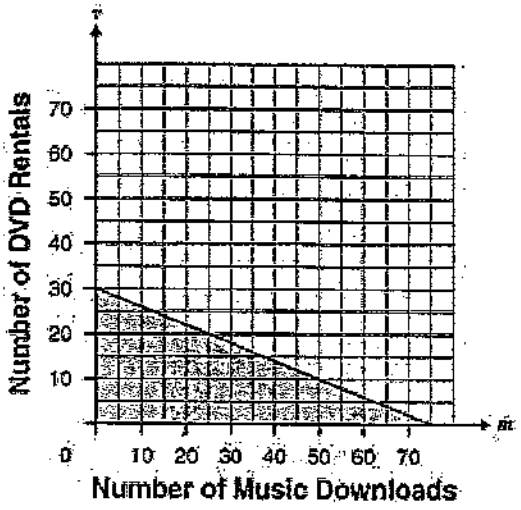

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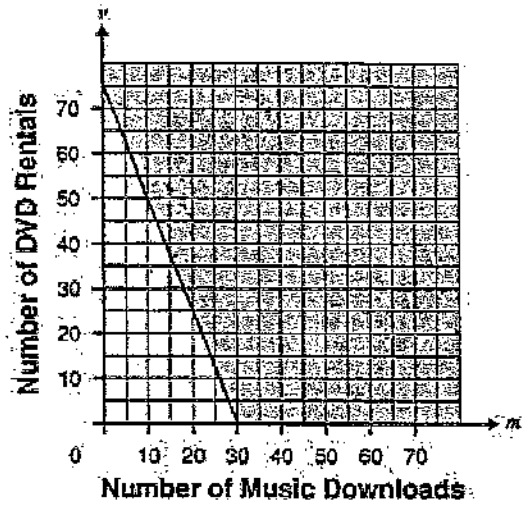

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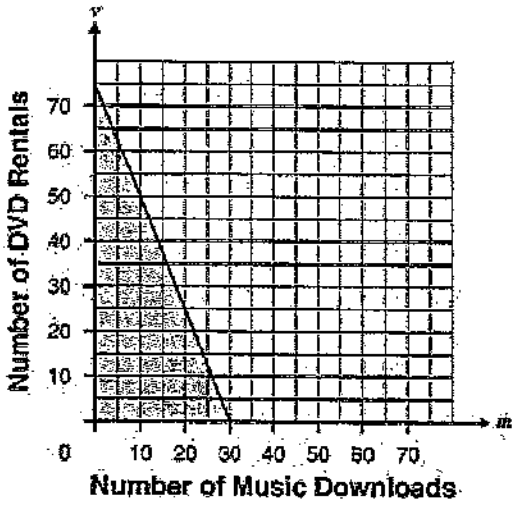

5. What is the solution for y in the inequality $-3(2y+4) \leq 12 - 4y$?

A. $y \leq -12$
B. $y \geq -12$
C. $y \geq -4$
D. $y \leq 0$

$-6y - 12 \leq 12 - 4y$
$-2y \leq 24$
$y \geq -12$

6. The suggested retail price per bottle of dish soap, y, is determined by the volume in liquid ounces, x, as shown below.

$y = 0.5x - 0.48(0.5x - 2)$

If the suggested retail price of a bottle of dish soap is \$4.08, what is the bottle's volume in ounces?

A. 8
B. 12
C. 23
D. 30

$4.08 = 0.5x - 0.48(0.5x - 2)$
$4.08 = 0.5x - 0.24x + 0.96$
$4.08 = 0.26x + 0.96$
$0.26x = 3.12$
$x = 12$

7. For each cable service installation Joshua completes, he earns \$50 plus 40% of the fee paid by the customer. One installation took 2.5 hours to complete. Joshua's pay of d dollars per hour worked is based on the customer's fee of f dollars plus \$50. This is represented by the equation below.

$2.5d = 0.4f + 50$

Which equation shows the amount Joshua earned per hour if the customer's fee was \$40?

A. $d = \frac{16 + 20}{2.5}$
B. $d = \frac{16 + 50}{2.5}$
C. $d = 16 + \frac{50}{2.5}$
D. $d = \frac{16}{2.5} + 50$

$2.5d = 0.4(40) + 50$
$2.5d = 16 + 50$
$d = \frac{16 + 50}{2.5}$

* 8. Which set of inequalities describes all the solutions of $-4 < x + 2 < 3$?

A. $\{x > -6 \text{ or } x < 1\}$
B. $\{x > -6 \text{ and } x < 1\}$
C. $\{x < -6 \text{ or } x < 1\}$
D. $\{x < -6 \text{ and } x < 1\}$

$-2 \quad -2 \quad -2$
$-6 < x < 1$
$x > -6 \text{ and } x < 1$

9. The Esteban family will order one t-shirt for each person who attends their family reunion. The cost is \$6.50 per t-shirt plus a one-time printing fee of \$35.00. This can be represented by the equation $c = 6.5n + 35$, where c represents the total cost of the shirts and n represents the number of shirts ordered. If the family can spend no more than \$2,000.00 on t-shirts, what is the maximum number they can order?

A. 300
B. 302
C. 308
D. 325

$6.5n + 35 \leq 2000$
$6.5n \leq 1965$
$n \leq 302.3076923$, so $n \leq 302$

10. Which values of x in the set $\{-5, 0, 8, 9, 10, 14\}$ are solutions to the inequality $2(x - 4) < 10$?

A. $\{10, 14\}$
B. $\{9, 10, 14\}$
C. $\{-5, 0, 8\}$
D. $\{-5, 0, 8, 9\}$

$2x - 8 < 10$
$2x < 18$
$x < 9$

11. **A system of equations is shown below.**

$$\begin{cases} 2x - y = 5 \\ x + 3y = 0 \end{cases}$$

Which statement is true regarding this system?

A. To Solve the system, multiply the second equation by 2 and then add the result to the first equation.

B. To solve the system, multiply the first equation by 3 and then add the result to the second equation.

C. The system has no solution since the second equation is equal to 0.

D. The system has infinitely many solutions since the second equation is equal to 0.

12. **A system of equations is shown below.**

$$\begin{cases} 4x + y = 8 \\ 2x - 3y = 18 \end{cases}$$

If the first equation is multiplied by a constant and the result is added to the second equation, which equation could result?

A. $-10x = -6$

B. $-2y = 26$

C. $7y = 44$

D. $14x = 42$

13. **Chun wants to solve the system of equations below.**

$$\begin{cases} x + 2y = -1 \\ 2x + 7y = 4 \end{cases}$$

Which process shows Chun correctly solving the system of equations?

A. $2(x + 2y = -1)$
$2x + 7y = 4$

don't cancel!

$2x + 4y = -2$
$2x + 7y = 4$
$11y = 2$
$y = \frac{2}{11}$

$x + 2\left(\frac{2}{11}\right) = -1$
$x + \frac{4}{11} = -1$
$x = -1 - \frac{4}{11}$
$x = -\frac{15}{11}$

B. $4(x + 2y = -1)$
$2x + 7y = 4$

don't subtract "7y" to combine

$4x + 8y = -4$
$2x + 7y = 4$
$6x + y = 0$
$6x = 0$
$x = \frac{0}{6}$
$x = 0$

$0 + 2y = -1$
$2y = -1$
$y = -\frac{1}{2}$

C. $x + 2y = -1$
$-\frac{1}{2}(2x + 7y = 4)$

should be -2

$x + 2y = -1$
$-x - \left(\frac{7}{2}\right)y = 2$
$-\left(\frac{3}{2}\right)y = 1$
$y = -\frac{2}{3}$

$x + 2\left(-\frac{2}{3}\right) = -1$
$x + \left(-\frac{4}{3}\right) = -1$
$x = -1 + \frac{4}{3}$
$x = \frac{1}{3}$

D. $-2(x + 2y = -1)$
$2x + 7y = 4$

$-2x - 4y = 2$
$2x + 7y = 4$
$3y = 6$
$y = 2$

$x + 2(2) = -1$
$x + 4 = -1$
$x = -1 - 4$
$x = -5$

14. What is the *x*-coordinate of the point of intersection for the two lines below?

$-6x + 8y = -6$
$7x - 10y = 9$

Find the solution

$7(-6x + 8y = -6) \Rightarrow -42x + 56y = -42$
$6(7x - 10y = 9) \Rightarrow 42y - 60y = 54$

$-4y = 12$
$y = -3$

$7x - 10(-3) = 9$
$7x + 30 = 9$
$7x = -21$
$x = -3$

A. −6
B. −3
C. 3
D. 7

15. A factory has 203 workers. There are 70 more males than females. Let *x* represent the number of males and let *y* represent the number of females. Which system of equations represents this situation?

A. $x + y = 203$
$x = y + 70$

B. $x + y = 203$
$y = x + 70$

C. $x + y = 203$
$x = 70y$

D. $x + y = 203$
$y = 70x$

16. Using substitution, what is the solution for the system of equations below?

$x = 2$
$y = 3x - 1$

$y = 3(2) - 1$
$y = 6 - 1$
$y = 5$

A. (2, 31)
B. (2, 4)
C. (2, 5)
D. (5, 2)

17. What is the *y*-coordinate in the solution of this system of equations?

$5x + 4y = 7$
$-1(5x + 2y = 1) \Rightarrow -5x - 2y = -1$

$5x + 4y = 7$
$2y = 6$
$y = 3$

A. 3
B. 1
C. −1
D. −3

18. Which point is a solution to the system of inequalities below?

$\begin{cases} 2x + y < 12 \\ 8x - 7y > 4 \end{cases}$

A) $2(2) + 3 < 12$
$4 + 3 < 12$
$7 < 12$ ✓

$8(2) - 7(3) > 4$
$16 - 21 > 4$
$-5 > 4$ ×

B) $2(3) + 2 < 12$
$6 + 2 < 12$
$8 < 12$ ✓

$8(3) - 7(2) > 4$
$24 - 14 > 4$
$10 > 4$ ✓

A. (2, 3)
B. (3, 2)
C. (4, 4)
D. (5, 5)

19. **A movie theater has 225 people. There are 110 more adults than children in the theater. Let *x* represent the number of adults and let *y* represent the number of children. Which system of equations represents this situation?**

A. $x + y = 225$
$y = 110x$

B. $x + y = 225$
$x = 110y$

C. $x + y = 225$
$x = y + 110$

D. $x + y = 225$
$y = x + 110$

20. **A student will solve for the value of *x* in the equation $\frac{3}{5}x + \frac{1}{2} = \frac{4}{7}$ in two steps. Which of the following describes the step that is the most appropriate for the student to use first?**

A. Add $\frac{4}{7}$ to both sides of the equation.

B. Multiply each side of the equation by $\frac{3}{5}$

C. Subtract $\frac{1}{2}$ from both sides of the equation.

D. Subtract $\frac{3}{5}$ from both sides of the equation.

21. **Which property does the equation below illustrate?**

$m \cdot n \cdot p \cdot q = m \cdot n \cdot q \cdot p$

A. distributive property

B. identity property

C. commutative property

D. associative property

22. **An athletic booster club is ordering drinks and chips to sell at a football game. The club treasurer uses the equation $c = 3.5d + 250$ to determine *d*, the number of cases of soft drinks the club can order if $250.00 is spent on chips, the total cost (c) is known, and each case of soft drinks costs $3.50. Which equation is equivalent to $c = 3.5d + 250$?**

A. $c + 3.5d = 250$

B. $c - 3.5 = 250d$

C. $c + 250 = 3.5d$

D. $c - 250 = 3.5d$