Algebra I Name_____

Multi-Step Equations - Fractions - WS#1

Date_____ Period____

Solve each equation.

1) $-\frac{5}{3}r - 2r = -\frac{11}{9}$

2) $-2r + \frac{1}{3} - \frac{5}{2}r = -\frac{25}{6}$

3) $\frac{3}{4}x + \frac{3}{2}x = \frac{9}{4}$

4) $\frac{8}{3}r - \frac{9}{4}r = -\frac{5}{12}$

5) $r - \frac{10}{3} + \frac{1}{2} = -\frac{11}{6}$

6) $-\frac{5}{2}a + \frac{4}{3} + \frac{2}{3} = \frac{13}{4}$

7) $\frac{8}{3}x + \frac{3}{2} + \frac{2}{3} = -\frac{23}{6}$

8) $\frac{10}{3}n - \frac{5}{2}n = \frac{5}{3}$

9) $-\frac{5}{3}n + \frac{4}{3} + \frac{3}{4} = \frac{19}{4}$

10) $x + \frac{6}{5} + 2\frac{1}{5} = \frac{9}{10}$

11) $\frac{12}{5}x - 2x = \frac{3}{10}$

12) $-\frac{7}{2}x - \frac{5}{2} + 2x = -\frac{17}{5}$

13) $\frac{3}{2}n + \frac{9}{4} - 1 = -1$

14) $\frac{5}{4}m + 1 + 4 = \frac{15}{2}$

15) $r + \frac{1}{3} - \frac{8}{5} = \frac{22}{5}$

16) $\frac{9}{5}b + \frac{3}{2}b = -\frac{33}{10}$

17) $-\frac{5}{2}n + \frac{5}{4}n = -\frac{1}{2}$

18) $-\frac{7}{4}p + 1 + \frac{2}{5} = \frac{7}{2}$

19) $\frac{3}{2}n - \frac{15}{4}n = \frac{21}{4}$

20) $p - \frac{8}{5} - \frac{2}{3}p = -\frac{7}{5}$

21) $-\frac{1}{4}n - n = -\frac{5}{6}$

22) $-\frac{5}{4}a + \frac{1}{3} + \frac{4}{3} = \frac{25}{6}$

23. $5\frac{2}{3}N = 4\frac{7}{8}$

24. $8\frac{4}{5} + N = 3\frac{2}{7}$

Name _____ Date _____

LESSON 3.1

Practice B

For use with pages 163–168

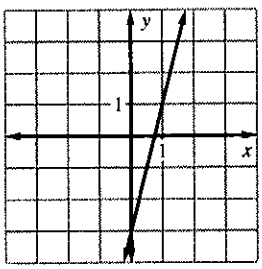
Match the linear system with its graph. Then classify the system as *consistent and independent, consistent and dependent,* or *inconsistent.*

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

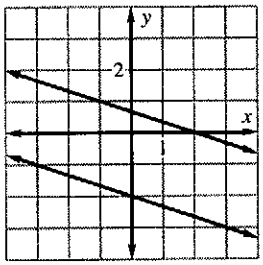
2. $4x - y = 3$
$-8x + 2y = -6$

3. $x + 3y = 2$
$-3x - 9y = 18$

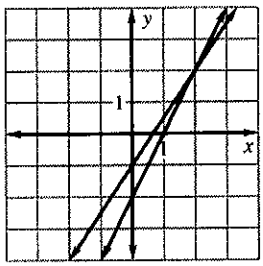
A.



B.

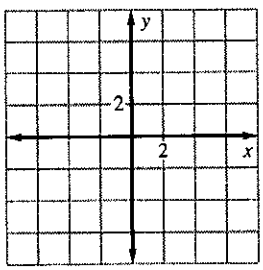


C.

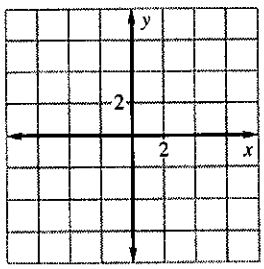


Graph the linear system and estimate the solution. Then check the solution algebraically.

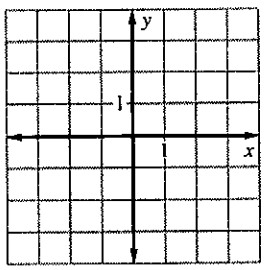
4. $2x + 3y = 8$
$-x + y = -4$



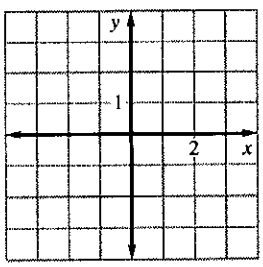
5. $3x + 5y = -4$
$2x - y = -7$



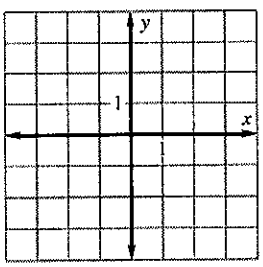
6. $x - 2y = 4$
$4x + 2y = 6$



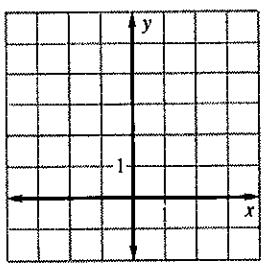
7. $3x + y = 3$
$-2x + y = 3$



8. $5x - 2y = -1$
$x - 3y = 5$



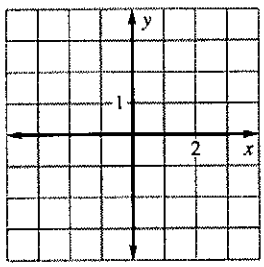
9. $x - 2y = -5$
$-2x + 6y = 18$



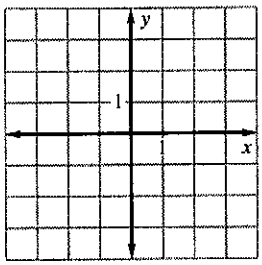
Name _____ Date _____

LESSON 3.1 **Practice B** *continued*
For use with pages 163–168

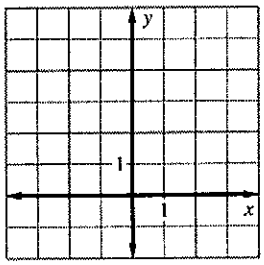
10. $3x + 3y = 3$
$x + 2y = 0$



11. $2x - 4y = 2$
$-2x + 3y = 0$



12. $5x - 3y = -17$
$4x + 5y = 16$



Solve the system. Then classify the system as *consistent and independent*, *consistent and dependent*, or *inconsistent*.

13. $x - 2y = 5$
$2x - 4y = 10$

14. $5x + y = 16$
$-3x + y = 0$

15. $2x + \frac{1}{2}y = 4$
$12x - 6y = -12$

16. Concert A vendor sold 200 tickets for an upcoming rock concert. Floor seats were \$36 and stadium seats were \$28. The vendor sold \$6080 in tickets. How many \$36 and \$28 tickets did the vendor sell?

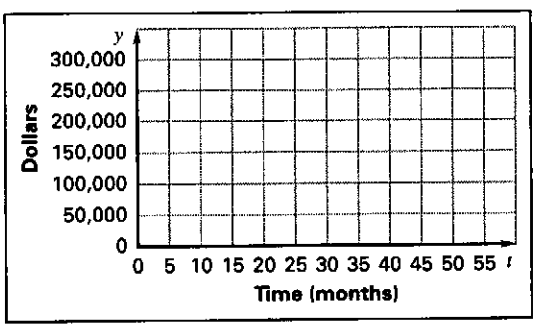
In Exercises 17–20, use the following information.

Break-Even Analysis You purchase a music store for \$115,000. The estimated monthly revenue is \$5500 and expected monthly costs are \$3200.

17. Let R represent the revenue during the first t months. Write a linear model for R.

18. Let C represent the costs during the first t months including the purchase price. Write a linear model for C.

19. Graph the revenue and cost linear models on the same coordinate plane.



20. How many months will it take until revenue and costs are equal (the "break-even point")?

Name _____ Date _____

LESSON 3.2

Practice C

For use with pages 170–177

Solve the system using the substitution method.

1. $2x + 4y = -4$
   $x - 2y = 10$

2. $2x + y = -3$
   $-6x - 4y = 0$

3. $4x + y = -1$
   $8x + 2y = -2$

4. $6x - 3y = 12$
   $-2x + y = -4$

5. $x + 2y = 11$
   $4x + 3y = 9$

6. $\frac{1}{5}x + 2y = \frac{4}{3}$
   $x + \frac{2}{3}y = 2$

Solve the system using the elimination method.

7. $2x + 4y = -10$
   $-3x - 2y = -1$

8. $6x + 12y = -7$
   $x + 2y = 2$

9. $5x + 4y = -3$
   $3x - 7y = 17$

10. $-2x + \frac{5}{3}y = -5$
    $3x - \frac{7}{2}y = \frac{9}{2}$

11. $\frac{1}{2}x + 3y = 9$
    $\frac{1}{3}x + y = 4$

12. $\frac{4}{3}x + 6y = -1$
    $4x - 4y = \frac{13}{3}$

Solve the system using any algebraic method.

13. $0.25x + 0.5y = 7.5$
    $0.4x + 0.5y = 9$

14. $0.5x - 0.3y = 1.3$
    $-1.4x + 1.2y = -2.2$

15. $2x - 3y = 1$
    $x + 2y = 5$

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

17. $0.3x - 0.2y = 1.4$
    $0.12x - 0.8y = 0.56$

18. $3.3x - 1.5y = 5.22$
    $1.1x + 2.6y = 7.32$

LESSON 3.2

19. **Labor Force** From 1840 to 1990 the percent of the labor force in farming and non-farming occupations can be modeled by the following equations where t is the number of years since 1840.

    $y = -0.48t + 67.2$ Farming occupations

    $y = 0.48t + 32.9$ Non-farming occupations

    In what year was the labor force split equally into farming and non-farming occupations? Round your answer to the nearest year.

20. **DVD Cable** In order to connect your DVD player to your TV set, you need a cable with a special adapter at both ends. An 8 foot cable costs \$24.50 and a 4 foot cable costs \$15.50. The total cost is the sum of the cost of the adapters and the cost of the cable itself. What would you expect to pay for a 6 foot cable?

21. **Challenge** Find a and b so that $(-2, -1)$ is the unique solution to the system below.

    $ax + by = -7$

    $-ax + 2by = -2$

Name _____ Date _____

LESSON 3.3

Practice B

For use with pages 180–185

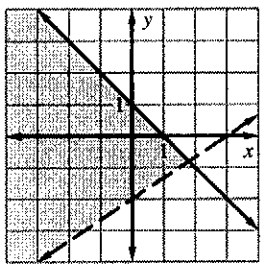
Match the system of inequalities with its graph.

1. $x + y > 1$
$-2x + 3y \geq -6$

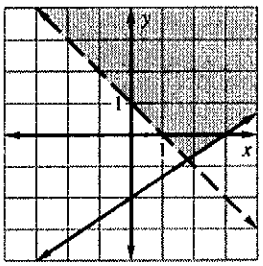
2. $x + y < 1$
$-2x + 3y < -6$

3. $x + y \leq 1$
$-2x + 3y > -6$

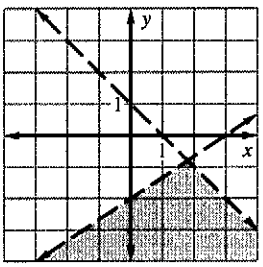
A.



B.

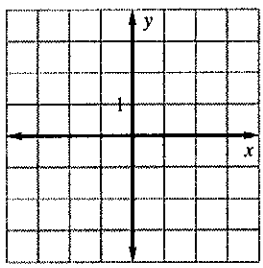


C.

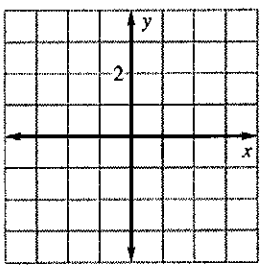


Graph the system of inequalities.

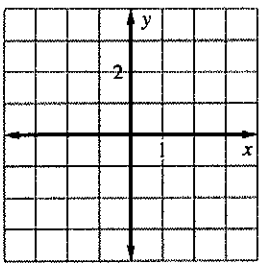
4. $x > -1$
$y > -1$



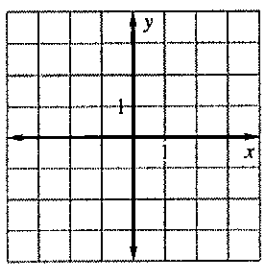
5. $x \geq -2$
$y < 1$



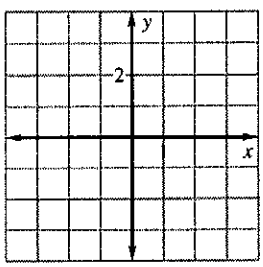
6. $y \leq 3$
$y > 1$



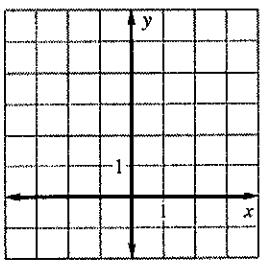
7. $x + y \geq 0$
$-x + y \geq 0$



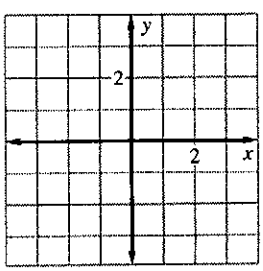
8. $y > -2x$
$2x - y > 1$



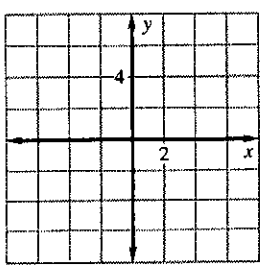
9. $2x + y < 5$
$y > 2|x - 1|$



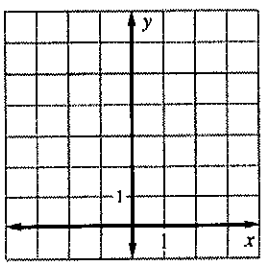
10. $x + 2y < 2$
$3x + y \leq 3$



11. $y > 2x - 3$
$x > -1$
$y < 3$



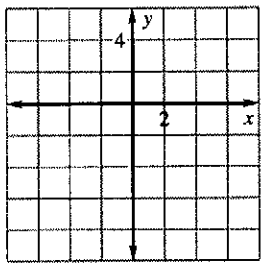
12. $y \leq |x| + 4$
$x < 2$
$y \geq 2$



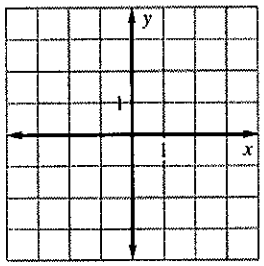
Name _____ Date _____

LESSON 3.3 **Practice B** *continued*
For use with pages 180–185

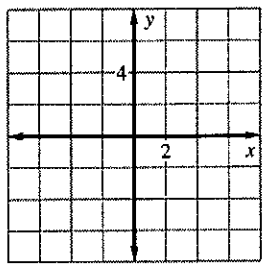
13. $y < \frac{1}{2}x + 3$
$y \geq -2x - 3$
$x \leq 3$



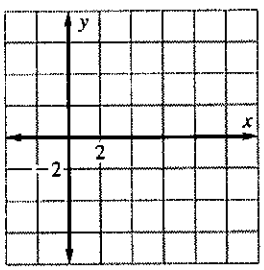
14. $x + y > -2$
$-x + y > -2$
$y \geq 0$



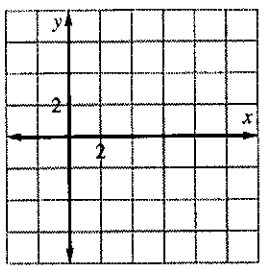
15. $y \leq -\frac{1}{3}x + 2$
$y > 3x - 3$
$x > -1$



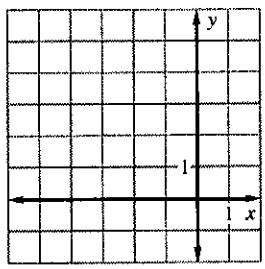
16. $x + 2y \leq 8$
$x + 4y \geq 8$
$x \geq 0$



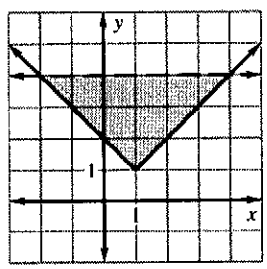
17. $x + 2y \leq 10$
$2x + y \leq 8$
$2x - 5y < 20$



18. $x + 2y \leq 5$
$2x - 4y \leq -10$
$3x + 6y > -12$



19. The diagram at the right shows the graph of a system of two inequalities. Write a system of inequalities that represents the graph.



In Exercises 20 and 21, use the following information.

Distance During a family trip, you share the driving with your dad. At most, you are allowed to drive for three hours. While driving, your maximum speed is 55 miles per hour.

20. Write a system of inequalities describing the possible number of hours t and distance d you may have driven.

21. Is it possible for you to have driven 160 miles?

Name _____ Date _____

LESSON 3.5

Practice C

For use with pages 194–201

Solve the system using the elimination method.

1. $x + 2y + 2z = -2$
$2x - y + 3z = -6$
$x - 3y + 2z = -7$

2. $-3x + y - 3z = -13$
$2x - y + z = 8$
$4x + 2y + 3z = 2$

3. $2x + 4y - 4z = 6$
$x + 2y - 2z = 1$
$5x - 3y + z = 5$

Solve the system using the substitution method.

4. $2x + 2y - z = 9$
$3x - y + 3z = -1$
$x - 2y + z = 3$

5. $x - 3y - z = -1$
$2x + 2y + 2z = 0$
$3x + y + 3z = -2$

6. $4x - 2y + 3z = 19$
$x + 4y - 2z = -3$
$2x + 6y + z = 5$

Solve the system using any algebraic method.

7. $2x + 5y - 4z = -3$
$4x + 2y - 2z = 4$
$2x - 8y - 2z = 21$

8. $2x + 2y - z = -1$
$-2x + 2y + 3z = -1$
$3x - y + 4z = 3$

9. $3x - y - 2z = 6$
$2x + 3y + 3z = 5$
$4x + 2y + z = 4$

10. $x + 2y - z = 4$
$3x - y + 4z = -2$
$6x + 5y + z = 10$

11. $x - 2y + z = \frac{7}{6}$
$2x + y - 3z = \frac{53}{12}$
$3x + 3y + 2z = \frac{23}{12}$

12. $x - 2y + 3z = 8$
$4x - 2y - 2z = -6$
$-2x + y + z = 3$

13. $w + x - 2y + z = 1$
$2w - x + 3y - 2z = 2$
$w + 3x - y + 4z = 7$
$3w + x - y + 2z = 5$

14. $w + x + 2y + z = 2$
$2w + 2x + y + 3z = 0$
$2w - 4x - 2y - z = 7$
$-w + 2x + y - z = -2$

15. $-w + 3x - y - 4z = 6$
$2w + 4x + 2y - z = 6$
$w - x + y + 3z = -4$
$3w - x + 3y + z = 4$

In Exercises 16–19, use the following information.

Polynomial Curve Fitting You can use a system of equations to find a polynomial of degree n whose graph passes through $(n + 1)$ points. Consider a polynomial of degree 2, $y = ax^2 + bx + c$. Suppose $(1, -2)$, $(-2, 7)$, and $(-5, -2)$ lie on the graph. Using the point $(1, -2)$, the following equation can be derived:

$y = ax^2 + bx + c$
$-2 = a(1)^2 + b(1) + c$
$-2 = a + b + c$

The equation $a + b + c = -2$ becomes the first equation in the system.

16. Write the equation in the system that corresponds to the point $(-2, 7)$.

17. Write the equation in the system that corresponds to the point $(-5, -2)$.

18. Write a system of equations for the coefficients of a polynomial of degree 2 that passes through $(1, -2)$, $(-2, 7)$, and $(-5, -2)$. Solve the system.

19. Write the polynomial.