NAME _____ DATE _____ PERIOD _____

SCORE _____

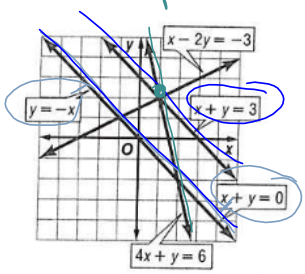
5 Chapter 5 Test, Form 2C

one solution – intersection point

No Solution – Parallel lines
variables cancel and 4=12
False statement ex.

Infinitely many solutions – on top of each other
same line
multiples of each other
Variables cancel and true statement ex. 4=4

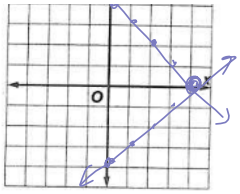
Use the graph at the right to determine whether each system has *no* solution, *one* solution, or *infinitely many* solutions.



1. $y = -x$
   $x + y = 3$
   no solution

2. $x - 2y = -3$
   $4x + y = 6$
   (1, 2)

*solutions must be written as points

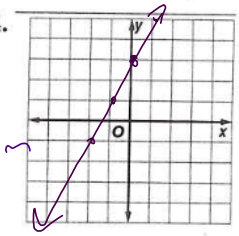


Graph each system of equations. Then determine whether the system has *no* solution, *one* solution, or *infinitely many* solutions. If the system has one solution, name it.

3. $y = -x + 4$
   $y = x - 4$
   (4, 0)
   To graph a line; put in slope intercept form
   ① start at b
   ② move slope

4. $2x - y = -3$
   $6x - 3y = -9$
   IMS

5. $x + y = -2$
   $x + y = 3$
   No solution



y = 2x + 3
y = −6x − 9
y = 2x + 3

Use substitution to solve each system of equations. If the system does not have exactly one solution, state whether it has *no* solution or *infinitely many* solutions.

① solve for a variable
② sub into other equation
③ solve for variable
④ plug into one of the equations
⑤ solve for other variable

6. $y = 3x$
   $x + y = 4$
   $x + 3x = 4$
   $4x = 4$
   $x = 1$
   $y = 3$
   (1, 3)

7. $5x - y = 10$
   $7x - 2y = 11$
   $y = 5x - 10$
   $7x - 2(5x - 10) = 11$
   $7x - 10x + 20 = 11$
   $-3x + 20 = 11$
   $-3x = -9$
   $x = 3$
   $y = 5(3) - 10$
   $y = 15 - 10$
   $y = 5$
   (3, 5)

8. $x - 6y = 4$
   $3x - 18y = 4$
   $x = 6y + 4$
   $3(6y + 4) - 18y = 4$
   $18y + 12 - 18y = 4$
   No solution

9. $x - 5y = 10$
   $2x - 10y = 20$
   I.M.S

* don't forget to check your distributive
* look for variable w/ coefficient of 1 *

Use elimination to solve each system of equations.

10. $x + 4y = -8$
    $x - 4y = -16$
    $2x = -24$
    $x = -8$
    $(-8) + 4y = -8$
    $4y = 0$
    $y = 0$
    (−8, 0)

11. $2x + 5y = 3$
    $-x + 3y = -7$) · 2
    $-2x + 6y = -14$
    $11y = -11$
    $y = -1$
    $2x + 5(-1) = 3$
    $2x - 5 = 3$
    $2x = 8$
    $x = 4$
    (4, −1)

12. $2x - 5y = -16$
    $-2x + 3y = 12$
    $-2y = -4$
    $y = 2$
    $x = -3$
    (−3, 2)

13. $2x + 5y = 9$) · −1
    $2x + y = 13$
    $-2x - y = -13$
    $y = -1$
    $x = 6$
    (6, −1)

14. $2x - 3y = 1$) · 4
    $5x + 4y = 14$) · 3
    $8x - 12y = 4$
    $+ 15x + 12y = 42$
    $23x = 46$
    $x = 2$
    (2, 1)

15. $x - 3y = 10$
    $-1 \cdot (x + 2y = 15)$
    $2(2) - 3y = 1$
    $4 - 3y = 1$
    $-4 \quad -4$
    $-3y = -3$
    $y = 1$

9. $x = 5y + 10$
   $2(5y + 10) - 10y = 20$
   $10y + 20 - 10y = 20$
   $20 = 20$ True

① Cancel variable by adding if needed; multiply a whole equation by a number like (−1)
② Solve for left over variable
③ plug into any equation and solve for other variable

NAME _____ DATE _____ PERIOD _____

5 Chapter 5 Test, Form 2C *(continued)*

Determine the best method to solve each system of equations. Then solve the system.

16. $x = 2y - 1$
$3x + y = 11$
Substitution
variable is already solved for

17. $5x - y = 17$
$3x - y = 13$
both work
$y = 5x - 17$
$y = 3x - 13$

Determine the best method to solve each system of equations. Then solve the system.

18. $8x + 3y = 15$
$5x - 2y = -10$
elimination by multiplication

19. $2x - 4y = 16$
$4x + 4y = -4$
opposite coefficients
elimination

20. The sum of two numbers is 17 and their difference is 29. What are the two numbers?
23 and -6
$x + y$
$x - y$

21. Adult tickets for the school musical sold for \$3.50 and student tickets sold for \$2.50. Three hundred twenty-one tickets were sold altogether for \$937.50. How many of each kind of ticket were sold?
define variables
A: # of adult tickets
S: # of student tickets
object equation $A + S = 321$ tickets
money equation $3.5A + 2.5S = 937.50$

22. Ayana has \$2.35 in nickels and dimes. If she has 33 coins in all, find the number of nickels and dimes.
n: # of nickels
d: # of dimes
object equation $n + d = 33$ coins
money equation $0.05n + 0.1d = 2.35$

23. The largest county in the state of New York is 1769 square miles larger than the smallest county in the same state. The size of the largest county is 64 times the size of the smallest county plus five square miles. How large is the smallest county in the state of New York?
x: # of mi^2 largest
y: # of mi^2 smallest
value!!!
$x = 1769 + y$
$x = 64 \cdot y + 5$

For Questions 24 and 25, use the following information.

The Martinez Company manufactures two types of industrial fans, standard and economy. These items are built using machines and manual labor. The table gives the time requirements at each type of workstation for each type of fan.

	Hours per Standard Fan	Hours per Economy Fan	Total Hours Each Week
Machines	3	3	1500
Manual Labor	2	1	800

24. Define variables and formulate a system of linear equations from this situation.
mixture
object equation $x + y =$ total liquid
percentage equation $\%x + \%y = \%$ total
ex. one solution has 75% salt and another has 90% salt. There needs to be 10 cups of 85% salt solution. How many cups of each is needed?
x: # of cups at 75%
y: # of cups at 90%

25. How many standard fans can be made in a week?
$x + y = 10$
$.75x + .90y = .85(10)$
$x = 10 - y$
$.75(10 - y) + .90y = 8.5$
$7.5 - .75y + .90y = 8.5$
$7.5 + .15y = 8.5$
$-7.5 \quad -7.5$
$\frac{.15y}{.15} = \frac{1}{.15}$
$y = 6\frac{2}{3}$ cups at 90%
$x + 6\frac{2}{3} = 10$
$-6\frac{2}{3} \quad -6\frac{2}{3}$
$x = 3\frac{1}{3}$
$x = 3\frac{1}{3}$ cups at 75%
substitution method

Bonus Mavis is 5 years older than her brother. Five years ago she was 2 times older than her brother. How old is each now?