

**ANSWER SHEET**

Instructions: Place your answers to all problems on this sheet. Attach your work for the problems on the back. If answer doesn't fit on the answer sheet and is on your solution paper, indicate that in the answer slot below by writing "on solution paper".

1. \_\_\_\_\_

15. \_\_\_\_\_

2. \_\_\_\_\_

16. \_\_\_\_\_

3. \_\_\_\_\_

17. \_\_\_\_\_

4. \_\_\_\_\_

18. \_\_\_\_\_

5. \_\_\_\_\_

19. \_\_\_\_\_

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11. \_\_\_\_\_

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13. \_\_\_\_\_

27. \_\_\_\_\_

14. \_\_\_\_\_

28. \_\_\_\_\_

MATH 100

Worksheet: \_\_\_\_\_

29. \_\_\_\_\_

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55. \_\_\_\_\_

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60. \_\_\_\_\_

Solve the problems on a separate sheet of paper. Also, write your answers on the answer sheet. You will get credit for **10 correct answers**.

Section 4.1 – Solving Systems of Linear Equations by Graphing

Decide whether the given ordered pair is a solution of the given system.

1.  $(-3, -1)$   
 $2x + 3y = 11$   
 $3x - 2y = 9$

2.  $(-1, -7)$   
 $x - y = -6$   
 $-2x + 3y = -19$

Solve each system by graphing both equations on the same axis.

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

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

Solve each system of equations by graphing both equations on the same axes. If the two equations produce parallel lines, write no solution. If the two equations produce the same line, write infinite number of solutions.

5.  $x + 2y = 4$   
 $8y = -4x + 16$

6.  $2x + 3y = 0$   
 $6x = -9y$

Without graphing, answer the following questions for each linear system.

- i. Is the system inconsistent, are the equations dependent, or neither
- ii. Is the graph a pair of intersecting lines, a pair of parallel lines, or one line?
- iii. Does the system have one solution, no solution, or an infinite number of solutions?

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

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

4.2 Solving Systems of Linear Equations by Substitution

Solve each system by the substitution method. First simplify the equations where necessary. Check each solution.

9.  $3x + 2y = 14$   
 $y = x + 2$

11.  $7x + 2y = 2x - y + 19$   
 $4x + 3y = 2x - 2y$

10.  $3x - 21 = y$   
 $y + 2x = -1$

12.  $2x + 7y = 5y - 3x + 16$   
 $2y = -x + y + 2$

13.  $48x - 56y = 32$   
 $21y - 18x = -12$

Solve each system by the addition or substitution method.

$$\begin{aligned} 14. \quad \frac{5}{3}x + y &= 12 \\ x + \frac{1}{2}y &= 7 \end{aligned}$$

$$\begin{aligned} 15. \quad \frac{x}{2} - \frac{y}{3} &= -8 \\ \frac{x}{4} - \frac{y}{6} &= -4 \end{aligned}$$

#### Section 4.3 – Solving Systems of Linear Equations by Elimination

Solve each system by the elimination method.

$$\begin{aligned} 16. \quad 2x - y &= 10 \\ 3x + y &= 10 \end{aligned}$$

$$\begin{aligned} 18. \quad 3x - 4y &= 16 \\ 4x + 5y &= -20 \end{aligned}$$

$$\begin{aligned} 17. \quad 8x + 2y &= 14 \\ 3x - 2y &= -14 \end{aligned}$$

$$\begin{aligned} 19. \quad 4x - 2y &= -8 \\ 2x - y &= 4 \end{aligned}$$

#### Section 4.4 – Applications of Linear Systems

Use a system of equations to solve each problem.

20. Find two numbers whose sum is  $-66$  and whose difference is  $-116$ .

21. The receipts from a concert were \$2100. The price for a regular ticket was \$6 and the student tickets were half the regular price. If 400 tickets were sold, how many of each type were there?

Use a system of equations to solve each problem about mixtures.

22. Ben wishes to blend candy selling for \$1.60 a pound with candy selling for \$2.50 a pound to get a mixture that will be sold for \$1.90 a pound. How many pounds of the \$1.60 and the \$2.50 candy should be used to get 30 pounds of the mixture?

23. How many liters of 75% solution should be mixed with a 55% solution to get 70 liters of 63% solution?

Use a system of equations to solve each problem about distance, rate, and time. Recall  $d = r \cdot t$

24. Two bicyclists leave from L.A. and ride in opposite directions. One travels  $1\frac{1}{2}$  times as fast as the other. After 2 hours, they are 40 miles apart. Find the speed of each bicyclist.

#### Section 4.5 – Solving Systems of Linear Inequalities

Graph the solution of each system of linear inequalities.

$$\begin{aligned} 25. \quad 3x - y &\leq 3 \\ x + y &\leq 0 \end{aligned}$$

$$\begin{aligned} 27. \quad 6x - y &> 6 \\ 2x + 5y &< 10 \end{aligned}$$

$$\begin{aligned} 26. \quad 3x + 5y &\geq 15 \\ y &\geq x - 2 \end{aligned}$$

$$\begin{aligned} 28. \quad 4x - 3y &> 12 \\ x &< 4 \end{aligned}$$