

## REVIEW TEST 2 - Chapter 4

To prepare for the test, study the following:

### Systems of Linear Equations in Two Variables ( Sections 4.1, 4.2, 4.3, 4.4)

1. Complete each statement. It is not necessary to rewrite the entire statement.

- The graph of a linear equation is a \_\_\_\_\_.
- If the graphs of two different equations are parallel lines, they have \_\_\_\_\_ common solutions.
- If the graphs of two equations coincide, the equations have \_\_\_\_\_ common solutions.
- If the graphs of two equations have one point of intersection, the equations have \_\_\_\_\_ common solutions.

2. a) What is a system of equations? Give an example of a system of two equations in two variables.

b) In your own words, explain what it means to solve a system of two equations in two variables.

c) What are the three methods used to solve a system of linear

3. Solve each system using the substitution method or the addition method.

$$\begin{array}{ll}
 \text{a) } \begin{cases} 2x + y = 1 \\ 5x - y = 20 \end{cases} & \text{b) } \begin{cases} x + 3y = 25 \\ 2x = y + 8 \end{cases} & \text{c) } \begin{cases} 2x + 3y = 0 \\ 4x + 6y = 3 \end{cases} & \text{d) } \begin{cases} \frac{3x}{4} + \frac{5y}{8} = \frac{10}{4} \\ \frac{x}{4} + \frac{y}{8} = 2 \end{cases}
 \end{array}$$

$$\begin{array}{ll}
 \text{e) } \begin{cases} -5A = 15B + 1 \\ A + 3B = -5 \end{cases} & \text{f) } \begin{cases} 9x + 3y = 5 \\ 3x = 4 - y \end{cases} & \text{g) } \begin{cases} -x + 5y = -1 \\ 3x - 15y = 3 \end{cases}
 \end{array}$$

$$\begin{array}{ll}
 \text{h) } \begin{cases} -5y + 6y = 3x + 2(x - 5) - 3x + 5 \\ 4(x + y) - x + y = -12 \end{cases} & \text{i) } \begin{cases} \frac{y}{3} = \frac{x}{2} - 3 \\ 2x - 4y = 0 \end{cases} & \text{j) } \begin{cases} x - 5y = 1 \\ -\frac{1}{2}x + \frac{5}{2}y = \frac{3}{4} \end{cases}
 \end{array}$$

4. Translate each problem into a system of simultaneous equations. DO NOT SOLVE.

a) One number is nine times another. Their sum is 75.

b) The sum of two numbers is 24. One number is six times the other.

c) The length of a rectangle is six times its width. The perimeter of the rectangle is 120 feet.

d) The mathematics department has \$40,000 to set up a new computer lab. They will need one printer for every four terminals they purchase. If a printer costs \$560 and a terminal costs \$1520, how many of each should they buy?

5. Mary buys 3 six-pack cartons of cola and 2 bags of potato chips for \$5.10. She later buys another carton of cola and 3 bags of potato chips for \$3.20. What is the price of a carton of cola? What is the price of a bag of potato chips?

6. A biologist has two brine solutions, one containing 10% salt and another containing 30% salt. He wants to mix the two solutions together to make 1 liter of a solution that is 15% salt. Set up and solve a system of equations to find how much of the 10% solution and how much of the 30% solution he should use.

7. A boat can travel 24 miles downstream in 2 hours and can make the return trip in 3 hours. Find the speed of the boat in still water.

8. An investment of \$950 at one rate of interest and \$1200 at a higher rate together generate an annual income of \$205.5. If the investment rates differ by 1%, find the lower rate.

### Textbook

Sections 4.1, 4.2, 4.3 & 4.4: All homework problems

Chapter 4 Review ( page 306): 15, 17, 19 – 22, 29 – 34 - You can turn in these problems (Chapter 4 review) for 10 points extra credit towards Test 2.