

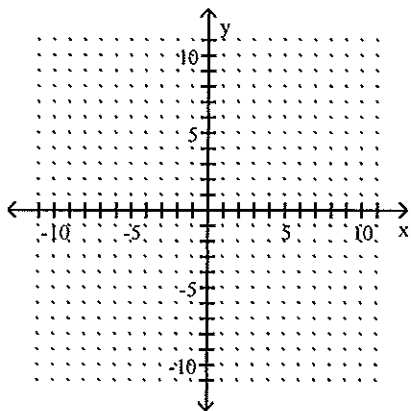
Name \_\_\_\_\_

**MULTIPLE CHOICE.** Choose the one alternative that best completes the statement or answers the question.

Find the solution set of the system by graphing the equations by hand. If the system is inconsistent or dependent, say so.

$$\begin{aligned} 1) \quad & y = 2x + 3 \\ & y = -3x - 7 \end{aligned}$$

1) \_\_\_\_\_



A) (-2, 1)

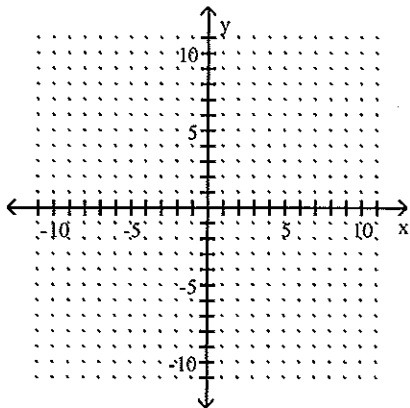
B) (2, 1)

C) (-2, 0)

D) (-2, -1)

$$\begin{aligned} 2) \quad & y = 4x + 7 \\ & 16x - 4y = -28 \end{aligned}$$

2) \_\_\_\_\_



A) (0, 0)

B) (0, 7)

C) all points on the line  $y = 4x + 7$ ; dependent system

D) empty set; inconsistent system

Solve the problem.

- 3) An electronics company kept comparative statistics on two products, A and B. For the years 1980 to 1988, the total number of Product A ever sold (in thousands) is given by the equation  $A(x) = 71x + 280$ , where  $x$  is the number of years since 1980. For that same period, the total number of Product B ever sold (in thousands) is given by the equation  $B(x) = -30x + 434$ , where  $x$  is the number of years since 1980. Choose the statement that most accurately describes the solution of the system of equations.
- A) At about 1.5 years (to the nearest tenth) from 1980, both products had sold the same amount.  
B) Product B sold 1.5 times as many as Product A.  
C) At some point between 1980 and 1988, both products had sold 1500 each.  
D) When 387,000 of Product A had been sold, Product B had sold 1.5 times as many.

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

- 4) Some values of  $y = -3x + 2$  and  $y = 5x - 6$  are listed in the table below.

x	0	1	2	3	4	5	6	7	8
$y = -3x + 2$	2	-1	-4	-7	-10	-13	-16	-19	-22
$y = 5x - 6$	-6	-1	4	9	14	19	24	29	34

Use the table to solve the system.

$$y = -3x + 2$$
$$y = 5x - 6$$

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Solve the system by substitution. If the system is inconsistent or dependent, say so.

- 5)  $x + y = -7$   
 $x = y + 19$   
A) (6, 13)                      B) (7, 6)                      C) (6, -13)                      D) (7, -13)                      5) \_\_\_\_\_
- 6)  $6x + 9y = -45$   
 $-4x - 3y = 15$   
A) (0, -5)                      B) (0, -4)  
C) (-1, -4)                      D) empty set solution; inconsistent system                      6) \_\_\_\_\_
- 7)  $x = 6 - 4y$   
 $-5x - 20y = -30$   
A) (6, 0)  
B) (0, 0)  
C) infinite number of solutions of the equation  $x = 6 - 4y$ ; dependent system  
D) empty set solution; inconsistent system                      7) \_\_\_\_\_

Use substitution to solve the system, with coordinates of solutions rounded to the second decimal place. Verify your work by using "intersect" on a graphing calculator.

- 8)  $y = -3.43x - 7.19$   
 $y = 2.89x - 1.05$   
A) (-0.97, 3.86)                      B) (-3.86, 0.97)                      C) (-0.97, -3.86)                      D) (-3.86, -0.97)                      8) \_\_\_\_\_

Solve the system by elimination. If the system is inconsistent or dependent, say so.

9)  $x + y = -7$   
 $x - y = -7$

A) (0, 7)

B) (-7, 0)

C) (0, -7)

D) (7, 0)

9) \_\_\_\_\_

10)  $2x + 4y = 14$

$2x + 2y = 18$

A) (-11, 2)

B) (11, -2)

C) (-11, 4)

D) (-2, 11)

10) \_\_\_\_\_

11)  $x - y = 4$

$\frac{1}{2}x + \frac{1}{2}y = 1$

A) (-3, 0)

C) (3, -1)

B) (2, 0)

D) empty set solution; inconsistent system

11) \_\_\_\_\_

12)  $2x - 7y = 19$

$7x - 4y = 5$

A) (-1, 3)

B) (1, 3)

C) (-1, -3)

D) (1, -3)

12) \_\_\_\_\_

Solve the system by either elimination or substitution. Verify your work by using "intersect" on your graphing calculator of by checking that your result satisfies both equations of the system.

13)  $x = -7y - 33$

$-3x + 6y = -9$

A) (5, -3)

C) empty set solution; inconsistent system

B) (-6, -3)

D) (-5, -4)

13) \_\_\_\_\_

14)  $2x + 5y = 16$

$4x - 4y = 29.2$

A) all points on the line  $2x + 5y = 16$ ; dependent system

B) (7.5, 0.2)

C) (0.2, 7.5)

D) empty set solution; inconsistent system

14) \_\_\_\_\_

**SHORT ANSWER.** Write the word or phrase that best completes each statement or answers the question.

Solve the problem.

15) The amount of highway mileage (in thousands of miles)  $U(t)$  and  $R(t)$  in urban areas and rural areas, respectively, can be modeled by the functions

$$U(t) = 12.88t + 625.48$$

$$R(t) = -13.38t + 3286.68$$

where  $t$  represents the number of years since 1980.

i) Compare  $U(0)$  with  $R(0)$ . What do these values mean in terms of highway mileage?

ii) Compare the slopes of  $U$  and  $r$ . What do these slopes mean in terms of highway mileage?

iii) Predict when the highway mileage in urban areas will equal the highway mileage in rural areas.

15) \_\_\_\_\_

- 16) Company A sold 14.7 million dollars of electronics equipment in 2000 and its sales have increased by 2.1 million dollars each year. Company B sold 19.4 million dollars of electronic equipment in 2000 and its sales have increased by 1.7 million dollars each year. 16) \_\_\_\_\_

- i) Let  $A(t)$  and  $B(t)$  represent the sales (in millions of dollars) by company A and company B, respectively, at  $t$  years since 2000. Find equations for A and B.  
 ii) Predict when sales at the companies will be equal. What will that sales be?

**MULTIPLE CHOICE.** Choose the one alternative that best completes the statement or answers the question.

- 17) The table below lists women's and men's total enrollments at all institutions of higher learning in Country X for various years. 17) \_\_\_\_\_

College Enrollments (Millions)

Year	Women	Men
1988	6.3	5.9
1990	7.4	6.5
1994	8.1	6.8
2002	8.9	7.1
2006	9.2	7.4

The enrollments (in millions) of women and men, respectively, can be modeled by the system

$$W(t) = 0.14t + 5.69$$

$$M(t) = 0.07t + 5.62$$

where  $t$  is the number of years since 1980.

- (i) Use substitution or elimination to estimate when women's and men's enrollments were approximately equal. What was that enrollment?  
 (ii) Use the models to predict the total enrollment of women and men in 2012.
- A) (i) The system cannot be solved.  
 (ii) In 2012,  $W(30) = 9.89$  million students and  $M(30) = 7.72$  million students.  
 B) (i) In about 1979, women's and men's enrollment was about 6.3 million students.  
 (ii) In 2012,  $W(33) = 10.31$  million students and  $M(33) = 7.93$  million students.  
 C) (i) In about 1977, women's and men's enrollment was about 5.9 million students.  
 (ii) In 2012,  $W(31) = 10.03$  million students and  $M(31) = 7.79$  million students.  
 D) (i) In about 1979, women's and men's enrollment was about 5.6 million students.  
 (ii) In 2012,  $W(32) = 10.17$  million students and  $M(32) = 7.86$  million students.
- 18) A flat rectangular piece of aluminum has a perimeter of 64 inches. The length is 16 inches longer than the width. Find the width. 18) \_\_\_\_\_  
 A) 8 in.                      B) 32 in.                      C) 40 in.                      D) 24 in.
- 19) A theatre sells two types of tickets to their plays; children's tickets and adult tickets. For today's performance they have sold a total of 1060 tickets. Also, they have sold 4 times as many adult tickets as children's tickets. How many adult tickets have they sold? 19) \_\_\_\_\_  
 A) 841 adult tickets                      B) 854 adult tickets  
 C) 845 adult tickets                      D) 848 adult tickets

- 20) A person plans to invest a total of \$190,000 in a CD at 7% annual interest and in a mutual fund that has a 3-year average annual interest of 12%. Let  $x$  and  $y$  represent the money (in dollars) invested in the CD and the mutual fund, respectively. How much money should be invested in each account to earn a total of \$20,800 in one year? 20) \_\_\_\_\_
- A) \$160,000 at 12% and \$30,000 at 7%                      B) \$150,000 at 12% and \$40,000 at 7%  
C) \$140,000 at 7% and \$50,000 at 12%                      D) \$150,000 at 7% and \$40,000 at 12%
- 21) A chemist needs 150 milliliters of a 53% solution but has only 18% and 93% solutions available. Find how many milliliters of each that should be mixed to get the desired solution. 21) \_\_\_\_\_
- A) 70 ml of 18%; 80 ml of 93%                      B) 80 ml of 18%; 70 ml of 93%  
C) 67 ml of 18%; 83 ml of 93%                      D) 83 ml of 18%; 67 ml of 93%
- 22) Chandra has 5 liters of a 64% solution of sodium hydroxide in a container. What is the amount and concentration of sodium hydroxide solution she must add to this in order to end up with 8 liters of 67% solution? 22) \_\_\_\_\_
- A) 3 L of 70% solution                      B) 3 L of 75% solution  
C) 3 L of 72% solution                      D) 3 L of 73% solution

Answer Key

Testname: CHAPTER 6 TEST 1

- 1) D
- 2) C
- 3) A
- 4) (1, -1)
- 5) C
- 6) A
- 7) C
- 8) C
- 9) B
- 10) B
- 11) C
- 12) C
- 13) D
- 14) B
- 15) i)  $U(0) = 625.48$ ,  $R(0) = 3286.68$ ; There is more highway mileage in rural areas than urban areas in 1980.  
ii) The slope of  $U$  is 12.88 and the slope of  $R$  is -13.38; the mileage is increasing in urban areas by 12,880 miles per year. The mileage is decreasing in rural areas by 13,380 miles per year.  
iii) 2081
- 16) i)  $A(t) = 2.1t + 14.7$  and  $B(t) = 1.7t + 19.4$   
ii) 2012; \$39.4 million
- 17) D
- 18) A
- 19) D
- 20) B
- 21) B
- 22) C