Exam

Name_____

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

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

1) $x + y = -6$
$x - y = 4$; (-1, -5) 1) _____

A) No B) Yes

2) $x + y = -2$
$x - y = 10$; (-4, -6) 2) _____

A) Yes B) No

3) $3x + y = -1$
$4x + 3y = 7$; (-2, 5) 3) _____

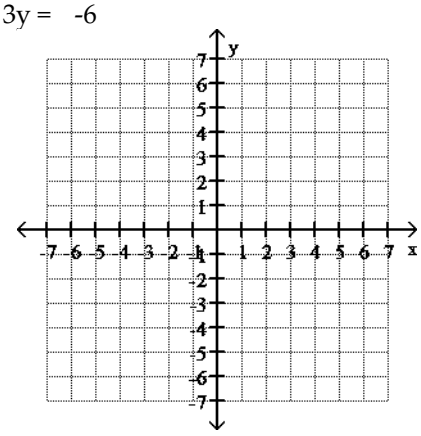
A) Yes B) No

4) $2x + y = 1$
$3x + 2y = 4$; (-2, -5) 4) _____

A) Yes B) No

Solve the system by graphing.

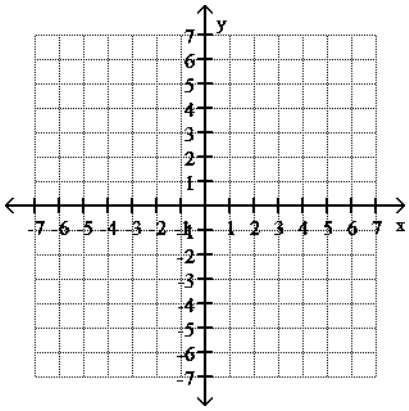
5) $5x + y = -16$
$x + 3y = -6$



5) _____

A) {(3, -1)} B) {(-3, -4)} C) {(-3, -1)} D) {(-4, 4)}

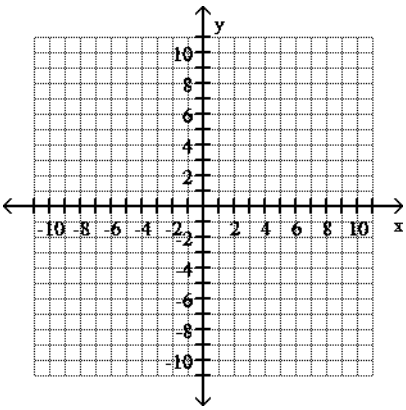
6) $2x + 3y = 18$
$3x + 2y = 22$



6) _____

A) {(6, 2)} B) {(2, 16)}
C) {(2, 6)} D) ∅; inconsistent system

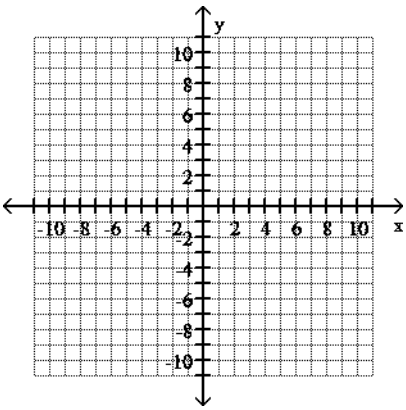
7) x - y = 2
x + y = 10



7) _____

A) {(12, 8)} B) {(4, 6)} C) {(8, 12)} D) {(6, 4)}

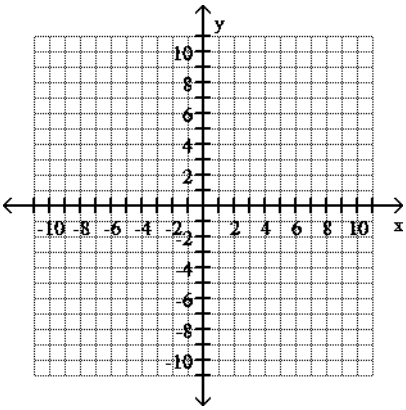
8) y = 20 - 3x
x + 5y = 16



8) _____

A) {(6, 5)} B) {(7, -1)} C) {(6, 2)} D) {(-6, 2)}

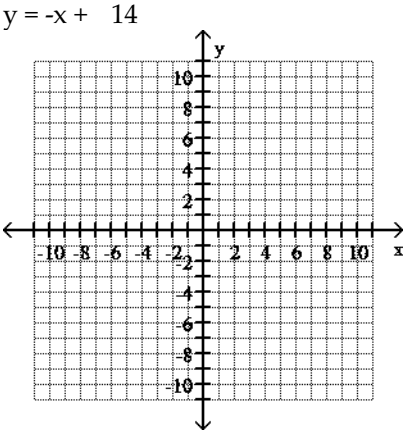
9) x = y - 2
5x = 4y



9) _____

A) {(0, 0)} B) {(10, 8)} C) {(8, 10)} D) {(-8, 6)}

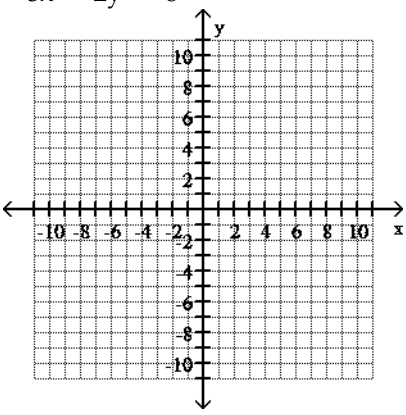
10) y = x - 4
y = -x + 14



10) _____

A) {(9, 5)} B) {(5, 9)} C) {(10, 18)} D) {(18, 10)}

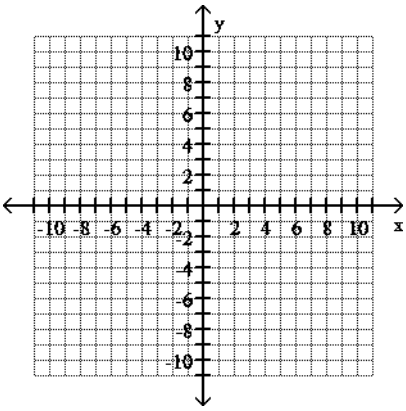
11) 4x + 2y = 34
3x - 2y = 8



11) _____

A) {(4, -4)} B) {(6, 5)}
C) {(5, 6)} D) ∅; inconsistent system

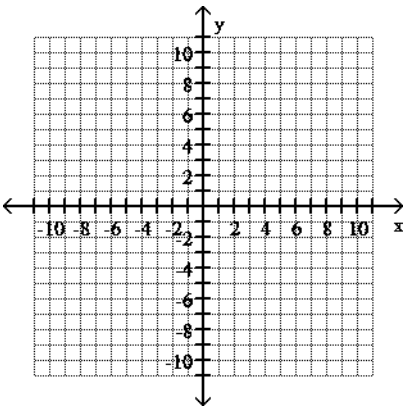
12) x + y = 6
5x - y = 30



12) _____

A) {(0, 5)} B) {(0, 6)} C) {(6, 0)} D) {(6, 5)}

13) 5x + y = 30
-x + y = -6



13) _____

A) {(0, 6)} B) {(0, - 6)} C) {(- 6, 0)} D) {(6, 0)}

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

14) $y = -\frac{1}{6}x$

-2x + 6y = 6 14) _____

A) $\left\{\left(2, \frac{1}{3}\right)\right\}$ B) $\left\{\left(-2, -\frac{1}{3}\right)\right\}$

C) ∅; inconsistent system D) $\left\{\left(-2, \frac{1}{3}\right)\right\}$

15) x = -17 - 3y
-4x + 2y = -2 15) _____

A) {(2, -4)} B) {(-2, -5)}
C) {(-3, -4)} D) ∅; inconsistent system

16) x + y = 1
y = 2x - 5 16) _____

A) {(1, 1)} B) {(2, -1)} C) {(-1, 2)} D) {(3, -2)}

17) $7y - 7 = -x$
$4x - 3y = -3$ 17) _____

A) {(0, 1)} B) {(1, 0)} C) {(0, 0)} D) {(1, 1)}

18) $5x - 2y = -1$
$x + 4y = 35$ 18) _____

A) {(3, 9)} B) {(3, 8)} C) {(2, 8)} D) {(2, 9)}

19) $5x + 3y = 80$
$2x + y = 30$ 19) _____

A) {(0, 10)} B) {(0, 0)} C) {(10, 10)} D) {(10, 0)}

20) $\frac{3}{2}x - \frac{1}{3}y = -18$
$\frac{3}{4}x + \frac{2}{9}y = -9$ 20) _____

A) {(0, -12)} B) {(-12, 0)} C) {(0, 12)} D) {(12, 0)}

21) $\frac{7}{3}x + \frac{5}{4}y = 4$
$\frac{5}{6}x - 2y = 21$ 21) _____

A) {(-6, -8)} B) {(-6, 8)} C) {(6, 8)} D) {(6, -8)}

22) $x + y = 4$
$x + y = 2$ 22) _____

A) ∅; inconsistent system B) {(4, 2)}
C) {(0, 6)} D) $\{(x, y) | x + y = 2\}$; dependent equations

23) $x + y = 4$
$7x + 7y = 28$ 23) _____

A) {(0, 0)} B) ∅; inconsistent system
C) $\{(x, y) | x + y = 4\}$; dependent equations D) {(9, -5)}

24) $y = 1.5x$
$0.9x + 1.4y = 12.0$ 24) _____

A) {(6, 4)} B) {(4, -6)} C) {(4, 6)} D) {(-4, 6)}

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

25) $-x + 2y = 6$
$9x - 2y = 26$ 25) _____

A) {(5, 4)} B) {(-5, 4)}

C) {(4, 5)} D) ∅; inconsistent system

26) $x + 4y = 13$
$2x + 3y = 6$ 26) _____

A) {(-4, 5)} B) {(-3, 4)}
C) {(3, 5)} D) ∅; inconsistent system

27) $x - 4y = -4$
$-4x - 3y = -3$ 27) _____

A) {(1, 0)} B) {(-1, 0)}
C) {(0, 1)} D) ∅; inconsistent system

28) $x + 3y = -6$
$2x + 4y = -12$ 28) _____

A) {(-5, -6)} B) {(-6, 0)}
C) {(-5, -1)} D) ∅; inconsistent system

29) $9x + 8y = -71$
$-3x - 5y = 26$ 29) _____

A) {(-8, 0)} B) {(-7, -1)}
C) {(-7, 0)} D) ∅; inconsistent system

30) $-4x - 5y = -20$
$-2x + 3y = 12$ 30) _____

A) {(0, 5)} B) {(-1, 5)}
C) {(0, 4)} D) ∅; inconsistent system

31) $-5x - 5y = -20$
$2x + 3y = 8$ 31) _____

A) {(4, 1)} B) {(4, 0)}
C) {(3, 1)} D) ∅; inconsistent system

32) $5x - 2y = 3$
$-20x + 8y = -12$ 32) _____

A) {(1, 1)}
B) {(-3, -9)}
C) $\{(x, y) \mid 5x - 2y = 3\}$; dependent equations
D) ∅; inconsistent system

33) $2x - 3y = -2$
$6x - 9y = 6$ 33) _____

A) {(5, -4)}
B) {(-1, 0)}

C) $\{(x, y) \mid 2x - 3y = -2\}$; dependent equations
D) ∅; inconsistent system

34) $\frac{1}{5}x - \frac{1}{4}y = 1$
$\frac{2}{5}x + \frac{1}{2}y = 1$ 34) _____

A) $\left\{\left(-\frac{15}{4}, -2\right)\right\}$ B) $\left\{\left(-\frac{15}{4}, -1\right)\right\}$
C) $\left\{\left(\frac{15}{4}, -1\right)\right\}$ D) ∅; inconsistent system

Tell how many solutions the system has. Do not actually solve.

35) $3x + 2y = 3$
$9x + 6y = 9$ 35) _____

A) No solution B) One solution C) Infinitely many

36) $2x - 4y = 2$
$y = \frac{1}{2}x - \frac{1}{2}$ 36) _____

A) Infinitely many B) No solution C) One solution

37) $6x - y = 20$
$x + 4y = 20$ 37) _____

A) Infinitely many B) One solution C) No solution

38) $x - 5 = y$
$y + 7 = x$ 38) _____

A) One solution B) Infinitely many C) No solution

39) $2x - y = 5$
$-4x + 2y = -18$ 39) _____

A) No solution B) One solution C) Infinitely many

40) $x - 2y = 5$
$2x - 4y = 18$ 40) _____

A) Infinitely many B) No solution C) One solution

41) $3x = y + 3$
$6x - 2y = 3$ 41) _____

A) One solution B) No solution C) Infinitely many

42) $x + 2y = 0$

$y = -\frac{1}{2}x$ 42) _____

A) One solution B) No solution C) Infinitely many

43) $2x + 3y = 6$
$4x + 6y = 12$ 43) _____

A) Infinitely many B) No solution C) One solution

44) $x - 3y = 6$
$3y + 1 = x$ 44) _____

A) No solution B) One solution C) Infinitely many

Solve the problem.

45) The table shown was generated by a graphing calculator. The functions defined by y_1 and y_2 are linear. Based on the table, find the coordinates of the point of intersection of the graphs.

X	Y1	Y2
0.00	3.00	9.00
1.00	5.00	8.00
2.00	7.00	7.00
3.00	9.00	6.00
4.00	11.00	5.00
5.00	13.00	4.00
6.00	15.00	3.00

X=0

45) _____

A) (2, 7) B) (3, 9) C) (7, 2) D) (7, 7)

46) The table shown was generated by a graphing calculator. The functions defined by y_1 and y_2 are linear. Based on the table, find the equation for y_1.

X	Y1	Y2
0.00	3.00	9.00
1.00	5.00	8.00
2.00	7.00	7.00
3.00	9.00	6.00
4.00	11.00	5.00
5.00	13.00	4.00
6.00	15.00	3.00

X=0

46) _____

A) $y_1 = -x + 3$ B) $y_1 = 2x + 9$ C) $y_1 = -x + 9$ D) $y_1 = 2x + 3$

47) The table shown was generated by a graphing calculator. The functions defined by y_1 and y_2 are linear. Based on the table, find the equation for y_2.

X	Y1	Y2
0.00	3.00	9.00
1.00	5.00	8.00
2.00	7.00	7.00
3.00	9.00	6.00
4.00	11.00	5.00
5.00	13.00	4.00
6.00	15.00	3.00

X=0

47) _____

A) $y_2 = -x + 3$ B) $y_2 = -x + 9$ C) $y_2 = 2x + 3$ D) $y_2 = 2x + 9$

48) The table shown was generated by a graphing calculator. The functions defined by y_1 and y_2 are linear. Based on the table, solve the system of equations formed by y_1 and y_2.

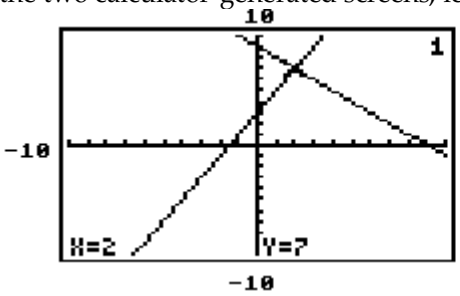
X	Y1	Y2
0.00	3.00	9.00
1.00	5.00	8.00
2.00	7.00	7.00
3.00	9.00	6.00
4.00	11.00	5.00
5.00	13.00	4.00
6.00	15.00	3.00

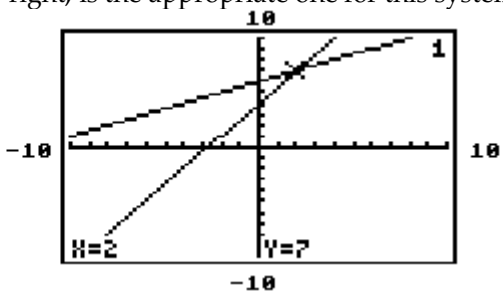
X=0

48) _____

A) {(2, 7)} B) {(7, 2)} C) {(9, 3)} D) {(3, 9)}

49) The solution set of the system $y_1 = 2x + 3$ and $y_2 = -x + 9$ is {(2, 7)}. Using slopes and y-intercepts, determine which of the two calculator-generated screens, left or right, is the appropriate one for this system.

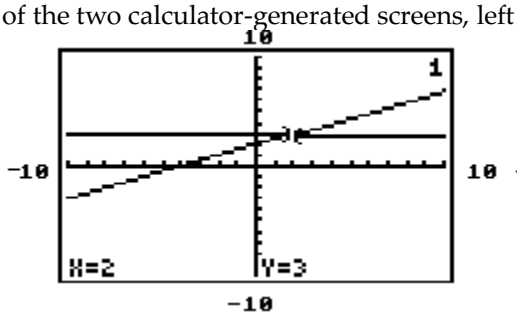


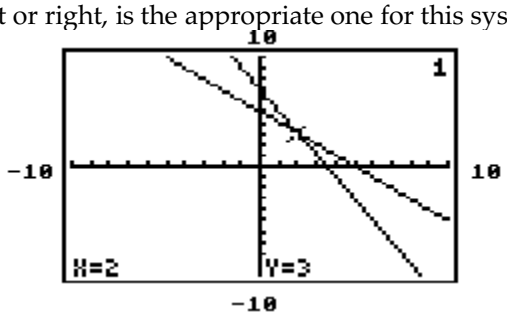


49) _____

A) Neither is correct. B) Left
C) Right D) Both could be correct.

50) The solution set of the system $y_1 = -x + 5$ and $y_2 = -2x + 7$ is {(2, 3)}. Using slopes and y-intercepts, determine which of the two calculator-generated screens, left or right, is the appropriate one for this system.



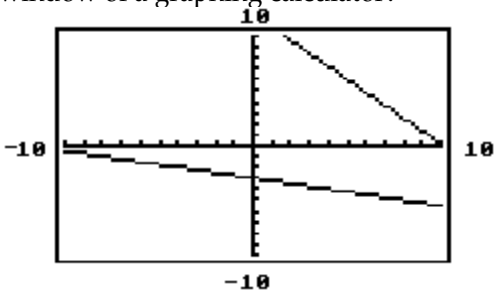


50) _____

A) Neither is correct. B) Right

C) Left D) Both could be correct.

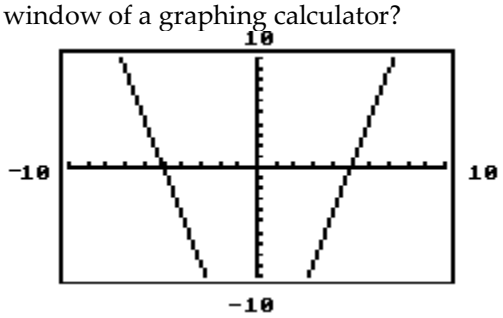
51) Which of the ordered pairs listed is the only possible solution for the system whose graphs are shown in the viewing window of a graphing calculator?



51) _____

A) (16, -7) B) (-16, -7)
C) (-20, 12) or (16, 7) D) None of the above

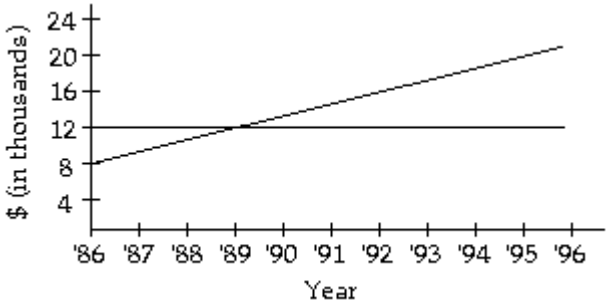
52) Which of the ordered pairs is the only possible solution for the system whose graphs are shown in the viewing window of a graphing calculator?



52) _____

A) (-22, 0) B) (0, -22) C) (-8, -30) D) (8, -30)

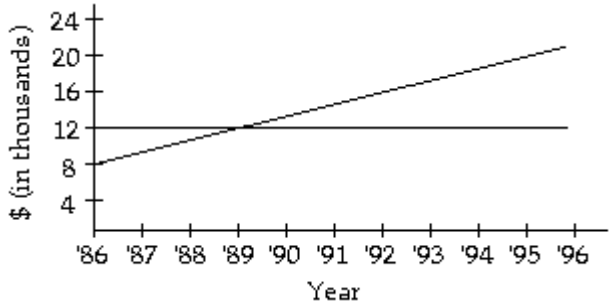
53) Alla doesn't trust banks, so her savings are hidden under her mattress. Betsy has her savings in an investment at simple interest. During which years would Alla's savings be more than Betsy's?



53) _____

A) 1986 - 1989 B) 1989 - 1996 C) 1986 - 1988 D) 1989

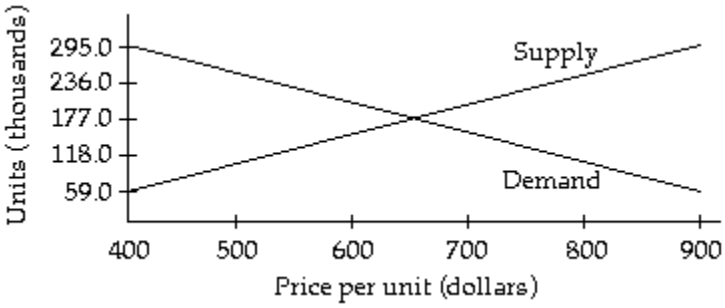
54) Emilia doesn't trust banks, so her savings are hidden under her mattress. Hsien-Ta has his savings in an investment at simple interest. During which year did they have the same amount?



54) _____

A) 1988B) 1996C) 1989D) 1986

55) The graphs below represent the supply and demand for a product at various prices per unit. At approximately what price does supply equal demand?



55) _____

A) $900B) $650C) $177D) $400

56) The graphs below represent the supply and demand for a product at various prices per unit. Approximately how many units should be produced so that supply equals demand?

56) _____

A) 42.9 units B) 2255 units C) 42,900 units D) 2250 units

57) A company manufactures three products. The graph shows the production from 1986 to 1996. During which year did the production of A equal the production of B?

57) _____

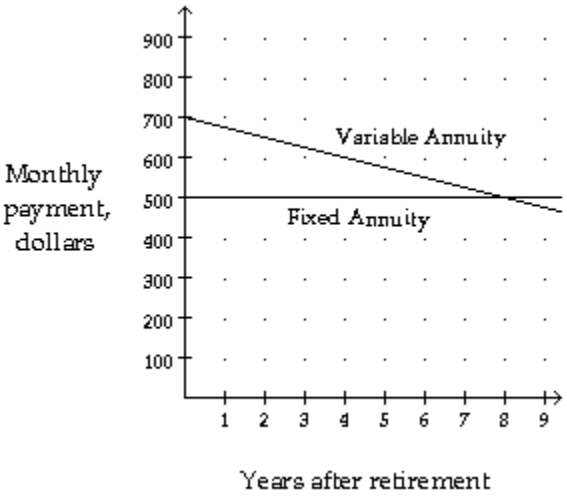
A) 1991 B) 1996 C) 600,000 D) 650,000

58) A company manufactures three products. The graph shows the production from 1986 to 1996. What was the approximate level of production when the production of C equaled the production of A?

58) _____

A) 600,000 B) 800,000 C) 500,000 D) 400,000

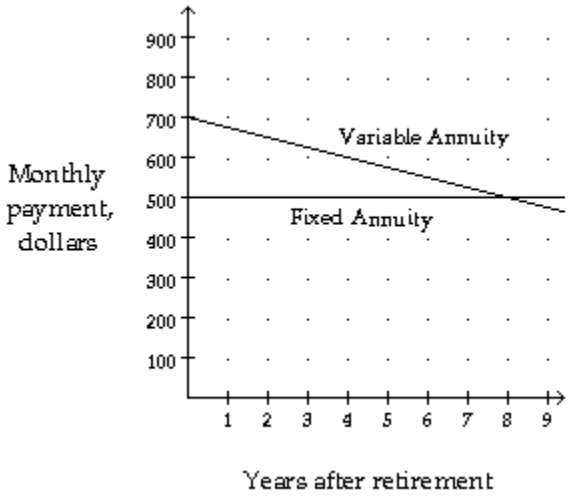
59) After retirement, Kelly's company offers her two options for receiving her retirement pension. According the the first plan, she will receive monthly payments from a variable annuity that initially pays $700 per month then decreases each month at a rate of $25 per month per year. Optionally, she may choose a plan that pays her a fixed amount of $500 per month for the rest of her life. The monthly payments for the two plans are illustrated in the graph below. After how many years does the variable plan pay less per month than the fixed plan?



59) _____

A) 9 years B) 8 years
C) Up to 8 years D) The variable plan always pays less.

60) After retirement, Kelly's company offers her two options for receiving her retirement pension. According the the first plan, she will receive monthly payments from a variable annuity that initially pays $700 per month then decreases each month at a rate of $25 per month per year. Optionally, she may choose a plan that pays her a fixed amount of $500 per month for the rest of her life. The monthly payments for the two plans are illustrated in the graph below. If Kelly's remaining life expectancy is 20 years, which plan would be the better choice?



60) _____

A) The fixed annuity
B) The variable annuity
C) Both plans are equally attractive.

Solve the system of equations.

61) $\frac{4}{x} - \frac{5}{y} = -23$

$\frac{2}{x} + \frac{1}{y} = 6$ 61) _____

A) $\left\{\left(2, \frac{1}{5}\right)\right\}$ B) $\left\{\left(\frac{1}{5}, 2\right)\right\}$ C) ∅ D) $\left\{\left(\frac{1}{2}, 5\right)\right\}$

62) $\frac{2}{y} + \frac{3}{x} = \frac{1}{2}$

$\frac{3}{y} - \frac{5}{x} = -\frac{13}{8}$ 62) _____

A) $\left\{\left(\frac{1}{4}, -\frac{1}{8}\right)\right\}$ B) {(4, -8}) C) {(-4, -8}) D) ∅

63) $\frac{3}{y} + \frac{3}{x} = -\frac{9}{10}$

$\frac{5}{y} + \frac{2}{x} = 0$ 63) _____

A) {(-2, -5}) B) $\left\{\left(-\frac{1}{2}, \frac{1}{5}\right)\right\}$ C) {(-2, 5}) D) ∅

Solve by any method. Assume a and b represent nonzero constants.

64) $4ax + 3y = 1$

$y = 2ax$ 64) _____

A) $\left\{\left(\frac{1}{10a}, \frac{1}{5}\right)\right\}$ B) $\left\{\left(\frac{1}{10}, \frac{1}{5}\right)\right\}$ C) $\left\{\left(\frac{a}{10}, \frac{1}{5}\right)\right\}$ D) $\left\{\left(\frac{1}{5}, \frac{1}{10a}\right)\right\}$

65) $7ax - 2y = 2$
$y = 5ax$ 65) _____

A) $\left\{\left(-\frac{2a}{3}, -\frac{10}{3}\right)\right\}$ B) $\left\{\left(-\frac{10}{3}, -\frac{2}{3a}\right)\right\}$ C) $\left\{\left(-\frac{2}{3}, -\frac{10}{3}\right)\right\}$ D) $\left\{\left(-\frac{2}{3a}, -\frac{10}{3}\right)\right\}$

66) $ax + by = 2$
$2ax + 4by = 1$ 66) _____

A) $\left\{\left(\frac{7a}{2}, -\frac{3}{2b}\right)\right\}$ B) $\left\{\left(\frac{7}{2a}, -\frac{3}{2b}\right)\right\}$ C) $\left\{\left(\frac{7b}{2}, -\frac{3a}{2}\right)\right\}$ D) $\left\{\left(-\frac{3}{2b}, \frac{7}{2a}\right)\right\}$

67) $ax + by = 7$
$ax - by = 12$ 67) _____

A) $\left\{\left(\frac{19}{2a}, \frac{5}{2b}\right)\right\}$ B) $\left\{\left(-\frac{19}{2a}, -\frac{5}{2b}\right)\right\}$ C) $\left\{\left(\frac{5}{a}, -\frac{19}{2b}\right)\right\}$ D) $\left\{\left(\frac{19}{2a}, -\frac{5}{2b}\right)\right\}$

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.
Provide an appropriate response.
68) Give the definition or an example of the word or phrase.
Dependent system 68) _____

69) What is indicated by the occurrence of a false statement such as "0 = 1" when you solve a system of two linear equation (in two variables) using substitution? 69) _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.
70) Graphs of two linear functions f and g that are neither parallel nor coincident intersect in how many points? 70) _____

A) Infinitely many points B) Two
C) None D) One

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.
71) What is indicated by the occurrence of a true statement such as "0 = 0" when you solve a system of two linear equation (in two variables) using elimination? 71) _____

72) Explain why the solution of a system of equations is the point of intersection of the graphs of the equations. 72) _____

73) Describe the three possible outcomes when graphing a system of equations, and relate each to the type of solution(s) each system has. 73) _____

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

question.

74) Solving for which variable in which equation involves the least amount of work?

$7x = 56$

$x - 8y = 64$ 74) _____

A) y in equation 2 B) x in equation 2

C) y in equation 1 D) x in equation 1

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

75) A student solved the system of equations

$x + 2y = 4$

$2x + 4y = 8$

for x in the first equation, and substituted into the second equation. The y's also disappeared in the process. The student claimed that the system of equations has no solution. Is this correct? 75) _____

76) A student argued that it is impossible to use the substitution method to determine if a system of equations has no solution or an infinite number of solutions. Is the student correct? 76) _____

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

Solve the system of equations.

77) $x + y + z = 7$

$x - y + 2z = 7$

$5x + y + z = 11$ 77) _____

A) {(4, 2, 1)} B) {(4, 1, 2)} C) {(1, 2, 4)} D) {(1, 4, 2)}

78) $x - y + z = 8$

$x + y + z = 6$

$x + y - z = -12$ 78) _____

A) {(2, -1, -9)} B) {(2, -1, 9)} C) {(-2, -1, -9)} D) {(-2, -1, 9)}

79) $5x + 2y + z = -11$

$2x - 3y - z = 17$

$7x + y + 2z = -4$ 79) _____

A) {(3, 0, -4)} B) {(-3, 0, 4)} C) {(0, 6, -1)} D) {(0, -6, 1)}

80) $7x + 7y + z = 1$

$x + 8y + 8z = 8$

$9x + y + 9z = 9$ 80) _____

A) {(1, -1, 1)} B) {(0, 1, 0)} C) {(0, 0, 1)} D) {(-1, 1, 1)}

81)

$x + y + z = 0$

$x - y + 3z = 12$ 81) _____

$3x + y + z = -8$

A) {(-1, 5, -4)} B) {(5, -1, -4)} C) {(5, -4, -1)} D) {(-4, -1, 5)}

82)

$$\begin{aligned} 5x + 3y + z &= -28 \\ 2x - 4y - z &= 1 \\ 4x + y + 5z &= -42 \end{aligned}$$

82) _____

A) {(-4, -5, -1)} B) {(-5, -1, -4)} C) {(-1, -4, -5)} D) {(-4, -1, -5)}

83) $\frac{1}{3}x + \frac{1}{6}y - \frac{2}{3}z = -2$

$-\frac{3}{4}x - \frac{1}{3}y - \frac{1}{4}z = 1$

$\frac{1}{2}x + \frac{3}{2}y + \frac{3}{4}z = 11$ 83) _____

A) $\left\{\left(\frac{1232}{31}, \frac{252}{31}, -\frac{476}{31}\right)\right\}$ B) $\left\{\left(\frac{68}{31}, -\frac{1232}{31}, -\frac{68}{31}\right)\right\}$

C) $\left\{\left(-\frac{176}{31}, \frac{252}{31}, \frac{68}{31}\right)\right\}$ D) $\left\{\left(-\frac{176}{31}, -\frac{36}{31}, \frac{68}{31}\right)\right\}$

84)

$$\begin{aligned} 2.4x + 3.5y - 1.8z &= 29.29 \\ 0.3x - 1.7y + 5.4z &= -31.54 \\ 5.1x - 2.7y - 9.0z &= 45.00 \end{aligned}$$

84) _____

A) {(2.7, 4.1, -4.7)} B) {(2.7, 4.1, 4.7)}
C) {(2.7, -4.1, -4.7)} D) {(5.4, 4.1, -14.1)}

85)

$$\begin{aligned} x - y + 4z &= 1 \\ 5x + z &= 0 \\ x + 3y + z &= -3 \end{aligned}$$

85) _____

A) {(0, -1, 0)} B) {(0, 0, -1)} C) {(-1, 0, -1)} D) {(0, -1, 1)}

86)

$$\begin{aligned} 3x - y &= 3 \\ 2y + z &= 14 \\ x + 4z &= 11 \end{aligned}$$

86) _____

A) {(-3, -6, -2)} B) {(3, 6, 2)} C) {(6, 12, 4)} D) {(3, 6, -2)}

87)

$$\begin{aligned} 4x - y - 7z &= -54 \\ 3x - 2z &= -11 \\ 6y + z &= 61 \end{aligned}$$

87) _____

A) {(-1, 9, 2)} B) {(-1, 2, 9)} C) {(1, 7, 9)} D) {(1, 9, 7)}

88)

$6x + 4y = -2$
$6x - 6z = -12$ 88) _____
$6y - 3z = -1$

A) $\left\{\left(\frac{2}{3}, \frac{1}{2}, -\frac{4}{3}\right)\right\}$ B) $\left\{\left(-\frac{2}{3}, \frac{1}{2}, \frac{4}{3}\right)\right\}$ C) $\left\{\left(1, -\frac{1}{3}, \frac{4}{3}\right)\right\}$ D) $\left\{\left(-1, \frac{1}{2}, \frac{4}{3}\right)\right\}$

89) $x - y + 2z = -5$
$2x + z = 0$
$x + 4y + z = 20$ 89) _____

A) {(-5, 5, -5)} B) {(0, 5, 0)} C) {(0, 5, -5)} D) {(0, 0, 5)}

90) $5x - 2z = 8$
$4y + 2z = -5$
$\frac{1}{3}x + \frac{2}{3}y = -4$ 90) _____

A) $\left\{\left(-\frac{9}{4}, \frac{73}{14}, -\frac{37}{8}\right)\right\}$ B) $\left\{\left(9, -\frac{21}{2}, \frac{37}{2}\right)\right\}$
C) $\left\{\left(-9, \frac{21}{2}, -\frac{37}{2}\right)\right\}$ D) $\left\{\left(-\frac{108}{7}, -\frac{21}{2}, \frac{37}{2}\right)\right\}$

Solve the system of equations. If the system is inconsistent or has dependent equations, say so.

91)
$2x + 6y + 6z = 144$
$x + 3y + 3z = -24$ 91) _____
$x + y + z = -6$

A) {(2, -2, -6)}
B) {(x, y, z) $|x + 3y + 3z = -24$}; dependent equations
C) ∅; inconsistent system
D) {(-6, 2, -2)}

92)
$x - y + 5z = -8$
$-5x + 5y - 25z = -1$ 92) _____
$x + 4y + z = -13$

A) {(0, -3, -1)}
B) ∅; inconsistent system
C) {(-1, 0, -3)}
D) {(x, y, z) $|x - y + 5z = -8$}; dependent equations

93)
$-3x - 5y + 9z = -22$
$9x + 15y - 27z = 66$ 93) _____
$-6x - 10y + 18z = -44$

A) ∅; inconsistent system
B) {(-3, -1, -4)}
C) {(x, y, z) $|-3x - 5y + 9z = -22$}; dependent equations

D) {(3, 1, 4)}

94) $x + 4y - z = 3$
$-4x - 16y + 4z = -12$
$3x + 12y - 3z = 9$ 94) _____

A) {(x, y, z) | x + 4y - z = 3}; dependent equations
B) {(1, 1, 2)}
C) {(0, 2, 5)}
D) ∅; inconsistent system

95) $x + 3y + 2z = 11$
$4y + 9z = -12$
$x + 7y + 11z = -11$ 95) _____

A) {(7, -1, -1)}
B) ∅; inconsistent system
C) {(x, y, z) | x + 3y + 2z = 11}; dependent equations
D) {(0, 3, 1)}

96) $x + \frac{1}{2} y - \frac{1}{2} z = 3$
$4x + 2y - 2z = 12$
$-2x - y + z = -6$ 96) _____

A) {(3, 1, 1)}
B) {(x, y, z) | -2x - y + z = -6}; dependent equations
C) ∅; inconsistent system
D) {(3, 0, 0)}

97) $x - y + 8z = -107$
$x + 2y = 21$
$2x + y + 8z = -80$ 97) _____

A) {(5, 8, 0)}
B) ∅; inconsistent system
C) {(x, y, z) | 2x + y + 8z = -80}; dependent equations
D) {(5, 8, -13)}

98) $2x - 2y + 8z = 16$
$-5x + 5y - 20z = -40$
$x - y + 4z = 8$ 98) _____

A) ∅; inconsistent system
B) {(7, 3, 1)}
C) {(0, 0, 2)}
D) {(x, y, z) | x - y + 4z = 8}; dependent equations

Solve the system. Express the solution in the form (x, y, z, w).

99) $5x + y - 4z + w = -18$
$-x + 5y + z - 5w = 8$

$$\begin{aligned} 4x - y + 5z + 4w &= 26 \\ x + y - 5z - w &= -26 \end{aligned}$$ 99) _____

A) {(-3, -6, 12, 5)} B) {(-4, 2, 7, 1)} C) {(3, -4, 6, -5)} D) {(3, -8, 0, 5)}

100)
$$\begin{aligned} 5x - 6z + w &= 4 \\ -x + 5y + z - 5w &= 8 \\ 2x - y + 6w &= -21 \\ y - 5z - w &= -3 \end{aligned}$$
100) _____

A) {(2, -1, -1, 0)} B) {(1, -3, -7, -5)} C) {(3, -3, 1, -5)} D) {(-3, 3, 3, -6)}

101)
$$\begin{aligned} 5x + 4y - 6z + w &= -32 \\ -x + y + 3z - w &= 8 \\ 4x - y + z + 3w &= 20 \\ x + y + 5z - w &= 26 \end{aligned}$$
101) _____

A) {(4, -10, -5, -2)} B) {(5, -3, 4, -4)}
C) {(-4, -5, 5, -4)} D) {(4, -5, 5, -2)}

102)
$$\begin{aligned} 6x - 6z + w &= 6 \\ -x + y + 6z - w &= -26 \\ 5x - y + 6w &= -30 \\ y + 6z - w &= -31 \end{aligned}$$
102) _____

A) {(-10, 0, -7 , 1)} B) {(-5, 5, -6, 0)}
C) {(0, -5 , 5, 5)} D) {(5, 7, -6, -1)}

103)
$$\begin{aligned} 3y + w &= -7 \\ x + y + 3z - w &= 11 \\ 3x + z + 3w &= 17 \\ x + y + 5z &= 14 \end{aligned}$$
103) _____

A) {(6, -2, 2, -1)} B) {(18, -6, 10, -3)}
C) {(6, -6, 4, -2)} D) {(6, -2, 10, -1)}

Provide an appropriate response.

104) What is the graph of an equation in three variables?
A) A line B) A pyramid C) A plane D) A triangle
104) _____

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

105) Without solving the following system of equations, tell what the solution is. Explain your answer.
$$\begin{aligned} 5x - 4y + 6z &= -3 \\ -30x + 24y - 36z &= 18 \\ 20x - 16y + 24z &= -12 \end{aligned}$$
105) _____

106) Without solving the following system of equations, tell what the solution is. Explain your answer.
$$3x - 6y - 3z = 2$$

$-18x + 36y + 18z = -12$

$6x + 6y - 2z = 5$ 106) _____

107) Without solving the following system of equations, tell what the solution is. Explain your answer.

$4x - 3y - 3z = 3$

$8x - 6y - 6z = 4$

$-16x + 12y + 12z = 6$107) _____

108) In solving a system of three equations in three variables, the final step yields the following equation:

$0 = 6.$

How many solutions does this system have? Explain geometrically. 108) _____

109) In solving a system of three equations in three variables, the final step yields the following equation:

$0 = 0.$

How many solutions does this system have? Explain geometrically. 109) _____

110) In solving a system of three equations in three variables, it is impossible to eliminate two variables. Thus, the the final step yields the following equation:

$z = x + 5.$

How many solutions does this system have? Explain geometrically. 110) _____

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

Solve the problem.

111) During the 1998-1999 Little League season, the Tigers played 47 games. They won 5 more games than they lost. How many games did they win that season? 111) _____

A) 28 games B) 23 games C) 21 games D) 26 games

112) During the 1998-1999 Little League season, the Tigers played 57 games. They won 17 more games than they lost. How many games did they lose that season? 112) _____

A) 18 games B) 23 games C) 20 games D) 37 games

113) During the 1998-1999 Little League season, the Tigers played 55 games. They lost 21 more games than they won. How many games did they win that season? 113) _____

A) 18 games B) 16 games C) 15 games D) 17 games

114) During the 1998-1999 Junior Hockey League season, the Sharks played 55 games. Together, their wins and losses totaled 51. They tied 8 fewer games than they lost. How many games did they win that season? 114) _____

A) 35 games B) 4 games C) 12 games D) 39 games

115) During the 1998-1999 Junior Hockey League season, the Sharks played 67 games. Together, their wins and losses totaled 62. They tied 17 fewer games than they lost. How many games did they lose that season? 115) _____

A) 22 games B) 20 games C) 5 games D) 40 games

116) During the 1998-1999 Junior Hockey League season, the Sharks played 64 games. Together, their wins and losses totaled 57. They tied 15 fewer games than they lost. How many games did they tie that season? 116) _____

A) 5 games B) 7 games C) 35 games D) 22 games

117) The perimeter of a rectangle is 20 cm. The length is 6 cm longer than the width. What are the length and width of the rectangle? 117) _____

A) Length: 8 cm; width: 2 cm B) Length: 11 cm; width: 5 cm
C) Length: 6 cm; width: 2 cm D) Length: 10 cm; width: 4 cm

118) The perimeter of a rectangle is 44 m. If the width were doubled and the length were increased by 8 m, the perimeter would be 76 m. What are the length and width of the rectangle? 118) _____

A) Length: 11 m; width: 11 m B) Length: 8 m; width: 14 m
C) Length: 14 m; width: 8 m D) Length: 11 m; width: 6 m

119) The perimeter of a triangle is 64 cm. The triangle is isosceles now, but if its base were lengthened by 3 cm and each leg were shortened by 5 cm, it would be equilateral. Find the length of the base of the original triangle. 119) _____

A) 16 cm B) 24 cm C) 19 cm D) 15 cm

120) Two angles are supplementary, and one is 40° more than three times the other. Find the smaller angle. 120) _____

A) 145° B) 35° C) 75° D) 105°

121) In a right triangle, one acute angle is 54° more than twice the other. Find each acute angle.
A) 12° and 78° B) 21° and 69° C) 37° and 53° D) 28° and 62°
121) _____

122) Two angles are supplementary, and one is 5° more than six times the other. Find the larger angle.
A) 110° B) 70° C) 155° D) 25°
122) _____

123) Bob fenced in a rectangular garden in his yard. The length of the rectangle is 8 feet longer than the width and the perimeter is 108 feet. What is the width of the rectangle? 123) _____

A) 22 feet B) 23 feet C) 25 feet D) 46 feet

124) The side of an equilateral triangle is 4 inches shorter than the side of a square. The perimeter of the square is 38 inches more than the perimeter of the triangle. Find the length of a side of the square. 124) _____

A) 27 inches B) 25 inches C) 22 inches D) 26 inches

125) The side of an equilateral triangle is 2 inches shorter than the side of a square. The perimeter of the square is 29 inches more than the perimeter of the triangle. Find the length of a side of the triangle. 125) _____

A) 25 inches B) 21 inches C) 23 inches D) 22 inches

126) Mrs. Boyd has a desk full of quarters and nickels. If she has a total of 23 coins with a total face value of $ 4.35, how many of the coins are nickels? 126) _____

A) 21 nickels B) 16 nickels C) 7 nickels D) 9 nickels

127) Andy has 10 coins made up of quarters and half dollars, and their total value is $ 4.00. How many quarters does he have? 127) _____

A) 9 quarters B) 8 quarters C) 4 quarters D) 6 quarters

128) A sum of money amounting to $ 4.50 consists of dimes and quarters. If there are 30 coins in all, how many are quarters? 128) _____

A) 22 quarters B) 10 quarters C) 15 quarters D) 20 quarters

129) A woman made a deposit of $ 299. If her deposit consisted of 79 bills, some of them one-dollar bills and the rest being five-dollar bills, how many one-dollar bills did she deposit? 129) _____

A) 55 one-dollar bills B) 19 one-dollar bills
C) 14 one-dollar bills D) 24 one-dollar bills

130) Ron and Kathy are ticket-sellers at their class play. Ron is selling student tickets for $ 4.00 each, and Kathy selling adult tickets for $ 6.50 each. If their total income for 29 tickets was $ 166.00, how many tickets did Ron sell? 130) _____

A) 9 tickets B) 20 tickets C) 25 tickets D) 11 tickets

131) There were 460 people at a play. The admission price was $ 2 for adults and $1 for children. The admission receipts were $ 700. How many adults and how many children attended? 131) _____

A) 110 adults and 350 children B) 175 adults and 285 children
C) 220 adults and 240 children D) 240 adults and 220 children

132) Don runs a charity fruit sale, selling boxes of oranges for $11 and boxes of grapefruit for $10. If he sold a total of 762 boxes and took in $8125 in all, then how many boxes of oranges did he sell? 132) _____

A) 458 boxes B) 257 boxes C) 505 boxes D) 383 boxes

133) Best Rentals charges a daily fee plus a mileage fee for renting its cars. Barney was charged $ 129.00 for 3 days and 300 miles, while Mary was charged $ 239.00 for 5 days and 600 miles. What does Best Rentals charge per day and per mile? 133) _____

A) $ 19 per day; 24¢ per mile B) $ 20 per day; 25¢ per mile
C) $ 18 per day; 25 ¢ per mile D) $ 24 per day; 19¢ per mile

134) 34,000 people attended a ballgame at a stadium that offers two kinds of seats: general admission and reserved. The day's receipts were $ 248,000. How many people paid $ 11.00 for reserved seats, and how many paid $ 5.00 for general admission? 134) _____

A) Reserved: 14,500 ; general admission: 19,500
B) Reserved: 21,000 ; general admission: 13,000
C) Reserved: 19,500 ; general admission: 14,500
D) Reserved: 13,000 ; general admission: 21,000

135) Ellen wishes to mix candy worth $1.32 per pound with candy worth $2.77 per pound to form 13 pounds of a mixture worth $2.21 per pound. How many pounds of the more expensive candy should she use? 135) _____

A) 5 pounds B) 13 pounds C) 7 pounds D) 8 pounds

136) A contractor mixes concrete from bags of pre-mix for small jobs. How many bags with 4% cement should he mix with 5 bags of 17.2% cement to produce a mix containing 10% cement? 136) _____

A) 11 bags B) 16 bags C) 8 bags D) 6 bags

137) Anne and Nancy use a metal alloy that is 13% copper to make jewelry. How many ounces of an alloy that is 11% copper must be mixed with an alloy that is 16% copper to form 55 ounces of the desired alloy? 137) _____

A) 35 ounces B) 22 ounces C) 27 ounces D) 33 ounces

138) How many liters (L) of a 20% alcohol solution must be mixed with 20 L of a 90% solution to get a 30% solution? 138) _____

A) 120 L B) 140 L C) 14 L D) 12 L

139) How many liters (L) of a 10% silver iodide solution must be mixed with 3 L of a 4% silver iodide solution to get a 6% solution? 139) _____

A) 3.0 L B) 0.5 L C) 2.5 L D) 1.5 L

140) A merchant has coffee worth $ 20 a pound that she wishes to mix with 30 pounds of coffee worth $ 60 a pound to get a mixture that is worth $ 30 a pound. How many pounds (lb) of the $ 20 coffee should be used? 140) _____

A) 60 lb B) 120 lb C) 90 lb D) 45 lb

141) A cruise boat travels 36 miles downstream in 3 hours and returns to its starting point upstream in 12 hours. Find the speed of the stream. 141) _____

A) 4.5 mph B) 19.5 mph C) 7.5 mph D) 12 mph

142) The speed of a stream is 4 mph. If a boat travels 66 miles downstream in the same time that it takes to travel 33 miles upstream, what is the speed of the boat in still water? 142) _____

A) 8 mph B) 12 mph C) 14 mph D) 15 mph

143) A plane flies 430 miles with the wind and 310 miles against the wind in the same length of time. If the speed of the wind is 24 mph, what is the speed of the plane in still air? 143) _____

A) 148 mph B) 138 mph C) 173 mph D) 153 mph

144) An airplane travels 500 miles against the wind in 4 hours, and makes the return trip with the same wind in

2 hours. Find the rate of the wind. 144) _____

A) 125 mph B) 187.5 mph C) 62.5 mph D) 250 mph

145) John and Tony start from Grays lake at the same time and head for a town 10 miles away. John walks twice as fast as Tony and arrives 3 hours before Tony. Find how fast each walks. 145) _____

A) Tony: $\frac{3}{5}$ mph; John: $\frac{6}{5}$ mph

B) Tony: 3 mph; John: 6 mph

C) Tony: $\frac{5}{3}$ mph; John: $\frac{10}{3}$ mph

D) Cannot be determined without more information

146) From a point on a river, two boats are driven in opposite directions, one at 7 miles per hour and the other at 11 miles per hour. In how many hours will they be 36 miles apart? 146) _____

A) 2 hours B) 1 hour C) 4 hours D) 3 hours

147) A cabin cruiser travels 20 miles in the same time that a power boat travels 40 miles. The cruiser travels 5 mph slower than the power boat. Find the speed of each boat. 147) _____

A) Power boat: 10 mph; cabin cruiser: 5 mph
B) Power boat: 20 mph; cabin cruiser: 15 mph
C) Power boat: 15 mph; cabin cruiser: 10 mph
D) Cannot be determined without more information

148) An express train and a local train both leave Gray's Lake at 3 P.M. and head for Chicago 50 miles away. The express travels twice as fast as the local and arrives 1 hour ahead of the local. Find the speed of each train. 148) _____

A) Express: 50 mph; local: 25 mph
B) Express: 25 mph; local: 12.5 mph
C) Express: 60 mph; local: 30 mph
D) Cannot be determined without more information

149) Candy and Delvis are riding bicycles in the same direction. Candy rides at a speed of 3 miles per hour, and Delvis rides at a speed of 9 miles per hour. If they started at the same place (and at the same time), then after 5 hours what is the distance between them? 149) _____

A) 39 miles B) 30 miles C) 31 miles D) 27 miles

150) Jill is 22 km away from Joe. Both begin to walk toward each other at the same time. Jill walks at 2.5 km per hour. If they meet in 4 hours, how fast is Joe walking? 150) _____

A) 2.5 km per hour B) 5 km per hour
C) 4 km per hour D) 3 km per hour

Solve the problem by using three variables.

151) The sum of the ages of Art, Ben, and Cal is 59. Art is 1 year older than Cal and Cal is 1 year younger than Ben. Who, if anyone, was a teenager 7 years ago? 151) _____

A) Art, Ben, and Cal B) Ben
C) Art D) Art and Ben

152) The largest angle of a triangle is 6 times the smallest angle and it is 3 times the other angle. Find the measure of the smallest angle. 152) _____

A) 30° B) 40° C) 10° D) 20°

153) A company makes 3 types of cable. Cable A requires 3 black, 3 white, and 2 red wires. B requires 1 black, 2 white, and 1 red. C requires 2 black, 1 white, and 2 red. They used 100 black, 110 white and 90 red wires. How many of each cable were made? 153) _____

A) 10 cable A; 103 cable B; 20 cable C B) 10 cable A; 30 cable B; 20 cable C
C) 10 cable A; 30 cable B; 93 cable C D) 20 cable A; 30 cable B; 10 cable C

154) A basketball fieldhouse seats 15,000. Courtside seats sell for $ 9, endzone for $ 7, and balcony for $ 4. The total revenue from a sell-out is $ 81,000. If half the courtside and balcony seats and all the endzone seats are sold, the total revenue is $ 47,500. How many of each type are there? 154) _____

A) 3000 courtside; 2000 endzone; 10,000 balcony
B) 3000 courtside; 3000 endzone; 8,000 balcony
C) 3200 courtside; 1800 endzone; 10,000 balcony
D) 4000 courtside; 3000 endzone; 8000 balcony

155) In triangle ABC, the measure of angle B is 5° more than three times the measure of angle A. The measure of angle C is 15° more than the measure of angle A. What is the measure of Angle C? 155) _____

A) 49° B) 53° C) 45° D) 47°

156) By eating 1 cracker, 1 pretzel, and 1 cookie, one would ingest 149 mg of sodium. By eating 8 pretzels and 8 cookies, one would ingest 936 mg of sodium. By eating 6 crackers and 7 pretzels, one would ingest 535 mg of sodium. How many mg of sodium are there in one pretzel? 156) _____

A) 50 mg B) 49 mg C) 48 mg D) 47 mg

157) A croissant, a cup of coffee, and a fruit bowl from Kelley's Coffee Cart cost a total of $5.50, and a croissant costs twice as much as a cup of coffee. Kelley posts a notice announcing that, effective next week, the price of a croissant will go up 15% and the price of coffee will go up 20%. After the increase, the total price of the purchase will be $5.88. Find the cost of each item before the increase. 157) _____

A) A fruit bowl costs $3.25, a croissant costs $1.50, and a cup of coffee costs $0.75.
B) A fruit bowl costs $3.25, a croissant costs $ 0.90, and a cup of coffee costs $ 1.73.
C) A fruit bowl costs $3.25, a croissant costs $ 1.73, and a cup of coffee costs $ 0.90.
D) The prices cannot be determined from the given information.

158) The perimeter of a triangle is 36 inches. Three times the length of the longest side minus the length of the shortest side is 46 inches. The sum of the length of the longest side and three times the sum of both the other side lengths is 74 inches. Find the side lengths.
158) _____

A) 5 in., 15 in., 16 in. B) 5 in., 14 in., 17 in.
C) 4 in., 14 in., 18 in. D) No solution

159) Michael's bank contains only nickels, dimes, and quarters. There are 59 coins in all, valued at $ 4.65. The number of nickels is 5 short of being three times the sum of the number of dimes and quarters together. How many dimes are in the bank? 159) _____

A) 10 B) 6 C) 43 D) 15

160) A company sells nuts in bulk quantities. When bought in bulk, peanuts sell for $ 1.35 per pound, almonds for $ 2.25 per pound, and cashews for $ 3.60 per pound. Suppose a specialty shop wants a mixture of 240 pounds that will cost $ 2.68 per pound. Find the number of pounds of each type of nut if the sum of the number of pounds of almonds and cashews is twice the number of pounds of peanuts. Round your answers to the nearest pound. 160) _____

A) Peanuts: 130 lb., almonds: 80 lb., cashews: 30 lb.
B) Peanuts: 80 lb., almonds: 30 lb., cashews: 130 lb.
C) Peanuts: 90 lb., almonds: 30 lb., cashews: 120 lb.
D) Peanuts: 30 lb., almonds: 130 lb., cashews: 80 lb.

Solve the problem.

161) A company manufactures three products. The graph shows the production from 1986 to 1996. Which of the companies experience production growth over the period shown in the graph?

161) _____

A) Company A and Company B B) Company A and Company C
C) Company A D) Company B and Company C

162) A company manufactures three products. The graph shows the production from 1986 to 1996. Which of the companies experience production decline over the period shown in the graph?

162) _____

A) Company B and Company C B) Company A and Company C
C) Company C D) Company A

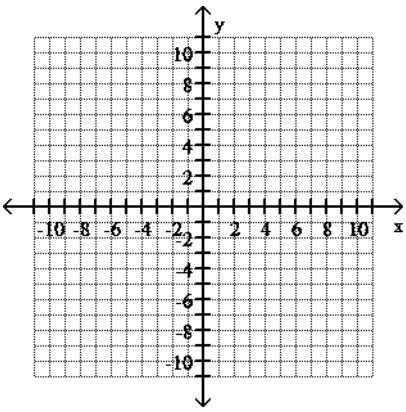
163) A company manufactures three products. The graph shows the production from 1986 to 1996. During which year did the production of A equal the production of B?

163) _____

A) 650,000 B) 1991 C) 1996 D) 600,000

Use a graph to solve the system.

164) x - y = 6
x + y = 14



164) _____

A) {(10, 4)} B) {(8, 20)} C) {(20, 8)} D) {(4, 10)}

Solve the system by substitution or elimination. If a system is inconsistent or has dependent equations, say so.

165) $y = \frac{35}{16}x$

$7x + 4y = 9$ 165) _____

A) $\left\{\left(-\frac{4}{7}, \frac{5}{4}\right)\right\}$ B) $\left\{\left(\frac{4}{7}, \frac{5}{4}\right)\right\}$
C) $\left\{\left(\frac{4}{7}, -\frac{5}{4}\right)\right\}$ D) ∅; inconsistent system

166) x + 9y = 41
5x + 8y = 20 166) _____

A) {(-4, 5)} B) {(4, 6)}
C) {(-5, 6)} D) ∅; inconsistent system

167) $\frac{1}{5}x + y = -3$

x + 15 = -5y 167) _____

A) {(-15, 0)}
B) {(5, -4)}

C) $\{(x, y) | x + 5y = -15\}$; dependent equations
D) ∅; inconsistent system

168) $5x - y = 22$
$2x + y = 13$ 168) _____

A) {(5, 3)} B) {(5, 4)}
C) {(3, 5)} D) ∅; inconsistent system

169) $7x + 7y = -7$
$-2x + 4y = 2$ 169) _____

A) {(-2, 1)} B) {(-1, 0)}
C) {(-1, 1)} D) ∅; inconsistent system

170) $x - 3y = 4$
$x = 8 + 3y$ 170) _____

A) {(4, 0)} B) {(4, 3)}
C) $\{(x, y) | x - 3y = 4\}$; dependent equations D) ∅; inconsistent system

171)
$3x + 2y + z = 7$
$4x - 2y - z = 21$ 171) _____
$5x + y + 2z = 16$

A) {(4, -1, -2)} B) {(4, -2, -1)}
C) {(-1, -2, 4)} D) ∅; inconsistent system

172)
$x - y + 3z = -2$
$5x + z = 0$ 172) _____
$x + 5y + z = 10$

A) {(0, 0, 2)} B) {(0, 2, -2)}
C) {(0, 2, 0)} D) ∅; inconsistent system

Solve the problem using a system of equations.

173) Paul invested three times as much money in an account paying 7% interest than he did in an account paying 2% interest. If the total interest paid was $ 920, how much did he invest in each? 173) _____

A) $ 12,000 at 7%, $ 4500 at 2% B) $ 4000 at 7%, $ 12,000 at 2%
C) $ 120 at 7%, $ 40 at 2% D) $ 12,000 at 7%, $ 4000 at 2%

174) Chuck and Dana agree to meet in Chicago for the weekend. Chuck travels 180 miles in the same time that Dana travels 165 miles. If Chuck's rate of travel is 3 mph more than Dana's, then at what rate does Chuck travel? 174) _____

A) 36 mph B) 41 mph C) 33 mph D) 31 mph

175) Anne and Nancy use a metal alloy that is 12% copper to make jewelry. How many ounces of a 10% alloy must be mixed with a 16% alloy to form 87 ounces of the desired alloy? 175) _____

A) 60 ounces B) 29 ounces C) 34 ounces D) 58 ounces

176) Best Rentals charges a daily fee plus a mileage fee for renting its cars. Barney was charged $ 135.00 for 3 days and 300 miles, while Mary was charged $ 247.00 for 5 days and 600 miles. What does Best Rentals charge per day and per mile? 176) _____

A) $ 22 per day; 23 ¢ per mile B) $ 22 per day; 23¢ per mile
C) $ 23 per day; 22¢ per mile D) $ 24 per day; 23¢ per mile

177) A company sells nuts in bulk quantities. When bought in bulk, peanuts sell for $ 1.30 per pound, almonds for $ 2.40 per pound, and cashews for $ 3.15 per pound. Suppose a specialty shop wants a mixture of 320 pounds that will cost $ 2.59 per pound. Find the number of pounds of each type of nut if the sum of the number of pounds of almonds and cashews is three times the number of pounds of peanuts. Round your answers to the nearest pound. 177) _____

A) Peanuts: 80 lb., almonds: 40 lb., cashews: 200 lb.
B) Peanuts: 200 lb., almonds: 80 lb., cashews: 40 lb.
C) Peanuts: 40 lb., almonds: 200 lb., cashews: 80 lb.
D) Peanuts: 90 lb., almonds: 40 lb., cashews: 190 lb.

1) B
2) B
3) A
4) B
5) C
6) A
7) D
8) C
9) C
10) A
11) B
12) C
13) D
14) D
15) B
16) B
17) A
18) B
19) C
20) B
21) D
22) A
23) C
24) C
25) C
26) B
27) C
28) B
29) B
30) C
31) B
32) C
33) D
34) C
35) C
36) A
37) B
38) C
39) A
40) B
41) B
42) C
43) A
44) A
45) A
46) D
47) B
48) A
49) B
50) B

51) A
52) B
53) A
54) C
55) B
56) C
57) A
58) A
59) B
60) A
61) A
62) B
63) C
64) A
65) D
66) B
67) D
68) A system having infinitely many solutions
(the lines coincide)
69) The system is inconsistent.
70) D
71) The system has an infinite number of solutions.
72) Each point on the graph corresponds to an ordered pair that is a solution of the equation. The point of intersection of the graphs of two lines corresponds to an ordered pair that is a solution of both equations and, hence, a solution of a system of equations.
73) Parallel lines: no solution
The lines intersect in exactly one point: independent solution
Equations have the same graph: dependent solutions
74) D
75) No
76) No
77) C
78) D
79) D
80) C
81) D
82) D
83) C
84) A
85) A
86) B
87) D
88) B
89) B
90) B
91) C
92) B
93) C
94) A
95) B
96) B

97) B
98) D
99) C
100) C
101) D
102) B
103) A
104) C
105) There are an infinite numbers of solutions (all representing points on a plane), since the three equations all represent the same plane. (Explanations will vary.)
106) There are an infinite numbers of solutions (all representing points on a line). The first two equations represent the same plane, which would intersect the plane of the third equation in a line. (Explanations will vary.)
107) There are no solutions since the three equations represent three parallel planes. (Explanations will vary.)
108) There are no solutions. All three planes are parallel, or two planes coincide and are parallel to the third. (Explanations will vary.)
109) There are an infinite number of solutions, which are represented by the points on a plane. All three planes coincide. (Explanations will vary.)
110) There are an infinite number of solutions, which are represented by the points on a line. (Explanations will vary.)
111) D
112) C
113) D
114) D
115) A
116) B
117) A
118) C
119) A
120) B
121) A
122) C
123) B
124) D
125) B
126) C
127) C
128) B
129) D
130) A
131) D
132) C
133) A
134) D
135) D
136) D
137) D
138) A
139) D
140) C
141) A
142) B
143) A

144) C
145) C
146) A
147) A
148) A
149) B
150) D
151) D
152) D
153) B
154) A
155) D
156) B
157) A
158) B
159) A
160) B
161) A
162) C
163) B
164) A
165) B
166) A
167) C
168) A
169) B
170) D
171) B
172) C
173) D
174) A
175) D
176) C
177) A