Exam 1 will be on 09/17/10 and covers the following sections: 3.1, 3.2, 3.3, 3.4, 3.5, 4.1, 4.2, 4.3, 4.5.

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

Plot the ordered pairs on the rectangular coordinate system provided.

1) A(1, 4), B(-2, 3)

2) A(-1/2, -5), B(-3, 1)

Determine whether the ordered pair is a solution for the equation.

3) (-2, -5); -19x - 2y = 48

4) (4, 4); 3x + y = 16

Graph the equation.

5) y = 2x - 4
6) \( y = -\frac{1}{6}x \)

Find three solutions for the equation.
8) \( y = -7x + 6 \)
9) \( 5x + 6y = 90 \)
10) \( y = 5x + 4 \)

Graph the equation.
11) \( y = -1 \)
Find the x- and y- intercepts.

12) $-2.6x + 1.8y = 9$

13) $x = 2$

14) $-x + \frac{1}{4}y = -1$

15) $x = 3$

16) $y = 4x$

17) $y = \frac{3}{4}x - 24$

18) $x - y = -16$

19) $4x - 7y = 11$

20) $y = -7$

21) $x - y = -14$
Graph using the x- and y-intercepts.

22) \(2x - y = 6\)

23) \(x - 2y = 6\)

24) \(3x + 4y = 16\)

Find the slope of the line through the given points.

25) \((2, -7), (2, 1)\)

26) \((1, 2), (4, 2)\)

27) \((-5, -7), (-8, 5)\)
Find the slope of the line going through the given pair of points.

28) \( \left( \frac{1}{2}, \frac{5}{7} \right) \) and \( \left( \frac{5}{6}, \frac{4}{7} \right) \)

29) (3.9, 4.4) and (3.4, 1.9)

Find the slope of the line through the given points.

30) (7, -7), (4, 5)

Determine the slope and the y-intercept. Then graph the equation.

31) \( y = -3x + 7 \)

32) \( 3x - 5y = 21 \)

33) \(-5y = -3x - 19 \)
34) \(5x - 2y + 9 = 0\)

35) \(x + y = -3\)

Find the slope of the line and sketch the graph.

36) \(y - 5 = 0\)

Write the equation of the line in slope-intercept form given the slope and the coordinates of the y-intercept.

37) \(m = -\frac{6}{5}, (0, 8)\)
38) \( m = \frac{1}{2}; \) \((0, 4)\)

Write the equation of a line connecting the given points. Write the equation in slope-intercept form.

39) \((-9, 0), (4, -3)\)

40) \((-8, -1), (-5, 4)\)

41) \((-9, 2), (-3, 2)\)

42) \((6, -9), (6, 5)\)

43) \( \left(\frac{1}{5}, \frac{3}{5}\right), \left(-\frac{1}{10}, \frac{1}{10}\right) \)

44) \( \left(-\frac{1}{5}, \frac{2}{5}\right), \left(\frac{1}{5}, \frac{7}{5}\right) \)

45) \((0, 0), (1, -8)\)

Write the equation of a line with the given slope passing through the given point. Write the equation in slope-intercept form.

46) \( m = -\frac{3}{7}; (3, 2)\)

47) \( m = -\frac{3}{8}; (3, 3)\)

48) \( m = \frac{2}{9}; (9, 2)\)

49) \( m = -8; (2, 4)\)

Find an equation in slope-intercept form of the line satisfying the specified conditions.

50) Through \((-7, -8)\), parallel to \(5x + 7y = -63\)

51) Through \((3, -5)\), perpendicular to \(9x - 8y = -13\)

52) Through \((-8, -7)\), perpendicular to \(-5x - 9y = 85\)

53) Through \((6, 2)\), parallel to \(4x - 9y = -57\)

54) Through \((-1, -4)\), parallel to \(y = -\frac{1}{2}x - 9\)

55) Through \((-2, -4)\), perpendicular to \(7x + 6y = -68\)
Solve the problem.

56) A deep sea diving bell is being lowered at a constant rate. After 12 minutes, the bell is at a depth of 600 feet. After 50 minutes the bell is at a depth of 1400 feet. What is the average rate of lowering per minute? Round your answer to the nearest tenth.

57) The cost of manufacturing a molded part is related to the quantity produced during a production run. When 100 parts are produced, the cost is $300. When 300 parts are produced, the cost is $1700. What is the average cost per part?

58) A cross-country skier reaches the 13-km mark of a race 40 min after reaching the 5-km mark. Find the speed (average rate of change) of the skier.

59) In 1980, the population of a city was 6.3 million. By 1992 the population had grown to 8.3 million. Find the average rate of change in population from 1980 to 1992.

60) A deep sea diving bell is being lowered at a constant rate. After 11 minutes, the bell is at a depth of 600 feet. After 55 minutes the bell is at a depth of 1500 feet. What is the average rate of lowering per minute? Round your answer to the nearest tenth.

61) The cost of manufacturing a molded part is related to the quantity produced during a production run. When 100 parts are produced, the cost is $300. When 600 parts are produced, the cost is $2300. What is the average cost per part?

Determine the nature of the system of equations.

62) \[ \begin{align*}
3x + 2y &= 34 \\
3x + 6y &= 78 
\end{align*} \]

63) \[ \begin{align*}
-6x + 3y &= -6 \\
5x + 5y &= 95 
\end{align*} \]

64) \[ \begin{align*}
3x + 5y &= 66 \\
6x + 10y &= 132 
\end{align*} \]

65) \[ \begin{align*}
2x - 3y &= -16 \\
8x - 12y &= -64 
\end{align*} \]

66) \[ \begin{align*}
-4x - y &= -52 \\
-16x - 4y &= -217 
\end{align*} \]

Solve the system using substitution.

67) \[ \begin{align*}
x &= 30 + 6y \\
9x - 5y &= 25 
\end{align*} \]

68) \[ \begin{align*}
-5x + 8y &= 36 \\
-2x - 4y &= -36 
\end{align*} \]
69) $7x + 28 = 7y$
   \[-3x + 2y = 10\]

70) $3x + 4y = 5$
   $9x = 10 + 12y$

71) $7x - 17 = 5y$
   \[-5x + 2y = -20\]

72) $2x + 3y = 5$
   $6x = 10 + 9y$

Solve the system using elimination.

73) $-x + 3y = -4$
   $-5x - 3y = 14$

74) $x - 5y = -48$
   $-2x - 5y = -39$

75) $x + 9y = -34$
   $9x + 8y = -87$

76) $3x - y = 9$
   $5x + y = 23$

77) $7x - 5y = -35$
   $5x + 2y = 14$

78) $x + y = 6$
   $x - y = 4$

Translate the problem to a system of equations, then solve using substitution.

79) A biologist collected 216 fern and moss samples. There were 84 fewer ferns than moss samples. How many fern samples did the biologist collect?

Solve the problem.

80) The perimeter of a rectangle is 22 cm. The length is 7 cm longer than the width. What are the length and width of the rectangle?

81) Bob fenced in a rectangular garden in his yard. The length of the rectangle is 5 feet longer than the width and the perimeter is 66 feet. What is the width of the rectangle?

Translate the problem to a system of equations, then solve using substitution.

82) At a local university, a difference between a professor’s salary and an associate professor's salary is $249,688. The sum of the salaries is $1,311,560. Find the salary of an associate professor at this university.

Translate the problem to a system of equations, then solve using substitution.

83) A biologist collected 259 fern and moss samples. There were 19 fewer ferns than moss samples. How many fern samples did the biologist collect?
Translate the problem to a system of equations, then solve using substitution.

84) At a local university, a difference between a professor's salary and an associate professor's salary is $149,683. The sum of the salaries is $1,291,559. Find the salary of an associate professor at this university.

85) A biologist collected 158 fern and moss samples. There were 98 fewer ferns than moss samples. How many fern samples did the biologist collect?

86) At a local university, a difference between a professor's salary and an associate professor's salary is $149,691. The sum of the salaries is $1,331,567. Find the salary of an associate professor at this university.
Answer Key
Testname: MAT_1033_FALL_10_MWF_7AM_EXAM_1_REVIEW

1) Yes

2) Yes

3) Yes
4) Yes

5)
6) (0, 6), (5, -29), (6, -36)
7) (0, 15), (18, 0), (12, 5)
8) (1, 9), (2, 14), (3, 19)
12) \[ \begin{align*} x & = 0, \quad y = 0 \end{align*} \]

13) \[ \begin{align*} x & = 0, \quad y = 0 \end{align*} \]

14) \((1, 0), (0, -4)\)

15) \((3, 0), \text{no y-intercept}\)

16) \((0, 0), (0, 0)\)

17) \((32, 0), (0, -24)\)

18) \((-16, 0), (0, 16)\)

19) \((\frac{11}{4}, 0), (0, -\frac{11}{7})\)

20) No x-intercept, \((0, -7)\)

21) \((-14, 0), (0, 14)\)

22) \[ \begin{align*} x & = 0, \quad y = 0 \end{align*} \]
23) undefined
24) undefined
25) Undefined
26) 0
27) -4
28) \(\frac{3}{7}\)
29) 5
30) -4
31) \(m = -3\), y-intercept: (0, 7)
32) \( m = \frac{3}{5} \), y-intercept: \( 0, -\frac{21}{5} \)

33) \( m = \frac{3}{5} \), y-intercept: \( 0, \frac{19}{5} \)

34) \( m = \frac{5}{2} \), y-intercept: \( 0, \frac{9}{2} \)
35) $m = -1$; y-intercept: $(0, -3)$

36) Slope: 0

37) $y = -\frac{6}{5}x + 8$

38) $y = \frac{1}{2}x + 4$

39) $y = -\frac{3}{13}x - \frac{27}{13}$

40) $y = \frac{5}{3}x + \frac{37}{3}$

41) $y = 2$

42) $x = 6$

43) $y = \frac{5}{3}x + \frac{4}{15}$

44) $y = \frac{5}{2}x + \frac{9}{10}$

45) $y = -8x$

46) $y = -\frac{3}{7}x + \frac{23}{7}$

47) $y = -\frac{3}{8}x + \frac{33}{8}$
48) $y = \frac{2}{9}x$

49) $y = -8x + 20$

50) $y = -\frac{5}{7}x - 13$

51) $y = -\frac{8}{9}x - \frac{7}{3}$

52) $y = \frac{9}{5}x + \frac{37}{5}$

53) $y = \frac{4}{9}x - \frac{2}{3}$

54) $y = -\frac{1}{2}x - \frac{9}{2}$

55) $y = \frac{6}{7}x - \frac{16}{7}$

56) 21.1 ft per min

57) $7.00$ per part

58) 12 km/hr

59) $\frac{1}{6}$ million per year

60) 20.5 ft per min

61) $4.00$ per part

62) Consistent with independent solutions

63) Consistent with independent solutions

64) Consistent with dependent solutions

65) Consistent with dependent solutions

66) Inconsistent with independent solutions

67) (0, -5)

68) (4, 7)

69) (-2, 2)

70) \[
\begin{bmatrix}
25 \\
18
\end{bmatrix}
\]

71) (6, 5)

72) \[
\begin{bmatrix}
25 \\
12
\end{bmatrix}
\]

73) (-4, 2)

74) (-3, 9)

75) (-7, -3)

76) (4, 3)

77) (0, 7)

78) (5, 1)

79) 66 fern samples

80) Length: 9 cm; width: 2 cm

81) 14 feet

82) $530,936$

83) 120 fern samples

84) $570,938$

85) 30 fern samples
Answer Key
Testname: MAT_1033_FALL_10_MWF_7AM_EXAM_1_REVIEW

86) $590,938