10. The line appears to go through 
(0, 1) and (6, 5).
Slope = \( \frac{y_2 - y_1}{x_2 - x_1} = \frac{5 - 1}{6 - 0} = \frac{2}{3} \)

12. Slope = \( \frac{-4 - 4}{4 - 2} = -4 \)

14. Slope = \( \frac{6 - (-2)}{1 - (-3)} = \frac{8}{4} = 2 \)

16. Because \( m \) is undefined, \( x \)
do not change. Three other points are: \((-4, 0), (-4, 3), (-4, 5)\).

18. Since \( m = -2 \), \( y \) decreases 2
for every one unit increase in \( x \). Three other parts are
\((1, -11), (2, -13), (3, -15)\).

20. Since \( m = -\frac{1}{2} \), \( y \) decrease 1
for every increase of 2 units in \( x \). Three points are \((1, -7),
(3, -8), (5, -9)\).

22. \( L_1: \) \((-2, -1), (1, 5)\)
\[ m_1 = \frac{5 - (-1)}{1 - (-2)} = \frac{6}{3} = 2 \]
\( L_2: \) \((1, 3), (5, -5)\)
\[ m_2 = \frac{-5 - 3}{5 - 1} = \frac{-8}{4} = -2 \]
The lines are neither parallel nor perpendicular.

24. \( L_1: \) \((4, 8), (-4, 2)\)
\[ m_1 = \frac{2 - 8}{4 - 2} = \frac{-6}{2} = -3 \]
\( L_2: \) \((3, -5), \left(-1, \frac{1}{3}\right)\)
\[ m_2 = \frac{(1/3) - (-5)}{-1 - 3} = \frac{16/3}{-4} = -\frac{4}{3} \]
The lines are perpendicular.

26. (a) \( 2x + 3y - 9 = 0 \)
\[ 3y = -2x + 9 \]
\[ y = -\frac{2}{3}x + 3 \]
Slope: \( m = -\frac{2}{3} \)
\( y \)-intercept: \((0, 3)\)

28. (a) \( 3x + 7 = 0 \) \( \quad \) (b)
\[ x = -\frac{7}{3} \]
Slope: undefined
\( y \)-intercept: none

30. (a) \(-11 - 8y = 0 \) \( \quad \) (b)
\[ 8y = -11 \]
\[ y = -\frac{11}{8} \]
Slope: \( m = 0 \)
\( y \)-intercept: \((0, -\frac{11}{8})\)
32. (a) \( x - y - 10 = 0 \)
\[ x - 10 = y \]
Slope: \( m = 1 \)
y-intercept: \((0, -10)\)

(b) 
\[
\begin{array}{c|c}
\hline
x & y \\
\hline
-2 & 3 \\
2 & 7 \\
6 & 11 \\
10 & 15 \\
\hline
\end{array}
\]

34. \( m = -1, (0, 10) \)
\[ y - 10 = -1(x - 0) \]
\[ y - 10 = -x \]
\[ x + y - 10 = 0 \]

36. \( m = 4, (0, 0) \)
\[ y - 0 = 4(x - 0) \]
\[ y = 4x \]
\[ 4x - y = 0 \]

38. \( m = \frac{3}{4}, (-2, -5) \)
\[ y + 5 = \frac{3}{4}(x + 2) \]
\[ 4y + 20 = 3x + 6 \]
\[ 0 = 3x - 4y - 14 \]

40. \( m = 0, (-10, 4) \)
\[ y - 4 = 0(x + 10) \]
\[ y - 4 = 0 \]

42. \( m = -\frac{5}{2}, (2.3, -8.5) \)
\[ y + 8.5 = -\frac{5}{2}(x - 2.3) \]
\[ 2y + 17 = -5x + 11.5 \]
\[ 2y + 5x + 5.5 = 0 \]
\[ 4y + 10x + 11 = 0 \]

44. \( (4, 3), (-4, -4) \)
\[ y - 3 = \frac{-4 - 3}{-4 - 4}(x - 4) \]
\[ y - 3 = \frac{7}{8}(x - 4) \]
\[ 8y - 24 = 7x - 28 \]
\[ 7x - 8y - 4 = 0 \]
46. \((-1, 4), (6, 4)\)
\[
y - 4 = \frac{4 - 4}{6 - (-1)}(x + 1)
\]
\[
y - 4 = 0(x + 1)
\]
\[
y - 4 = 0
\]

48. \((1, 1), \left(6, \frac{-2}{3}\right)\)
\[
y - 1 = \frac{-2}{3} \cdot \frac{1}{6 - 1}(x - 1)
\]
\[
y - 1 = \frac{1}{3}(x - 1)
\]
\[
y - 1 = \frac{1}{3}x + \frac{1}{3}
\]
\[
3y - 3 = -x + 1
\]
\[
x + 3y - 4 = 0
\]

50. \(\left(\frac{3}{4}, 2\right), \left(-\frac{4}{3}, \frac{7}{4}\right)\)
\[
y - \frac{3}{2} = \frac{7}{4} - \frac{3}{2}(x - \frac{3}{4})
\]
\[
y - \frac{3}{2} = -\frac{3}{4} \cdot \frac{3}{4}(x - \frac{3}{4})
\]
\[
y - \frac{3}{2} = -\frac{3}{25}x + \frac{9}{100}
\]
\[
100y + 12x - 159 = 0
\]

52. \((-8, 0.6), (2, -2.4)\)
\[
y - 0.6 = \frac{-2.4 - 0.6}{2 - (-8)}(x + 8)
\]
\[
y - 0.6 = -\frac{3}{10}(x + 8)
\]
\[
10y - 6 = -3(x + 8)
\]
\[
10y - 6 = -3x - 24
\]
\[
3x + 10y + 18 = 0
\]
54. \( \frac{x}{a} + \frac{y}{b} = 1 \)

\[ \frac{x}{-6} + \frac{y}{2} = 1 \]

\[ y = 2 \left( 1 + \frac{x}{6} \right) \]

\[ y = \frac{x}{3} + 2 \]

\( a \) and \( b \) are the \( x \)- and \( y \)-intercepts.

56. \( \frac{x}{a} + \frac{y}{b} = 1 \)

\[ \frac{x}{-5} + \frac{y}{-4} = 1 \]

\[ 4x + 5y + 20 = 0 \]

60. The first setting shows the \( x \)- and \( y \)-intercepts more clearly.

62. \( L_1: y = \frac{2}{3}x; \ L_2: y = -\frac{3}{2}x; \ L_3: y = \frac{2}{3}x + 2 \)

\( L_1 \) is parallel to \( L_3 \). \( L_2 \) is perpendicular to \( L_1 \) and \( L_3 \).

64. \( L_1: y = x - 8; \ L_2: y = x + 1; \ L_3: y = -x + 3 \)

\( L_1 \) is parallel to \( L_2 \). \( L_3 \) is perpendicular to \( L_1 \) and \( L_2 \).

66. \( x + y = 7 \)

\[ y = -x + 7 \]

Slope: \( m = -1 \)

(a) \( m = -1, (-3, 2) \)

\[ y - 2 = -1(x + 3) \]

\[ y = -x - 1 \]

\[ x + y + 1 = 0 \]

(b) \( m = 1, (-3, 2) \)

\[ y - 2 = 1(x + 3) \]

\[ y = x + 5 \]

\[ x - y + 5 = 0 \]

68. \( 5x + 3y = 0 \)

\[ 3y = -5x \]

\[ y = -\frac{5}{3}x \]

Slope: \( m = -\frac{5}{3} \)

(a) \( m = -\frac{5}{3}, \left( \frac{7}{8}, \frac{3}{4} \right) \)

\[ y - \frac{3}{4} = -\frac{5}{3}(x - \frac{7}{8}) \]

\[ 24y - 18 = -40(x - \frac{7}{8}) \]

\[ 24y - 18 = -40x + 35 \]

\[ 40x + 24y - 53 = 0 \]

(b) \( m = \frac{3}{5}, \left( \frac{7}{8}, \frac{3}{4} \right) \)

\[ y - \frac{3}{4} = \frac{3}{5}(x - \frac{7}{8}) \]

\[ 40y - 30 = 24(x - \frac{7}{8}) \]

\[ 40y - 30 = 24x - 21 \]

\[ 24y - 40y + 9 = 0 \]
70. \(6x + 2y = 9\)
\[
2y = -6x + 9 \\
y = -3x + \frac{9}{2}
\]
Slope: \(m = -3\)
(a) \(m = -3, (-3.9, -1.4)\)  
(b) \(m = \frac{1}{3}, (-3.9, -1.4)\)
\[
y + 1.4 = -3(x + 3.9) \\
y + 1.4 = \frac{1}{3}(x + 3.9)
\]
\[
y = -3x - 13.1 \\
3y + 4.2 = x + 3.9
\]
\[
30x + 10y + 131 = 0 \\
-x + 3y + 0.3 = 0 \\
10x - 30y - 3 = 0
\]
72. Set the distance between \((3, -2)\) and \((x, y)\) equal to the distance between \((-7, 1)\) and \((x, y)\).
\[
\sqrt{(x - 3)^2 + (y + 2)^2} = \sqrt{(x + 7)^2 + (y - 1)^2}
\]
\[
(x^2 - 6x + 9) + (y^2 + 4y + 4) = (x^2 + 14x + 49) + (y^2 - 2y + 1)
\]
\[
-6x + 4y + 13 = 14x - 2y + 50
\]
\[
-20x + 6y - 37 = 0 \\
20x - 6y + 37 = 0
\]
This line is the perpendicular bisector of the line segment connecting \((3, -2)\) and \((-7, 1)\).

74. (a) \(m = 400\). The revenues are increasing $400 per day.
(b) \(m = 100\). The revenues are increasing $100 per day.
(c) \(m = 0\). There is no change in revenue. (Revenue remains constant.)

76. (a) \begin{array}{|c|c|}
    \hline
    \text{Years} & \text{Slope} \\
    \hline
    1988–1989 & 0.39 - 0.37 = 0.02 \\
    1989–1990 & 0.45 - 0.39 = 0.06 \\
    1990–1991 & 0.51 - 0.45 = 0.06 \\
    1991–1992 & 0.58 - 0.51 = 0.07 \\
    1992–1993 & 0.67 - 0.58 = 0.09 \\
    1993–1994 & 0.77 - 0.67 = 0.10 \\
    1994–1995 & 0.88 - 0.77 = 0.11 \\
    1995–1996 & 0.94 - 0.88 = 0.06 \\
    1996–1997 & 1.06 - 0.94 = 0.12 \\
    1997–1998 & 1.10 - 1.06 = 0.04 \\
    \hline
\end{array}

Greatest increase: 1996–1997
Smallest increase: 1998–1989

(b) \((1988, 0.37), (1998, 1.10)\):
\[
y - 0.37 = \frac{1.10 - 0.37}{11 - 1}(x - 1) \\
y - 0.37 = 0.073(x - 1) \\
y = 0.073x + 0.297 \\
73x - 1000y + 297 = 0
\]
(c) Between 1988 and 1998, the dividend per share increased at a rate of $0.073 per year.
(d) For 2001, \(y = 0.073(14) + 0.297 \approx 1.32\), which seems reasonable.
78. \[ \text{rise} = \frac{3}{4} = \frac{x}{\sqrt{2}(32)} \]
\[ \frac{3}{4} = \frac{x}{16} \]
\[ 4x = 48 \]
\[ x = 12 \]
The maximum height in the attic is 12 feet.

80. \( (1, 156), m = 4.50 \)
\[ V - 156 = 4.50(t - 1) \]
\[ V - 156 = 4.5t - 4.5 \]
\[ V = 4.5t + 151.5 \]

82. \( (1, 245,000), m = -5600 \)
\[ V - 245,000 = -5600(t - 1) \]
\[ V - 245,000 = -5600t + 5600 \]
\[ V = -5600t + 250,600 \]

84. The y-intercept is 12.5 and the slope is 1.5, which represents the increase in hourly wage per unit produced. Matches graph (c).

86. The y-intercept is 600 and the slope is \(-100\), which represents the decrease in the value of the word processor each year. Matches graph (d).

88. \( F = \frac{9}{5}C + 32 \)
\[
\begin{align*}
F = 0^\circ: \quad 0 &= \frac{9}{5}C + 32 \\
-32 &= \frac{9}{5}C \\
-17.7 &\approx C
\end{align*}
\]
\[
\begin{align*}
C &= 10^\circ: \quad F = \frac{9}{5}(10) + 32 \\
F &= 18 + 32 \\
F &= 50 \\
F &= 90^\circ: \quad 90 = \frac{9}{5}C + 32 \\
58 &= \frac{9}{5}C \\
32.2 &= C
\end{align*}
\]

\[
\begin{array}{|c|c|c|c|c|c|}
\hline
C & -17.8^\circ & -10^\circ & 10^\circ & 20^\circ & 32.2^\circ \\
F & 0^\circ & 14^\circ & 50^\circ & 68^\circ & 350.6^\circ \\
\hline
\end{array}
\]

90. \( (1998, 2546), (2000, 2702) \)
\[
\begin{align*}
y - 2546 &= \frac{2702 - 2546}{2000 - 1998}(x - 1998) \\
y - 2546 &= 78(x - 1998) \\
y &= 78x - 153,298
\end{align*}
\]
For \( x = 2004 \), \( y = 78(2004) - 153,298 = 3014 \) students.
92. (a) (0, 25,000), (10, 2000)

\[ V - 25,000 = \frac{2000 - 25,000}{10 - 0}(t - 0) \]

\[ V - 25,000 = -2300t \]

\[ V = -2300t + 25,000 \]

(b) 

\[ \begin{array}{c|cccccccccc}
 t & 0 & 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 & 10 \\
\hline
 V & 25,000 & 22,700 & 20,400 & 18,100 & 15,800 & 13,500 & 11,200 & 8,900 & 6,600 & 4,300 & 2000 \\
\end{array} \]

(c) \( t = 0: V = -2300(0) + 25,000 = 25,000 \)

\( t = 1: V = -2300(1) + 25,000 = 22,700 \)

etc.

94. (a) (580, 50), (625, 47)

\[ x - 50 = \frac{47 - 50}{625 - 580}(p - 580) \]

\[ x - 50 = \frac{-1}{15}(p - 580) \]

\[ x = \frac{-1}{15}p + \frac{266}{3} \]

(c) If \( p = 595, x = 49 \) units.

Algebraically, \( x = \frac{-1}{15}(595) + \frac{266}{3} = 49. \)

96. False. The slopes are different: \( \frac{4 - 2}{-1 + 8} \neq \frac{7 + 4}{-7 - 0} \)

98. One way is to calculate the lengths of the sides.

\[ d(A, B) = \sqrt{(2 - 2)^2 + (3 - 9)^2} = 6 \]

\[ d(B, C) = \sqrt{(2 - 7)^2 + (9 - 3)^2} = \sqrt{25 + 36} = \sqrt{61} \]

\[ d(A, C) = \sqrt{(2 - 7)^2 + (3 - 3)^2} = \sqrt{25} = 5 \]

Then \( d(A, B)^2 + d(A, C)^2 = d(B, C)^2 \), and the triangle is a right triangle.

100. Yes, any pair of points on a line can be used to calculate the slope of the line. The rate of change remains the same on the line.