

Sections 4.1-4.3

Quiz Review

1. At noon, the temperature is 30°F . For the next several hours, the temperature falls by an average of 3°F per hour.
- \swarrow y-int
 $m = -3$
- a) Write an equation for the temperature, T , after n hours after noon.
- b) What does the slope represent?
- $y = -3x + 30$
 $T = -3n + 30$
- how much the temperature drops per hour
- c) What does the y-intercept represent?
- starting temperature

2. Suppose that the water level of a river is 34 feet and that it is receding at a rate of 0.5 foot per day.

a) Write an equation for the water level, L , after d days.

y-int going down $m = -0.5$

$$y = -0.5x + 34$$

$$L = -0.5d + 34$$

b) In how many days will the water level be 26 feet?

16 days

L

$$\begin{array}{r} 26 = -0.5d + 34 \\ -34 \quad \quad \quad -34 \\ \hline -8 = -0.5d \\ -0.5 \quad \quad \quad -0.5 \\ \hline 16 = d \end{array}$$

3. A plumber charges \$25 for a service call plus \$50 per hour of service.

a) Write an equation in slope-intercept form for the cost, C , after h hours of service.

b) What will be the total cost for 8 hours of work?

$$C = 50(8) + 25$$

$$C = \$425$$

c) When will the plumber earn \$275?

5 hours

$$y = 50x + 25$$

$$C = 50h + 25$$

$$\begin{array}{r} 275 = 50h + 25 \\ -25 \quad \quad \quad -25 \\ \hline 250 = 50h \\ 50 \quad \quad \quad 50 \\ \hline 5 = h \end{array}$$

Cost depends on # of people
 y x

4. A caterer charges \$120 to cater a party for 15 people and \$200 for 25 people. Assume that the cost, y , is a linear function of the number of x people.

a) Write an equation in slope-intercept form for this situation.

$$y = 8x$$

b) What does the slope represent?

cost per person

c) How much would a party for 40 people cost?

$$y = 8(40)$$

$$y = \$320$$

$$(15, 120) \quad (25, 200)$$

$x_1 \quad y_1 \quad x_2 \quad y_2$

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$\rightarrow m = \frac{\$200 - 120}{25 - 15}$$

$$m = \frac{80}{10} = 8$$

$$y - y_1 = m(x - x_1)$$

$$y - 120 = 8(x - 15)$$

$$y - 120 = 8x - 120$$

$$\begin{array}{r} y - 120 = 8x - 120 \\ +120 \qquad \qquad +120 \\ \hline \end{array}$$

$$y = 8x$$

5. Write an equation in slope-intercept form of the line with a slope of $-\frac{1}{3}$ and a y-intercept of 5.

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

6. Write an equation in **point-slope form** of the line with a slope of $\frac{4}{5}$ and passes through $(5, -2)$.

$$y - y_1 = m(x - x_1)$$

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

7. Write an equation in **point-slope form** of the line that passes through $(4, 3)$ and $(1, 2)$.

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$m = \frac{2 - 3}{1 - 4} = \frac{-1}{-3} = \frac{1}{3}$$

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

OR

$$y - 2 = \frac{1}{3}(x - 1)$$

$$y = mx + b$$

8. Write an equation in slope-intercept form of the line with the equation $y + 3 = \frac{5}{3}(x + 4)$.

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

$$y + 3 = \frac{5}{3}x + \frac{20}{3}$$

$$\begin{array}{r} y + 3 \\ -3 \\ \hline y = \frac{5}{3}x + \frac{11}{3} \end{array}$$

9. Write an equation in slope-intercept form of the line with a slope of $\frac{2}{7}$ and passes through $(8, -1)$.

$$y - y_1 = m(x - x_1)$$

$$y + 1 = \frac{2}{7}(x - 8)$$

$$y + 1 = \frac{2}{7}x - \frac{16}{7}$$

$$\begin{array}{r} y + 1 \\ -1 \\ \hline y = \frac{2}{7}x - \frac{23}{7} \end{array}$$

10. Write an equation in slope-intercept form of the line with a slope of 0 and passes through $(-6, 7)$.

$$\begin{aligned}
 y - y_1 &= m(x - x_1) \\
 y - 7 &= 0(x - (-6)) \\
 y - 7 &= 0 \\
 \begin{array}{r}
 +7 \quad +7 \\
 \hline
 \end{array} \\
 y &= 7
 \end{aligned}$$

11. Write an equation in slope-intercept form of the line that passes through $(3, -3)$ and $(4, 0)$.

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{0 - (-3)}{4 - 3} = \frac{3}{1} = 3$$

$$\begin{aligned}
 y - y_1 &= m(x - x_1) \\
 y + 3 &= 3(x - 3) \\
 y + 3 &= 3x - 9 \\
 \begin{array}{r}
 -3 \quad -3 \\
 \hline
 \end{array} \\
 y &= 3x - 12
 \end{aligned}$$

12. Write an equation in slope-intercept form of the line that passes through $(3, 5)$ and $(0, 1)$.

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{1 - 5}{0 - 3} = \frac{-4}{-3} = \frac{4}{3}$$

$$y - y_1 = m(x - x_1)$$

$$y - 5 = \frac{4}{3}(x - 3)$$

$$\begin{array}{r} y - 5 = \frac{4}{3}x - 4 \\ +5 \qquad \qquad +5 \\ \hline \end{array}$$

$$y = \frac{4}{3}x + 1$$