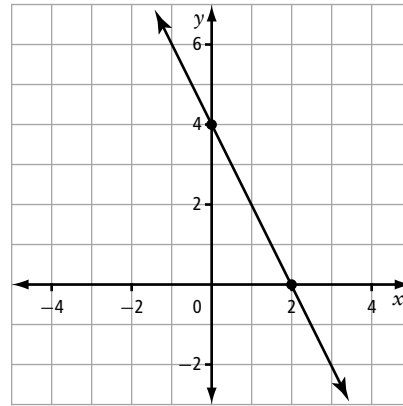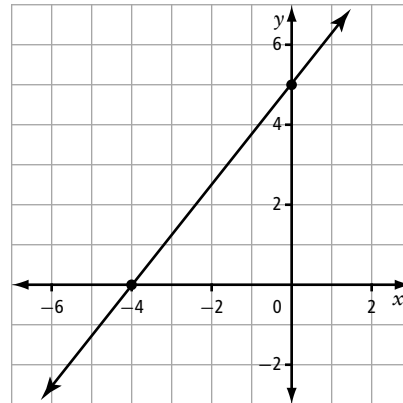**c)** $m = 0.25$; $b = 500$; the slope represents the redemption value per jug; the y-intercept represents the amount of money already raised

d) 1400 jugs

7.2 General Form

5. **a)** $x + 2y + 18 = 0$ **b)** $2x - 3y + 6 = 0$
   c) $x + y + 3 = 0$

6. **a)** y-intercept is $(0, 4)$; x-intercept is $(2, 0)$

Chapter 7 Review

7.1 Slope-Intercept Form

1. **a)** $m = \frac{3}{2}$; $b = -2$; $y = \frac{3}{2}x - 2$
   b) $m = -1$; $b = 5$; $y = -x + 5$
   c) $m = \frac{-1}{6}$; $b = 1$; $y = \frac{-1}{6}x + 1$
   d) $m = 3$; $b = -4$; $y = 3x - 4$

2. $b = 8$

3. If the line $y = mx - 8$ passes through the point $(-2, 6)$, replace x with -2 and y with 6. Solve for m.
$$y = mx - 8$$
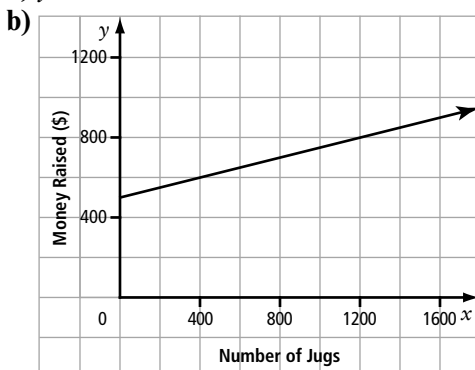$$6 = m(-2) - 8$$
$$6 = -2m - 8$$
$$6 + 8 = -2m - 8 + 8$$
$$14 = -2m$$
$$\frac{14}{-2} = \frac{-2m}{-2}$$
$$-7 = m$$

4. **a)** $y = 0.25x + 500$
   b)

b) y-intercept is $(0, 5)$; x-intercept is $(-4, 0)$

7. **a)** $60x + 10y - 4200 = 0$
   b) x-intercept is $(70, 0)$, y-intercept is $(0, 420)$; The x-intercept represents the number of days of growth under ideal conditions to reach a height of 42 m. The y-intercept represents the number of days of growth under less than ideal condition to reach a height of 42 m.
   c) $0 \le x \le 70$, $0 \le y \le 420$
   d) 90 days

7.3 Slope-Point Form

8. $y + 5 = 2(x + 6)$; $2x - y + 7 = 0$

9. $y - 4 = 8(x - 0)$; $8x - y + 4 = 0$

10. a) Example:

Use the points (8570, 3) and (5570, 12) to find the slope:

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

$$m = \frac{12 - 3}{5570 - 8570}$$

$$m = \frac{9}{-3000}$$

$$m = \frac{-3}{1000}$$

Choose the point (8570, 3). Write the equation in slope-point form:

$$y - 3 = \frac{-3}{1000}(x - 8570)$$

b) Replace x with 6500, and solve for y:

$$y - 3 = \frac{-3}{1000}(x - 8570)$$

$$y - 3 = \frac{-3}{1000}(6500 - 8570)$$

$$y - 3 = \frac{-3}{1000}(-2070)$$

$$y - 3 = 6.21$$

$$y - 3 + 3 = 6.21 + 3$$

$$y = 9.21$$

The temperature at the base of Eagle Chair is approximately 9 °F.

7.4 Parallel and Perpendicular Lines

11. a) perpendicular   **b)** parallel
   c) perpendicular

12. $x + 2y - 12 = 0$

13. Find the slope of the line through the points (−1, 3) and (2, 1).

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

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

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

The negative reciprocal of $\frac{-2}{3}$ is $\frac{3}{2}$. The x-intercept is (−4, 0). Place these values in the slope-point form of the equation of a line:

$$y - 0 = \frac{3}{2}(x - (-4))$$

$$y = \frac{3}{2}x + 6$$

Multiply the equation by 2:

$$2y = 2\left(\frac{3}{2}x + 6\right)$$

$$2y = 3x + 12$$

Write in general form.

$$2y - 2y = 3x - 2y + 12$$

$$0 = 3x - 2y + 12$$

14. All of the lines have a slope of $\frac{-2}{3}$ and all of the lines have different intercepts, therefore, the equations represent parallel lines.