LESSON 5.2

NAME _____ DATE _____

Challenge: Skills and Applications

For use with pages 279–284

In Exercises 1–4, a line with the given slope m contains the given point. Find the y-intercept of the line.

1. $m = \frac{2}{3}$; $(-12, 1)$

2. $m = -\frac{5}{2}$; $(6, -4)$

3. $m = \frac{3}{4}$; $(-2, 7)$

4. $m = -\frac{5}{6}$; $(4, -8)$

5. A line with a slope of -3 passes through the point $(k, 4)$. Find the y-intercept of the line in terms of k.

6. A line with slope of $-\frac{1}{r}$ passes through the point (h, k). Find the y-intercept in terms of r, h, and k.

7. Suppose a certain line has equation $y = mx + b$ and passes through the point $(4, q)$. Suppose another line has the same y-intercept and passes through the point $(4, q + 2)$. Write an equation of this second line using the variables m and b from the first equation, but not using the variable q.

In Exercises 8–9, write an equation of the line.

8. the line whose slope is the same as that of the line $2x - 3y = 4$ and that passes through $(1, 7)$

9. the line with slope p passing through (p, q)

In Exercises 10–12, use the following information.

David Margolez has been working for Pioneer Engineering since 1990. Each year he gets a $2100 raise. In 1998, he earned one and a half times as much as he earned in 1990.

10. Write an equation in the form $y = mx + b$ that models David's salary y in terms of the number of years x since he started working at Pioneer Engineering. (*Hint*: Think about what the slope m and the y-intercept b represent in this problem and what the given information tells you about them.)

11. What was David's salary in 1998?

12. Use your equation to predict how much David will earn in 2005.