LESSON 3.6

NAME _____ DATE _____

Challenge: Skills and Applications

For use with pages 165–171

In Exercises 1–6, write an equation of the line that passes through point *P* and has the given slope. Use slope-intercept form.

1. $(12, d)$; $m = \frac{3}{4}$

2. $(c, -4)$; $m = 2$

3. $(-3, g)$; $m = 4r$

4. $(r, 7)$; $m = \frac{t}{5}$

5. $(2s, 3t)$; $m = \frac{p}{q}$

6. $\left(\frac{u}{5}, \frac{v}{3}\right)$; $m = 2$

In Exercises 7–12, write an equation of the line that passes through point *P* and is parallel to the line with the given equation. Use slope-intercept form.

7. $(0, p)$; $y = 3x - 4$

8. (c, d); $y = 4x - 5$

9. $(3, -5)$; $6x - y = 21$

10. $(-10, 4)$; $2x + y = W$

11. $(1, 4)$; $Ax + By = C$

12. $(b, 4d)$; $x - ty = s$

13. Let $A(0, u)$ and $C(0, v)$ be two points on the y-axis. Let $B(w, 0)$ and $D(x, 0)$ be two points on the x-axis. If $\overleftrightarrow{AB} \parallel \overleftrightarrow{CD}$, express x in terms of u, v, and w.

In Exercises 14–16, suppose the points *O*(0, 0), *D*(*q*, *r*), and *E*(*s*, *t*) are three noncollinear points. Find the coordinates of the given point.

14. F, given that $\overleftrightarrow{OD} \parallel \overleftrightarrow{EF}$ and $\overleftrightarrow{DF} \parallel \overleftrightarrow{OE}$

15. G, given that $\overleftrightarrow{ED} \parallel \overleftrightarrow{GO}$ and $\overleftrightarrow{EG} \parallel \overleftrightarrow{DO}$

16. H, given that $\overleftrightarrow{DH} \parallel \overleftrightarrow{EO}$ and $\overleftrightarrow{OH} \parallel \overleftrightarrow{ED}$

17. Consider the two linear equations $Ax + By = C$ and $Dx + Ey = F$.

a. If the lines described by these equations are parallel, what condition must be satisfied by A, B, D, and E?

b. If the condition you wrote is satisfied, are there any values of C and F for which the equations do *not* describe two parallel lines? Explain.