LESSON 7.5

NAME _____ DATE _____

Challenge: Skills and Applications

For use with pages 426–431

In Exercises 1–3, use the linear system.

$\frac{1}{2}x - \frac{3}{4}y = 5$

$kx - \frac{3}{5}y = 2$

1. For what values of k does the system have no solution?
2. For what values of k does the system have infinitely many solutions?
3. For what values of k does the system have exactly one solution?

In Exercises 4–5, suppose *a, b,* and *k* are nonzero numbers. Suppose you solve the system by linear combinations.

$ax + by = 5$

$kax + kby = 10$

4. Does the number of solutions the system has depend on the values of a and b? Does it depend on the value of k?
5. Describe the number of solutions in each possible case.

In Exercises 6–7, suppose you solve the system by multiplying the first equation by *d* and the second equation by *b* and then subtracting.

$ax + by = p$

$cx + dy = q$

6. What is the coefficient of x in the resulting equation?
7. State a relationship among the numbers a, b, c, and d that guarantees that the system does *not* have exactly one solution.