**Mechanics of the Elimination Method**

(Problems 1–3) The elimination method for solving a system of two linear equations works if the two equations are both in standard form so that the *x­*-terms, the *y*-terms, and the constant terms line up with each other. In each of these systems, rewrite the second equation so that it “lines up” with the first one.

1. 3*x* + 2*y* = 10
 *y =* 2*x* – 9

2. 4*x* + 2*y* = 6
 3*y* – 2*x* = 25

3. *x* + 10*y* = 0
 –15 = 5*y* + 2*x*

(Problems 4–6) Once the equations are lined up, you can sometimes eliminate a variable by adding the two equations together. For which system can you eliminate *x* by adding? For which system can you eliminate *y* by adding? For which system will neither variable be eliminated when the equations are added?

4. 2*x* – *y* = –2
 3*x* + *y* = 17

 5. *x* + 2*y* = 9
 –2*x* + *y* = –8

6. 4*x* – 2*y* = 16
 – 4*x* + 8*y* = 8

(Problems 7–9) Sometimes you can eliminate a variable by multiplying one of the equations by the same number on both sides and then adding it to the other. For each of these systems, which equation should be multiplied and by what number? Which variable will be eliminated when you do that?

7. 2*x* + *y* = 2
 3*x* – 2*y* = –11

8. –*x* + 2*y* = –7
 3*x* + 5*y* = –1

9. *x* + 3*y* = 5
 2*x* + 4*y* = 7

(Problems 10–15) Complete the solutions to the systems in Problems 4–9.

10(4). 2*x* – *y* = –2
 3*x* + *y* = 17

 11(5). *x* + 2*y* = 9
 –2*x* + *y* = –8

12(6). 4*x* – 2*y* = 16
 – 4*x* + 8*y* = 8

13(7). 2*x* + *y* = 2
 3*x* – 2*y* = –11

14(8). –*x* + 2*y* = –7
 3*x* + 5*y* = –1

15(9). *x* + 3*y* = 5
 2*x* + 4*y* = 7

(Problems 16–18) Sometimes you need to multiply both equations in order to eliminate one variable. Figure out which variable you want to eliminate and then chose what to multiply each equation by. Explain your choices.

16. 2*x* + 5*y* = 45
 3*x* – 2*y* = 20

17. 2*x* + 3*y* = 30
 –3*x* – 4*y* = –41

18. 0.2*x* + 0.7*y* = 0.9
 0.5*x* + 0.3*y* = 0.8

(Problems 19–21) Complete the solution to each of the systems in Problems 16–18.

19(16). 2*x* + 5*y* = 45
 3*x* – 2*y* = 20

20(17). 2*x* + 3*y* = 30
 –3*x* – 4*y* = –41

21(18). 0.2*x* + 0.7*y* = 0.9
 0.5*x* + 0.3*y* = 0.8