Chapter Review

Key

Know it! Note

6-1 Solving Systems by Graphing

Tell whether the ordered pair is a solution of the given system.

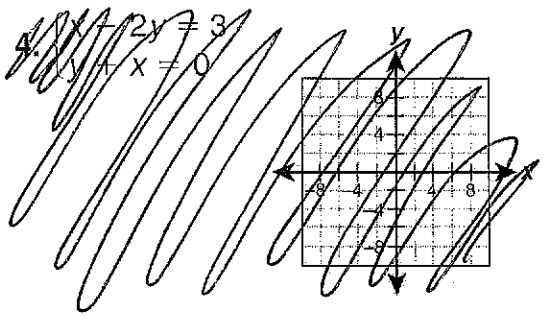
1. $(2, -3)$; $\begin{cases} 2x - y = 7 \\ x - 2y = -5 \end{cases}$ — $4 + 3 = 7$ ✓; $2(2) - (-3) = 7$ ✓; $2 - 2(-3) = -5$; $2 + 6 = -5$; $8 \neq -5$ — No

2. $(-1, -5)$; $\begin{cases} y = 3x - 2 \\ y = -x - 6 \end{cases}$ — $-5 = 3(-1) - 2$ ✓; $-5 = 1 - 6$ ✓ — Yes

3. $(3, 14)$; $\begin{cases} x = \frac{1}{2}y - 4 \\ y = 4x + 2 \end{cases}$ — $3 = 7 - 4$ ✓; $14 = 4(3) + 2$; $12 + 2$ ✓ — Yes

Solve each system by graphing.

4. $\begin{cases} x - 2y = 3 \\ y + x = 0 \end{cases}$



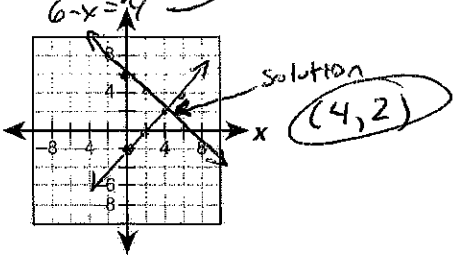
5. $\begin{cases} x = 6 - y \\ 2 - x = -y \end{cases}$

$6 - y = x$; $+y \quad +y$; $6 = x + y$; $6 - x = y$; $y = -x + 6$

$-1 \quad -1 \quad = 1$

$-2 + x = y$

$y = x - 2$



6-2 Solving Systems by Substitution

Solve each system by substitution.

6. $\begin{cases} x + 2y = 16 \\ x - 3y = 1 \end{cases}$

$+3y \quad +3y$

$x = 3y + 1$

$3y + 1 + 2y = 16$

$5y + 1 = 16$

$-1 \quad -1$

$\frac{5y}{5} = \frac{15}{5}$

$y = 3$

$x + 2(3) = 16$

$x + 6 = 16$

$-6 \quad -6$

$x = 10$

(10, 3)

7. ~~$\begin{cases} 2x + 5y = 15 \\ x = -23 \end{cases}$~~

8. $\begin{cases} 2x + y = -9 \\ 3x + 4y = -11 \end{cases}$

$y = -2x - 9$

$-2x \quad -2x$

$3x + 4(-2x - 9) = -11$

$3x + 8x - 36 = -11$

$+36 \quad +36$

$\frac{-5x}{-5} = \frac{25}{-5}$

$x = -5$

$2(-5) + y = -9$

$-10 + y = -9$

$+10 \quad +10$

$y = 1$

(-5, 1)

9. The sum of two numbers is 66. The second number is 22 less than three times the first number. Write and solve a system of equations to find the two numbers.

6-3 Solving Systems by Elimination

Solve each system by elimination.

10. $\begin{cases} 4y = 25 - 3x \\ 4x = 7y - 16 \end{cases}$

11. $\begin{cases} 8x + y = -137 \\ y = 2x + 99 \end{cases}$

12. $\begin{cases} 2x + y = -21 \\ 12x - 13y = 387 \end{cases}$

13. John needs 23 boards to build rafters for his house. He can use 16-foot or 20-foot length boards. He needs seven fewer 16-foot boards than 20-foot boards. Write and solve a system of equations to determine how many of each size board John needs.

6-4 Solving Special Systems

Solve each system of linear equations.

14. $\begin{cases} 4y - 6x = 10 \\ 15 + 9x = 6y \end{cases}$

15. $\begin{cases} 2x - 5y = 15 \\ 10y = 20 + 4x \end{cases}$

16. $\begin{cases} 8x + 12y = 16 \\ 24 = 9x - 21y \end{cases}$

Classify each system. Give the number of solutions.

17. $\begin{cases} y - 3x = 3 \\ 3(x - 1) = y \end{cases}$

18. $\begin{cases} y + x = 3 \\ 6 = 2x - y \end{cases}$

19. $\begin{cases} 3x = y + 2 \\ 2y + 4 = 6x \end{cases}$

6-5 Solving Linear Inequalities

Tell whether the ordered pair is a solution of the inequality.

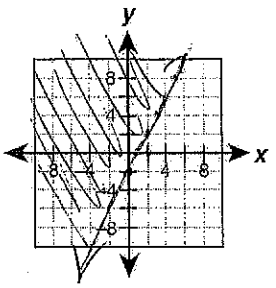
20. $(-4, 2)$; $y \geq 2x - 4$ — $2 \geq 2(-4) - 4$; $2 \geq -8 - 4$; $2 \geq -12$ — Yes

21. $(6, 8)$; $y < 2x - 4$ — $8 < 2(6) - 4$; $8 < 12 - 4$; $8 < 8$ — No

22. $(1, 2)$; $2y \leq x + 3$ — $2(2) \leq 1 + 3$; $4 \leq 4$ — Yes

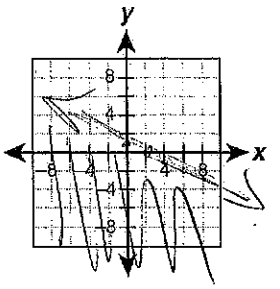
Graph the solutions of each linear inequality.

23. $y \geq 2x - 2$



24. $y + \frac{1}{2}x \leq 1$

$y \leq -\frac{1}{2}x + 1$



6-6 Solving Systems of Linear Inequalities

Tell whether the ordered pair is a solution of the given system.

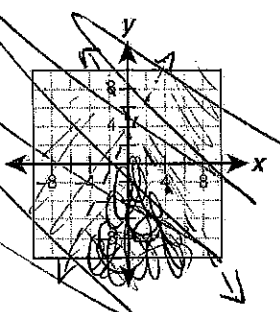
25. $(0, 0)$; $\begin{cases} x + 2y < 4 \\ 2y > x - 6 \end{cases}$ — $0 + 0 < 4$ ✓; $0 > -6$ ✓ — Yes

26. $(-2, 2)$; $\begin{cases} y \geq x + 3 \\ 2x \geq 3y + 2 \end{cases}$ — $2 \geq -2 + 3$ ✓; $-4 \geq 6 + 2$ — No

27. $(4, -3)$; $\begin{cases} 2y - x \leq -6 \\ 2x \geq -3y \end{cases}$ — $-10 \leq -6$; $-6 - 4 \leq -6$ ✓; $8 \geq 9$ — No

Graph each system of linear inequalities.

28. $\begin{cases} 2x - y > -3 \\ 4x + y < 5 \end{cases}$



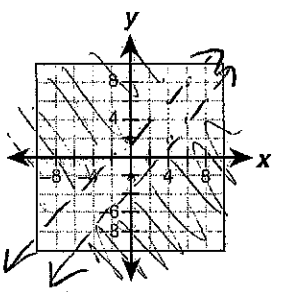
$2x - y > -3$; $+y \quad +y + 3$; $+3$; $2x + 3 > y$; $y < 2x + 3$

$4x + y < 5$; $-5 \quad -y \quad -5 - y$; $4x - 5 < -y$; $-1 \quad -1 \quad -1$; $-4x + 5 > y$; $y < -4x + 5$

29. $\begin{cases} x - y < -2 \\ x - y > 2 \end{cases}$

$+2 \quad +2$; $+y \quad +y$

$x + 2 < y$; $y > x + 2$



$x - y > 2$; $+y \quad +y \quad +2$; -2; $x - 2 > y$; $y < x - 2$

CHAPTER 6

Big Ideas

Know it Note

Answer these questions to summarize the important concepts from Chapter 6 in your own words.

1. What are the steps for solving systems of equations by using substitution?

① Solve for one of the variables (in only one equation)
② Plug into the other equation for the variable you solved for
③ Solve that equation
④ plug that answer into either of the original equations
⑤ Write your answer as an ordered pair.

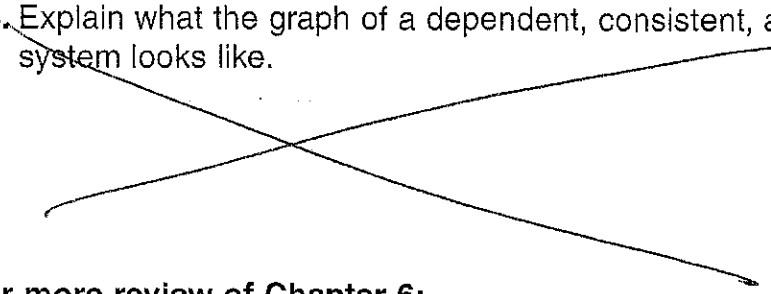
2. Explain which method is best for solving systems of linear equations for certain systems.

Graphing	Substitution	Elimination
If your equations are in slope-int form or easy to get into slope-int.	If it is easy to isolate a variable without creating a fraction.	If you can easily get the same coefficient but opposite sign.

3. What are the steps for graphing inequalities?

① write the equation in slope intercept (imagine it is an =)
② Plot points
③ Determine if it should be a dashed or solid line
④ Determine where to shade.

4. Explain what the graph of a dependent, consistent, and inconsistent system looks like.



For more review of Chapter 6:

- Complete the Chapter 6 Study Guide and Review on pages 430–433.
- Compete the Ready to Go On quizzes on pages 413 and 429.