Name: _____ **Hour** _____

Chapter 3 Systems Review

Solve the system by substitution.

How many solutions does each system have?

1. $\begin{cases} -2x - y = -14 \\ 3x - y = 11 \end{cases}$

5. $\begin{cases} -x + 2y = 10 \\ -3x + 6y = 11 \end{cases}$

2. $\begin{cases} -2.5x + y = 13.5 \\ 2.25x - y = -12.25 \end{cases}$

6. $\begin{cases} x - 3y = 9 \\ -x + 3y = -9 \end{cases}$

Solve the system using elimination.

7. $\begin{cases} -x - 2y = 7 \\ 3x + 6y = 6 \end{cases}$

3. $\begin{cases} -4x + 4y = -8 \\ x - 4y = -7 \end{cases}$

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

4. $\begin{cases} 7x + 2y = 11 \\ 4x - 7y = -10 \end{cases}$

9. A group of 36 people attended a ball game. There were twice as many children as adults in the group. Set up a system of equations that represents the numbers of adults and children who attended the game and solve the system to find the number of adults and the number of children who were in the group.
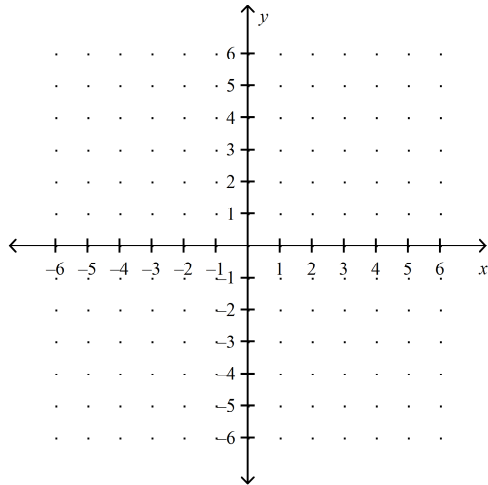
12. $\begin{cases} x \geq 2 \\ y > -1 \end{cases}$

10. The length of a rectangle is 6.7 cm more than 2 times the width. If the perimeter of the rectangle is 57.2 cm, what are its dimensions?
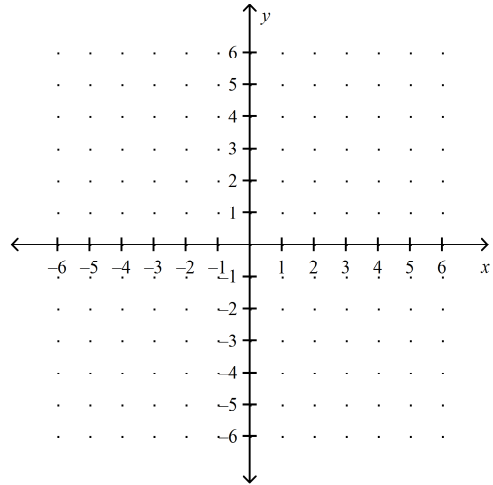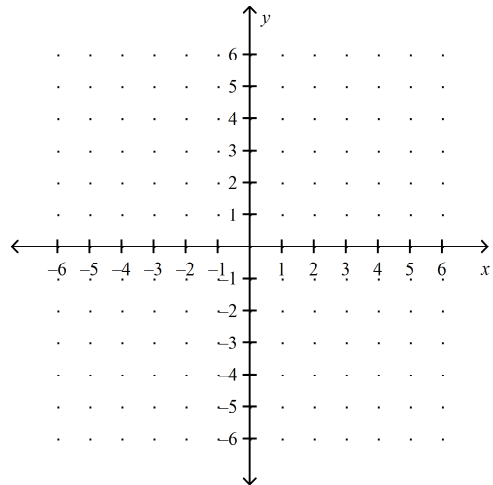
Solve the system of inequalities by graphing.

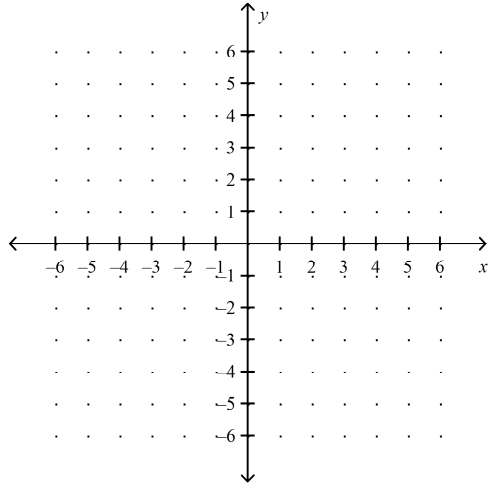11. $\begin{cases} y \leq -3x - 1 \\ y > 3x - 2 \end{cases}$

13. $\begin{cases} y \geq -3x - 1 \\ y \leq \dfrac{1}{2}x + 1 \end{cases}$
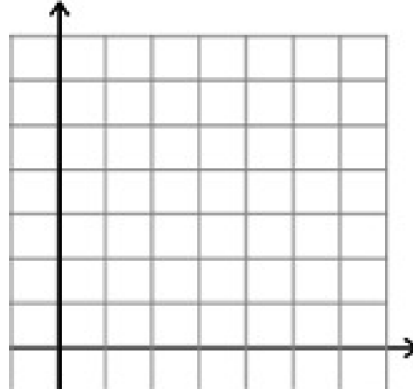
Solve the system of inequalities by graphing.

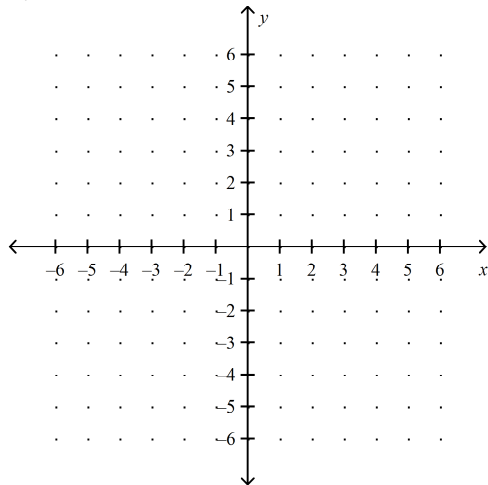14. $\begin{cases} y \geq 4 \\ y > |x - 1| \end{cases}$

16. Your club is baking vanilla and chocolate cakes for a bake sale. They need at most 27 cakes. You cannot have more than 13 chocolate cakes. Write and graph a system of inequalities to model this system.

15. $\begin{cases} y \geq x \\ y < |3x + 2| + 5 \end{cases}$


17. An exam consists of two parts, Section X and Section Y. There can be a maximum of 80 questions. There must be at least 10 more questions in Section Y than in Section X. Write a system of inequalities to model the number of questions in each of the two sections. Then solve the system by graphing.
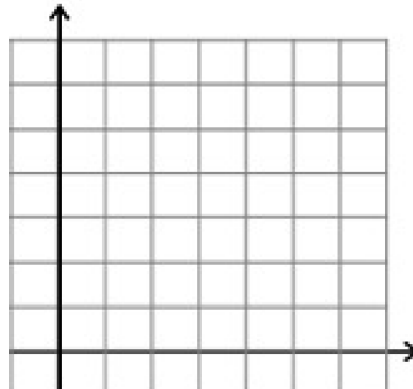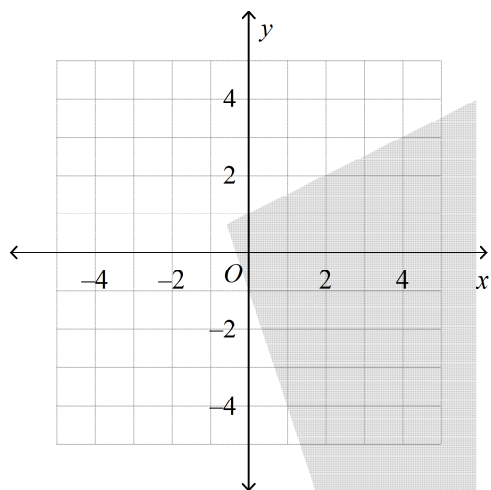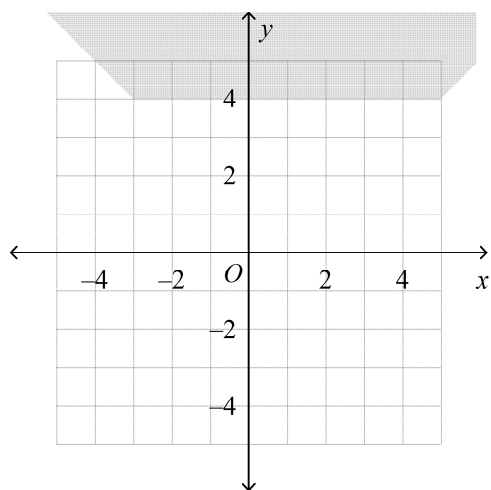
Chapter 3 Systems Review
Answer Section

1. (5, 4)
2. (–5, 1)
3. (5, 3)
4. (1, 2)
5. no solutions
6. infinitely many solutions
7. no solutions
8. infinitely many solutions
9. $\begin{cases} a + c = 36 \\ c = 2a \end{cases}$; 12 adults, 24 children
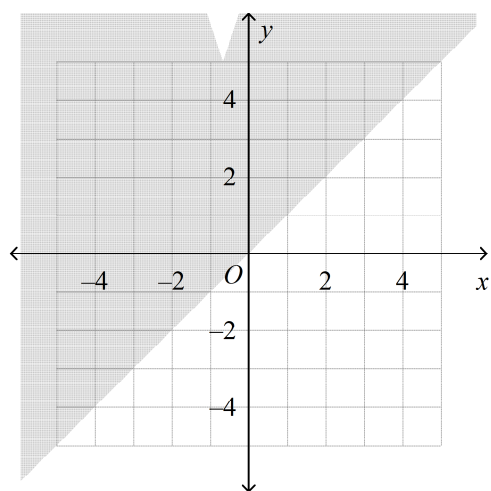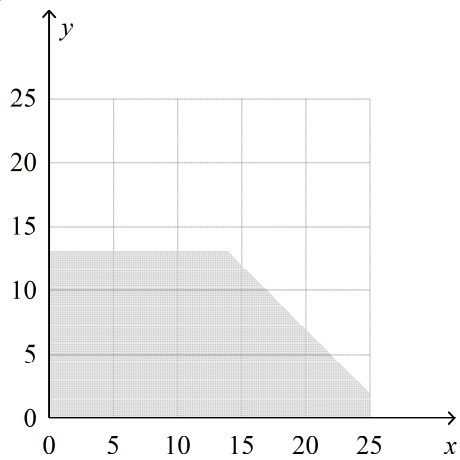10. length = 21.3 cm; width = 7.3 cm
11.

12.
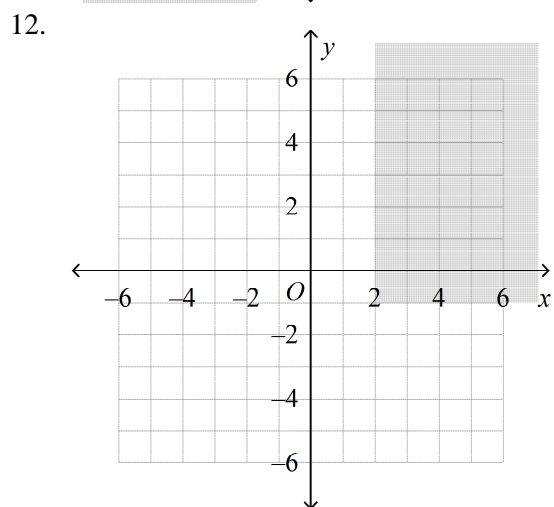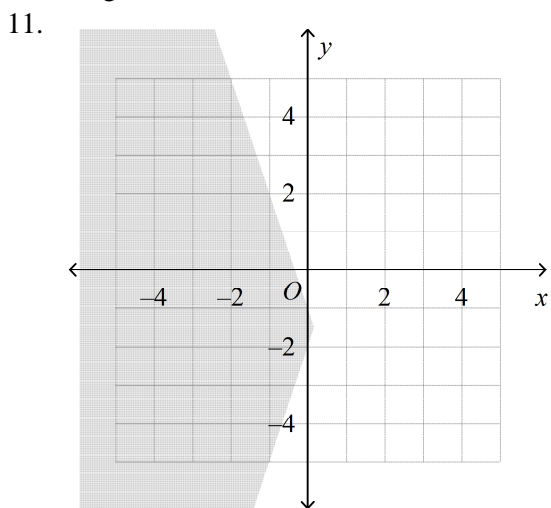
13.

14.

15.

16. Let x = the number of vanilla cakes.
    Let y = the number of chocolate cakes.
    $$\begin{cases} x \geq 0 \\ y \geq 0 \\ x + y \leq 27 \\ y \leq 13 \end{cases}$$

17. $$\begin{cases} X \geq 0 \\ Y \geq 0 \\ X + Y \leq 80 \\ Y \geq X + 10 \end{cases}$$