Name: _____  Date: _____

# Chapter 8 Test

**Multiple Choice**

*For #1 to 4, select the best answer.*

1. Tickets for the school drama production cost
   \$12 for adults and \$9 for students. Suppose
   500 people purchased tickets and \$5478 was
   collected. Which of the following systems of
   linear equations could be used to solve for
   the number of adults and number of students
   attending the play?

   **A** $12a + 9s = 500$

   $a + s = 5478$

   **B** $12a + 9s = 5478$

   $12a + 9s = 500$

   **C** $12a + 9s = 5478$

   $a + s = 500$

   **D** $9a + 12s = 5478$

   $a + s = 500$

2. The system of linear equations $7x - 2y = 11$
   and $14x + my = n$ has an infinite number of
   solutions if

   **A** $m = -4$, $n = 22$

   **B** $m = 4$, $n = 22$

   **C** $m = -5$, $n = 18$

   **D** $m = 5$, $n = 18$

3. If a system of two linear equations has no
   solution, the graph of this system will be
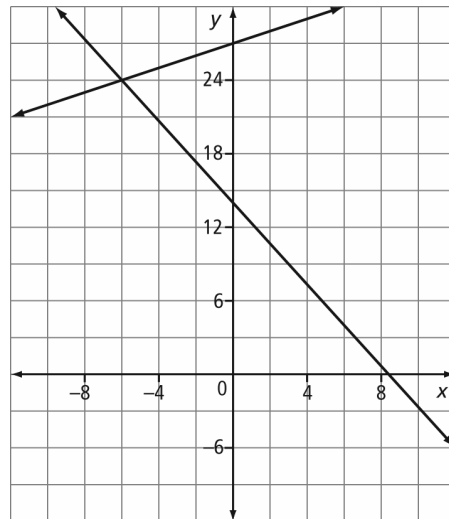
   **A** two intersecting lines

   **B** two perpendicular lines

   **C** two coincident lines

   **D** two parallel lines

4. Which system of linear equations is shown
   in the graph?



   **A** $5x + 3y = 14$

   $x - 2y = -27$

   **B** $5x + 3y = 42$

   $x - 2y = -54$

   **C** $y + 24 = -\dfrac{5}{3}(x - 6)$

   $y + 24 = \dfrac{1}{2}(x - 6)$

   **D** $y = -6x + 13$

   $y = 6x + 28$

**Short Answer**
*For #5 to 7, complete the statement.*

5. If the points (2, 5) and (–2, 1) both lie on the
   line $Ax + By = -27$, the value of $A$ must be
   $\square$.

6. The $x$-coordinate, to one decimal place, of
   the point of intersection of the graph of the
   system of linear equations $4x + 5y = -18$ and
   $3x + 2y = 7$ is $\square$.

**7.** If the sum of two numbers is 83 and the difference of the two numbers is 41, then the smaller number must be ▢.

**8.** Represent the system of linear equations $y = 5x + 1$ and $y = \dfrac{3}{2}x - 6$ using a table of values. Then, determine the solution to the linear system from your table of values.

**9.** Explain the significance of the given point to the graph of each system of linear equations.

**a)** $y = -x + 4$

$y = 2x + 4$

(4, 0)

**b)** $y = -3x + 9$

$y = -3x + 3$

(3, –6)

**c)** $y = \dfrac{2}{5}x + 1$

$y = -4x + 1$

(0, 1)

**10.** Solve each system of linear equations graphically. Verify the solution algebraically.

**a)** $y - 7 = 2x$

$y - 1 = x$

**b)** $x + 6y = -7$

$2x + 12y = -14$

**c)** $3x + y - 1 = 0$

$x - 2y - 26 = 0$

**Extended Response**

**11.** Shirley and her younger brother, Aaron, differ in age by six years. Half of Shirley's age is two less than Aaron's age.

**a)** Develop a system of linear equations in two variables that could be used to determine the ages of Shirley and Aaron.

**b)** The domain of this situation cannot be all real numbers. Explain why.

**c)** Graph the system of linear equations to determine how old Shirley and Aaron are.

**12.** Family history books are to be sold at a family reunion. The cost of the books includes a $500 setup fee plus an additional $6 per book. A book will sell for $35. The cost and the revenue can be represented by the following system of linear equations:

Cost: $d = 500 + 6b$

Revenue: $d = 35b$

In the equations, $d$ represents the amount of money, in dollars, and $b$ represents the number of books.

**a)** Use technology to graph the linear system and determine the point of intersection, to one decimal place.

**b)** The solution shows the break-even point, or the point at which the cost and revenue are equal. Considering the domain of the situation, how many books must be sold to ensure a profit is made?