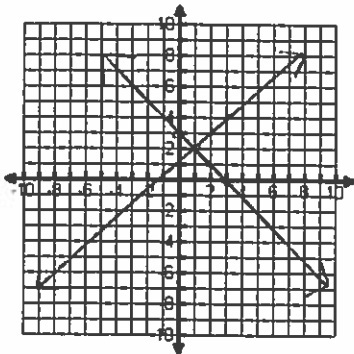### Unit 3 Mid-Unit Test Review
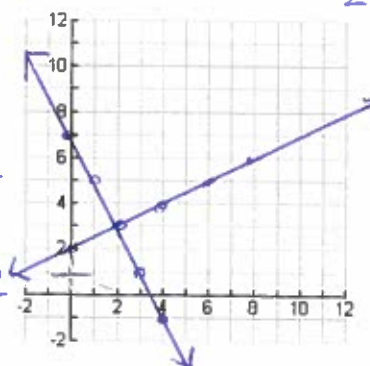
Find the solution of the linear system _graphically_. Write your solution in the blank provided.

$(1,2)$ 1. $y = -x + 3$ $m = \frac{-1}{1}, b = 3$
        $y = x + 1$ $m = \frac{1}{1}, b = 1$

$(2,3)$ 2. $y = -2x + 7$ $m = \frac{-2}{1}, b = 7$
        $-3x + 6y = 12$ $m = \frac{1}{2}, b = 1$

$-3x + 6y = 12$
$+3x \qquad +3x$
$\dfrac{6y}{6} = \dfrac{3x + 12}{6}$
$y = \frac{1}{2}x + 2$

Use _substitution_ to solve the linear system. SHOW ALL WORK and write your solution in the space provided.

$(2, 2)$ 3. $y = \boxed{2x - 2}$
          $6x + 2\boxed{y} = 16$

$6x + 2(2x - 2) = 16$
$6x + 4x - 4 = 16$
$10x - 4 = 16$
$\underline{+4 \quad +4}$
$\dfrac{10x}{10} = \dfrac{20}{10}$
$x = 2$

$y = 2(2) - 2$
$y = 4 - 2$
$y = 2$

$(-2, -2)$ 4. $4x - \boxed{y} = -6$
            $y = \boxed{2x + 2}$

$4x - (2x + 2) = -6$
$4x - 2x - 2 = -6$
$2x - 2 = -6$
$\underline{+2 \qquad +2}$
$\dfrac{2x}{2} = \dfrac{-4}{2}$
$x = -2$

$y = 2(-2) + 2$
$y = -4 + 2$
$y = -2$

Use _elimination_ to solve the linear system. SHOW ALL WORK and write your solution in the space provided.

$(2, 1)$ 5. $5x - 3y = 7$
          $x + 3y = 5$

$\dfrac{6x}{6} = \dfrac{12}{6}$
$x = 2$

$2 + 3y = 5$
$\underline{-2 \qquad -2}$
$\dfrac{3y}{3} = \dfrac{3}{3}$
$y = 1$

$(1, -2)$ 6. $(-3x + 3y = -9)2$
            $6x + 2y = 2$

$-6x + 6y = -18$
$\dfrac{8y}{8} = \dfrac{-16}{8}$
$y = -2$

$6x + 2(-2) = 2$
$6x - 4 = 2$
$\underline{+4 \quad +4}$
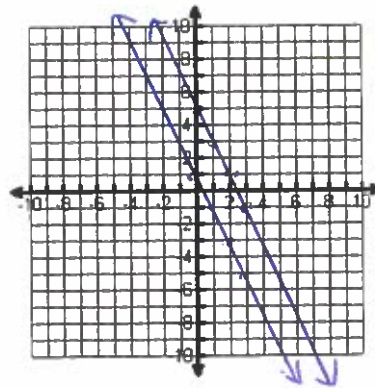$\dfrac{6x}{6} = \dfrac{6}{6}$
$x = 1$

Use _any method_ to solve the linear system. SHOW ALL WORK and write your solution in the space provided.

no solution 7. $6x - 9y = 18$

$(2x - 3y = 10) - 3$

$-6x + 9y = -30$

$6x - 9y = 18$
_____

$0 = -12$

no solution
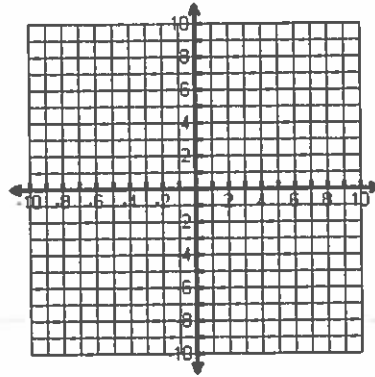
no solution 8. $y = -2x + 5$ $m = \frac{-2}{1}, b = 5$

$y + 2x = 1$

$y = -2x + 1$ $m = \frac{-2}{1}, b = 1$

Substitution:

$-2x + 5 + 2x = 1$

$5 = 1$

no solution

Systems of Linear Equations Word Problems:

9. A store sold 32 pairs of jeans for a total of $1050. Brand A sold for $30 per pair and Brand B sold for $35 per pair. How many of Brand A were sold?

$-30(A + B = 32)$

$30A + 35B = 1050$

$-30A - 30B = -960$
_____

$\frac{5B}{5} = \frac{90}{5}$ $B = 18$

$A + 18 = 32$

$-18 \quad -18$

$A = 14$

14 pairs of Brand A

10. You are selling tickets for a basketball game. Student tickets cost $3 and general admission tickets cost $5. You sell 350 tickets and collect $1450. How many of each type of ticket did you sell?

$3s + 5g = 1450$

$-3(s + g = 350)$

$-3s - 3g = -1050$

$3s + 5g = 1450$
_____

$\frac{2g}{2} = \frac{400}{2}$

$g = 200$

$s + 200 = 350$

$-200 \quad -200$

$s = 150$

150 Student tickets

200 general admission