p. 249, #1-16 all, #21, #22

1. *Equation 1*

$x + y = 8$

$2 + 6 \stackrel{?}{=} 8$

$8 = 8$ ✓

Equation 2

$3x - y = 0$

$3(2) - 6 \stackrel{?}{=} 0$

$6 - 6 \stackrel{?}{=} 0$

$0 = 0$ ✓

Because the ordered pair (2, 6) is a solution of each equation, it is a solution of the linear system.

2. *Equation 1*

$x - y = 6$

$8 - 2 \stackrel{?}{=} 6$

$6 = 6$ ✓

Equation 2

$2x - 10y = 4$

$2(8) - 10(2) \stackrel{?}{=} 4$

$16 - 20 \stackrel{?}{=} 4$

$-4 \neq 4$ ✗

The ordered pair (8, 2) is a solution of the first equation, but it is not a solution of the second equation. So, (8, 2) is *not* a solution of the linear system.

3. *Equation 1*

$y = -7x - 4$

$3 \stackrel{?}{=} -7(-1) - 4$

$3 \stackrel{?}{=} 7 - 4$

$3 = 3$ ✓

Equation 2

$y = 8x + 5$

$3 \stackrel{?}{=} 8(-1) + 5$

$3 \stackrel{?}{=} -8 + 5$

$3 \neq -3$ ✗

The ordered pair $(-1, 3)$ is a solution of the first equation, but it is not a solution of the second equation. So, $(-1, 3)$ is *not* a solution of the linear system.

4. *Equation 1*

$6x + 3y = 12$

$6(5) + 3(-6) \stackrel{?}{=} 12$

$30 - 18 \stackrel{?}{=} 12$

$12 = 12$ ✓

Equation 2

$4x + y = 14$

$4(5) + (-6) \stackrel{?}{=} 14$

$20 - 6 \stackrel{?}{=} 14$

$14 = 14$ ✓

Because the ordered pair $(5, -6)$ is a solution of each equation, it is a solution of the linear system.

5. *Equation 1*

$6x + 5y = -7$

$6\left(\frac{1}{2}\right) + 5(-2) \stackrel{?}{=} -7$

$3 - 10 \stackrel{?}{=} -7$

$-7 = -7$ ✓

Equation 2

$2x - 4y = -8$

$2\left(\frac{1}{2}\right) - 4(-2) \stackrel{?}{=} -8$

$1 + 8 \stackrel{?}{=} -8$

$9 \neq -8$ ✗

Because the ordered pair $\left(\frac{1}{2}, -2\right)$ is not a solution of Equation 2, it is not a solution of the linear system.

6. *Equation 1*

$$y = 6x + 11$$
$$-4 \stackrel{?}{=} 6(-2.5) + 11$$
$$-4 \stackrel{?}{=} -15 + 11$$
$$-4 = -4 \checkmark$$

Equation 2

$$2x + y = -9$$
$$2(-2.5) + (-4) \stackrel{?}{=} -9$$
$$-5 - 4 \stackrel{?}{=} -9$$
$$-9 = -9 \checkmark$$

Because the ordered pair $(-2.5, -4)$ is a solution of each equation, it is a solution of the linear system.

7. The lines appear to intersect at $(1, -3)$.

Check *Equation 1*

$$x - y = 4$$
$$1 - (-3) \stackrel{?}{=} 4$$
$$1 + 3 \stackrel{?}{=} 4$$
$$4 = 4 \checkmark$$

Equation 2

$$4x + y = 1$$
$$4(1) + (-3) \stackrel{?}{=} 1$$
$$4 - 3 \stackrel{?}{=} 1$$
$$1 = 1 \checkmark$$

The solution is $(1, -3)$.

8. The lines appear to intersect at $(-4, 5)$.

Check *Equation 1*

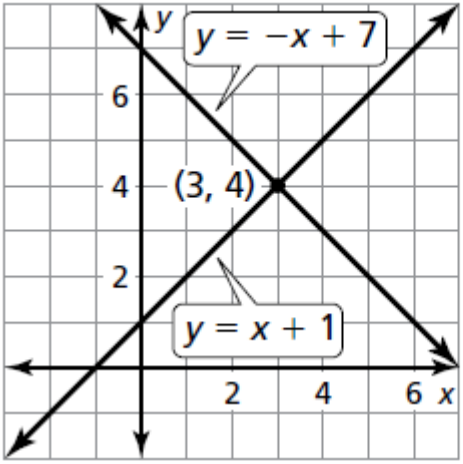
$$6y + 3x = 18$$
$$6(5) + 3(-4) \stackrel{?}{=} 18$$
$$30 - 12 \stackrel{?}{=} 18$$
$$18 = 18 \checkmark$$

Equation 2

$$-x + 4y = 24$$
$$-(-4) + 4(5) \stackrel{?}{=} 24$$
$$4 + 20 \stackrel{?}{=} 24$$
$$24 = 24 \checkmark$$

The solution is $(-4, 5)$.

9.



Check *Equation 1*

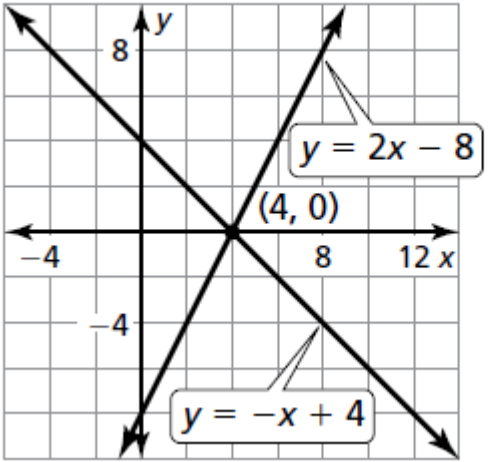
$$y = -x + 7$$
$$4 \stackrel{?}{=} -3 + 7$$
$$4 = 4 \checkmark$$

Equation 2

$$y = x + 1$$
$$4 \stackrel{?}{=} 3 + 1$$
$$4 = 4 \checkmark$$

The solution is (3, 4).

10.



Check *Equation 1*

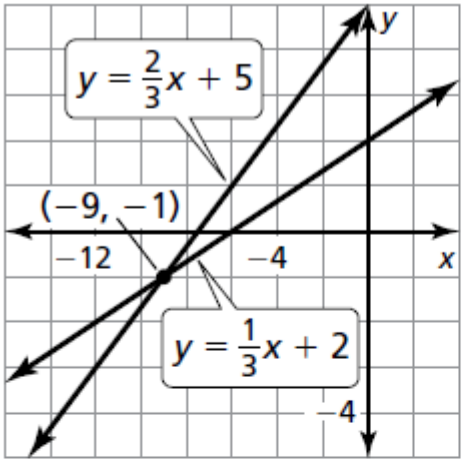
$$y = -x + 4$$
$$0 \stackrel{?}{=} -4 + 4$$
$$0 = 0 \checkmark$$

Equation 2

$$y = 2x - 8$$
$$0 \stackrel{?}{=} 2(4) - 8$$
$$0 \stackrel{?}{=} 8 - 8$$
$$0 = 0 \checkmark$$

The solution is (4, 0).

11.



Check *Equation 1*

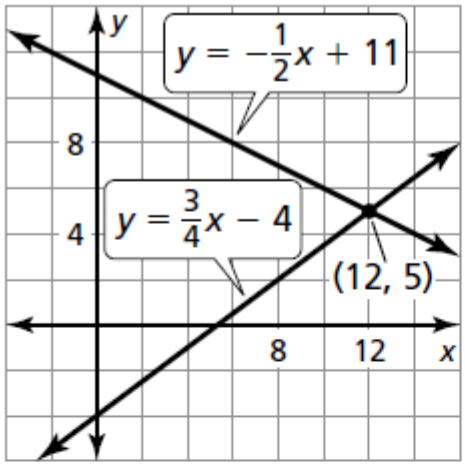
$$y = \tfrac{1}{3}x + 2$$
$$-1 \stackrel{?}{=} \tfrac{1}{3}(-9) + 2$$
$$-1 \stackrel{?}{=} -3 + 2$$
$$-1 = -1 \checkmark$$

Equation 2

$$y = \tfrac{2}{3}x + 5$$
$$-1 \stackrel{?}{=} \tfrac{2}{3}(-9) + 5$$
$$-1 \stackrel{?}{=} -6 + 5$$
$$-1 = -1 \checkmark$$

The solution is $(-9, -1)$.

12.



Check *Equation 1*

$$y = \tfrac{3}{4}x - 4$$
$$5 \stackrel{?}{=} \tfrac{3}{4}(12) - 4$$
$$5 \stackrel{?}{=} 9 - 4$$
$$5 = 5 \checkmark$$

Equation 2

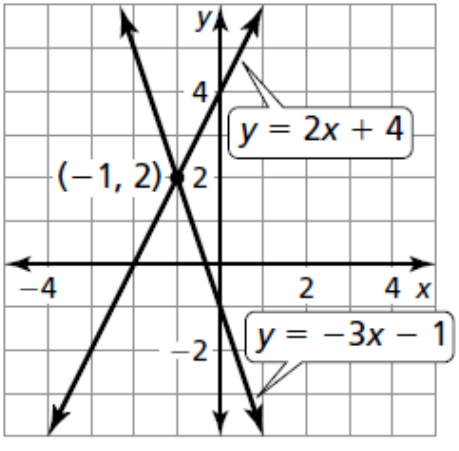
$$y = -\tfrac{1}{2}x + 11$$
$$5 \stackrel{?}{=} -\tfrac{1}{2}(12) + 11$$
$$5 \stackrel{?}{=} -6 + 11$$
$$5 = 5 \checkmark$$

The solution is (12, 5).

13.

$$9x + 3y = -3$$
$$9x - 9x + 3y = -3 - 9x$$
$$3y = -9x - 3$$
$$\frac{3y}{3} = \frac{-9x - 3}{3}$$
$$y = -3x - 1$$

$$2x - y = -4$$
$$2x - 2x - y = -4 - 2x$$
$$-y = -2x - 4$$
$$\frac{-y}{-1} = \frac{-2x - 4}{-1}$$
$$y = 2x + 4$$



Check *Equation 1*

$$9x + 3y = -3$$
$$9(-1) + 3(2) \stackrel{?}{=} -3$$
$$-9 + 6 \stackrel{?}{=} -3$$
$$-3 = -3 \checkmark$$

Equation 2

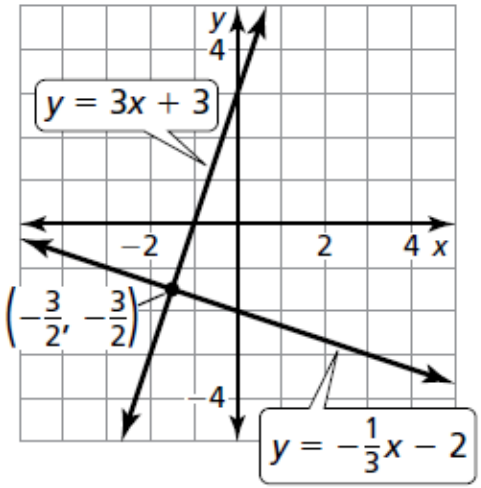
$$2x - y = -4$$
$$2(-1) - 2 \stackrel{?}{=} -4$$
$$-2 - 2 \stackrel{?}{=} -4$$
$$-4 = -4 \checkmark$$

The solution is $(-1, 2)$.

14.

$$3y - 9x = 9$$
$$3y - 9x + 9x = 9 + 9x$$
$$3y = 9x + 9$$
$$\frac{3y}{3} = \frac{9x + 9}{3}$$
$$y = 3x + 3$$

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



Check *Equation 1*

$$3y - 9x = 9$$
$$3\left(-\frac{3}{2}\right) - 9\left(-\frac{3}{2}\right) \stackrel{?}{=} 9$$
$$-\frac{9}{2} + \frac{27}{2} \stackrel{?}{=} 9$$
$$9 = 9 \checkmark$$

Equation 2

$$x + 3y = -6$$
$$-\frac{3}{2} + 3\left(-\frac{3}{2}\right) \stackrel{?}{=} -6$$
$$-\frac{3}{2} - \frac{9}{2} \stackrel{?}{=} -6$$
$$-6 = -6 \checkmark$$

The solution is $\left(-\frac{3}{2}, -\frac{3}{2}\right)$.

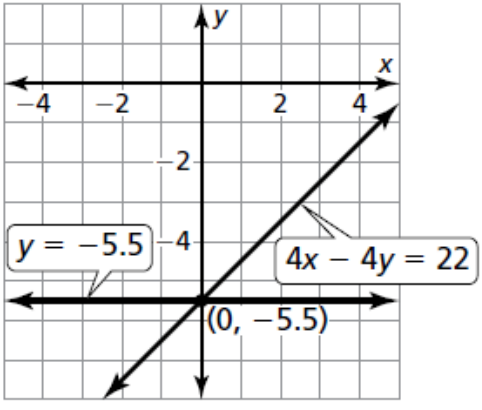
15. $4x - 4y = 22$ $\qquad y = -5.5$

$$4x - 4x - 4y = 22 - 4x$$

$$-4y = -4x + 22$$

$$\frac{-4y}{-4} = \frac{-4x + 22}{-4}$$

$$y = x - 5.5$$



Check *Equation 1* $\qquad$ *Equation 2*

$$4x - 4y = 22 \qquad y = -5.5$$

$$4(0) - 4(-5.5) \stackrel{?}{=} 22 \qquad -5.5 = -5.5 \checkmark$$

$$22 = 22 \checkmark$$

The solution is $(0, -5.5)$.

16. $x - 2y = -\frac{1}{2}$

$x - x - 2y = -\frac{1}{2} - x$

$-2y = -x - \frac{1}{2}$

$\frac{-2y}{-2} = \frac{-x - \frac{1}{2}}{-2}$

$y = \frac{1}{2}x + \frac{1}{4}$

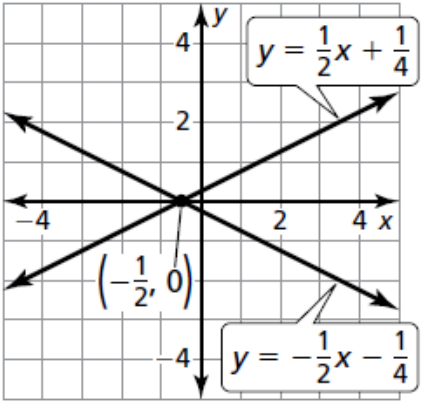
$-4x - 8y = 2$

$-4x + 4x - 8y = 2 + 4x$

$-8y = 4x + 2$

$\frac{-8y}{-8} = \frac{4x + 2}{-8}$

$y = -\frac{1}{2}x - \frac{1}{4}$



Check *Equation 1*

$x - 2y = -\frac{1}{2}$

$-\frac{1}{2} - 2(0) \stackrel{?}{=} -\frac{1}{2}$

$-\frac{1}{2} = -\frac{1}{2}$ ✓

Equation 2

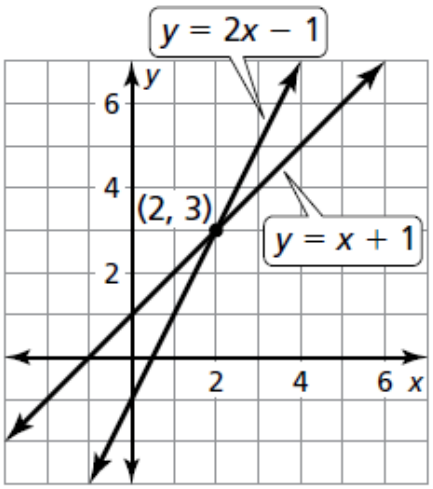
$-4x - 8y = 2$

$-4\left(-\frac{1}{2}\right) - 8(0) \stackrel{?}{=} 2$

$2 = 2$ ✓

The solution is $\left(-\frac{1}{2}, 0\right)$.

21. The solution of the system should be the ordered pair for the point of intersection, not just the x-value where the lines intersect.



Check *Equation 1*

$$y = 2x - 1$$
$$3 \stackrel{?}{=} 2(2) - 1$$
$$3 \stackrel{?}{=} 4 - 1$$
$$3 = 3 \checkmark$$

Equation 2

$$y = x + 1$$
$$3 \stackrel{?}{=} 2 + 1$$
$$3 = 3 \checkmark$$

The solution of the linear system $y = 2x - 1$ and $y = x + 1$ is $(2, 3)$.

22. B; The total of the shots is 16 and it is expressed as $p + q$. This expression correctly equals 16 in choices B and C. There are p shots worth 2 points each and this is expressed as $2p$. There are q shots worth 3 points each and this is expressed as $3q$. You score 35 points, so $2p + 3q$ must equal 35, which is choice B.