1. The answer is D.
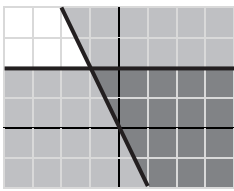
    $(-1, 1)$ satisfies both equations.

2. The intersection point is the solution to the system.
    The graphs intersect at $(2, 1)$, so $x = 2$ and $y = 1$.

    $x + y = 2 + 1 = 3$

3. | | |
    |---|---|
    | $3x - (x + 1) = 3$ | Plug eq1 into eq2. |
    | $2x - 1 = 3$ | Solve for x. |
    | $2x = 4$ | |
    | $x = 2$ | |
    | $y = 2 + 1 = 3$ | Plug x into eq1. |

    The solution is $(2, 3)$.

4. | | |
    |---|---|
    | $4x + 2y = 16$ | eq1 × 2 |
    | $3x - 2y = 5$ | eq2 |
    | $7x = 21$ | Add the equations. |
    | $x = 3$ | Solve for x. |
    | $2(3) + y = 8$ | Plug x into eq1. |
    | $y = 2$ | Solve for y. |

    $x - y = 3 - 2 = 1$

5. The system will have no solutions if the lines are parallel. $k = 2$ makes the lines have the same slope and thus parallel.

6. The answer is B.
    A) The lines are parallel (no solutions).
    B) The lines are identical (infinitely many solutions).
    C) The lines intersect at one point (one solution).
    D) The lines are parallel (no solutions).

7. The answer is C.
    Two more quarters than dimes, so $x = y + 2$.

    Total value $= x$ quarters at \$0.25 each $+$
    y dimes at \$0.10 each,
    so $0.25x + 0.1y = 2.25$.

8. Let $x =$ larger integer
    Let $y =$ smaller integer
    Sum $= 65$, so $x + y = 65$.
    Difference $= 39$, so $x - y = 39$.
    Solve the system, and you get $x = 52$ and $y = 13$.
    The integers are 52 and 13.

9. Let $x =$ number of 2-point questions
    Let $y =$ number of 5-point questions
    A total of 32 questions, so $x + y = 32$.

    Total points $= x$ questions worth 2 points each $+$
    y questions worth 5 pointe each,
    so $2x + 5y = 100$.

    Solve the system, and you get $x = 20$ and $y = 12$.
    20 questions are worth 2-points each.
    12 questions are worth 5 points each.

10. Let $x =$ number of bottles of soda
    Let $y =$ number of hotdogs
    A total of 45 sodas and hotdogs, so $x + y = 45$.

    Total cost $= x$ bottles of soda at \$2 each $+$
    y hotdogs at \$6 each,
    so $2x + 6y = 170$.

    Solve the system, and you get $x = 25$ and $y = 20$.
    Linda bought 25 bottles of soda.
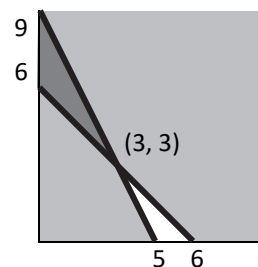
11. The answer is C.
    Test a point in each region. $(-1, 0)$ satisfies both inequalities.

12. The lines intersect at $(-1, 2)$.
    The minimum possible value of x is -1.

13. The answer is C.
    A) There is no overlap, so there are no solutions.
    B) The solution set is the region between the lines.
    D) There is no overlap, so there are no solutions.

14. No more than 40 plants, so $x + y \leq 40$.
    More carrots than tomatoes, so $x > y$.

    The system is $x + y \leq 40$ and $x > y$.

15. $x =$ pounds of walnuts
    $y =$ pounds of cashews

    At least 6 pounds in all,
    so $x + y \geq 6$.

    Within a budget of \$30,
    so $6x + 4y \leq 30$.

    The lines intersect at $(3, 3)$.

    The minimum y-value of the solution region is 3, so Chris must use at least 3 pounds of cashews.

16 | | |
    |---|---|
    | $-a = -b/2$ | Set the slopes equal. |
    | $2a = b$ | Multiply both sides by -2. |
    | $b/a = 2a/a = 2$ | Replace b by $2a$. |