Problem	1	2	3	4	5	6	7	8	9	10	11	12
Lesson Origin	17, 18	15	17	17	16, 17	17	15	18	15, 17	16, 17	15, 18	15, 18

Problem	13	14	15	16	17	18	19	20	21	22	23	24	25
Lesson Origin	17	18	17	18	15	16	18	16	18	15	17	15, 18	15

1.

A.

x: Munchkins Bake-Shoppe, y: Flying Monkeys Taxi Service

$x + y = 30$

$8x + 18y = 400$

B.

$x + y = 30$

$8x + 18y = 400$

Elimination

$(-8)(x + y = 30) = -8x - 8y = -240$

$+ 8x + 18y = 400$

$10y = 160$

$y = 16$

$x + (16) = 30$

$x = 14$

(14, 16)

Your student may use any method to solve. If they prefer substitution, the solution will still be (14, 16).

C.

The solution is (14, 16). This means that Glinda works 14 hours at Munchkins Bake-Shoppe and 16 hours at Flying Monkeys Taxi Service.

If your student solves incorrectly in part B but still explains their answer for part C correctly, they can receive full credit for this part of the question.

D.

$x + y \leq 50$

$8x + 18y \geq 600$

2. C
There is no work for this problem.

Distractor Rationale:
A. This is true whe the lines are parallel.
B. This is true when the lines intersect.
D. This is not a possible solution to a system of equations.

3. B

Elimination

$x + y = 7$
$x - y = -3$
$2x = 4$
$x = 2$

$(2) + y = 7$
$y = 5$

(2, 5)

Distractor Rationale:
A. This is the difference of the solution (2, 5).
C. This is $\frac{y}{x}$ rather than $\frac{x}{y}$ for (2, 5).
D. This is the difference of $7 - (-3)$ rather than the solution.

4. C

$j + g = 17$
$g = \frac{1}{2}j + 2$

Substitution

$j + (\frac{1}{2}j + 2) = 17$
$\frac{3}{2}j + 2 = 17$
$\frac{3}{2}j = 15$
$j = 10$

$g = \frac{1}{2}(10) + 2 = 7$

Distractor Rationale:
A. This is half of Jacob's age without adding 2.
B. This is Grant's age, not Jacob's.
D. This is Jacob's age plus 2 if substitution was completed incorrectly.

5. A
$x + y = 197$
$3x + 2y = 519$
Elimination
$-2(x + y = 197)$
$-2x - 2y = -394$
$+ \ 3x + 2y = 519$
$x = 125$
Distractor Rationale:
B. This is the y-value.
C. This is the opposite of the y-value if signs are confused.
D. This is the opposite of the x-value if signs are confused.

6. A

$500 = 2.5(p - w) \Rightarrow 200 = p - w$
$500 = 2(p + w) \Rightarrow + \ 250 = p + w$
$450 = 2p$
$225 = p$

$200 = 225 - w$
$w = 25$

Distractor Rationale:
B. This is the wind speed with a calculation error in the system.
C. This is the speed of the plane in a headwind.
D. This is the speed of the plane.

7. A
There is no work for this problem.
Distractor Rationale:
B. This is a solution when lines intersect.
C. This is the solution for coincident lines.
D. This is not a possible solution to a system of equations.

8. B
At least: >=, cannot read more than: <=
Distractor Rationale:
A. "cannot read more than" is a less than or equal to symbol, rather than less than symbol.
C. and D. both used the word "OR" when an AND compound inequality is represented.

9. D
Intersection point: (3, −2)
$x - y$: $3 - (-2) = 3 + 2 = 5$
Distractor Rationale:
A. This shows $y - x$ for the solution (3, −2).
B. This shows $x + y$, and confuses the signs of the ordered pair with (−3, 2) rather than (3, −2).
C. This is the sum of (3, −2) rather than the difference.

10. C

$x = 3y - 8$

$4x - 5y = 10$

Substitution

$4(3y - 8) - 5y = 10$

$12y - 32 - 5y = 10$

$7y = 42$

$y = 6$

$x = 3(6) - 8$

$x = 10$

(10, 6)

Distractor Rationale:

A. This is the solution if 4 is not distributed to the substituted terms $(3y - 8)$.

B. This is the solution when 6 replaces 6 rather than y when solving.

D. This reverses the order of the order pair (y, x) rather than (x, y)

11. C

There is no work for this problem.

Distractor Rationale:

A. This represents the graph when both inequalities are less than or equal to.

B. This represents the top equation graphed with a less than or equal to symbol.

D. This represents the bottom equation graphed with a less than or equal to symbol.

12. B

There is no work for this problem.

Distractor Rationale:

A. and C. ignore that ordered pairs can represent answers that contain fractions and/or decimals.

D. The shaded region is all TRUE values, not false values.

13. D

r: letter stamps, p: postcard stamps

$r + p = 13$

$0.29r + 0.19p = 2.77 \Rightarrow 29r + 19p = 277$

Elimination

$-19r - 19p = -247$

$+\ 29r + 19p = 277$

$10r = 30$

$r = 3$

$p = 10$

Distractor Rationale:

A. and B. Both these add to 13 stamps but the total cost is incorrect.

D. This confuses the order of letter and postcard stamps.

14. C
$12 = 2L + 2w$
$L = 2w$
$12 = 2(2w) + 2w$
$12 = 6w$
$w = 2$
$L = 2(2) = 4$
Distractor Rationale:
A. and B. This is a rectangle with an *area* of 12 feet, not a perimeter. The length is not double the width for these two choices.
D. The length is double the width, but the perimeter does not equal 12.

15. A
There is no work for this problem.
Distractor Rationale:
B. In the problem, it states that y represents short answer questions.
C. and D. Discuss point values rather than the number of questions.

16. C
$y = 30$
$y = 0.75x$
Substitution
$30 = 0.75x$
$40 = x$
Distractor Rationale:
A. and B. These values do not represent enough lemonade being sold to earn $30.
D. This number represents a profit of $3.75.or $33.75 in lemonade sales.

17. B
$y = \frac{1}{2}x - 4 \Rightarrow m = \frac{1}{2}, b = -4$

$4x + 5y = -20 \Rightarrow m = -(\frac{A}{B}) = -\frac{4}{5}, b = \frac{C}{B} = -\frac{20}{5} = -4$

Both lines have a y-intercept at $(0, -4)$
Distractor Rationale:
A. The graphs the top equation with an intercept of $b = 4$, rather than $b = -4$

C. This graph show $m = -\frac{1}{2}$, rather than $m = \frac{1}{2}$

D. This graph shows a slope of $m = 2$, rather than $m = \frac{1}{2}$

18. A

$y = \frac{3}{4}x - 3$

$3x + y = 3$

Substitution

$3x + \frac{3}{4}x - 3 = 3$

$\frac{15}{4}x = 6$

$x = \frac{8}{5}$

$y = \frac{3}{4}(\frac{8}{5}) - 3$

$y = \frac{6}{5} - 3$

$y = \frac{6}{5} - \frac{15}{5}$

$y = -\frac{9}{5}$

$(\frac{8}{5}, -\frac{9}{5})$

Distractor Rationale:
B. This solution has the incorrect sign for the x-coordinate.
C. This represents the y-intercept for the bottom equation.
D. This is the solution when the bottom equation is $-3x + y = 3$.

19. D

There is no work for this problem.
Distractor Rationale:
A. This does not represent a system of inequalities.
B. This mismatches 40 hours with the pay for each job
C. This incorrectly shows that each job pays \$12/hr.

20. B

$2x - 3y = 0 \Rightarrow 6(2x - 3y = 0) \Rightarrow 12x - 18y = 0$

$6x + 18y = 36$

Elimination

$12x - 18y = 0$

$+\ 6x + 18y = 36$

$18x = 36$

$x = 2$

$2(2) - 3y = 0$

$4 - 3y = 0$

$-3y = -4$

$y = \frac{4}{3}$

$(2, \frac{4}{3})$

Distractor Rationale:
A. The x-value is correct but the y-value is the reciprocal of the correct answer.
C. This is the (y, x) when the y-value is replaced by its reciprocal.
D. This is (y, x) rather than (x, y).

21. C

$u - t = 5$

$t + 10u = 10u + 1 \Rightarrow t = 1$

$u - 1 = 5$

$u = 6$

The number is 16.

Distractor Rationale:

A. This is the tens digit only.

B. This is the units digit only.

D. This is the answer with the digit reversed.

22. A

The intersection point is (2, –1)

Distractor Rationale:

B. This is (y, x).

C. and D. This represents an ordered pair in the third quadrant when the solution is in the fourth quadrant.

23. B

Large number: x; smaller number: y

$x + y = 27$

$x - y = 65$

Elimination

$x + y = 27$

$+ x - y = 65$

$2x = 92$

$x = 46$

$46 + y = 27$

$y = -19$

The smaller number is –19

Distractor Rationale:

A. This is the number if the signs of the answer are switched.

C. This is the number if the signs are ignored when solving. 46 – 19 does not equal 65.

D. This is the larger number when solved correctly.

24.

☑ Quadrant I

☑ Quadrant II

☐ Quadrant III

☑ Quadrant IV

There is no work for this problem.

Distractor Rationale:

The shaded region (or solution) is not in Quadrant III, but in all other quadrants.

25.

☑ (2, –1)
☑ (2, 2)
☑ (0, 4)
☑ (2.67, 4)

Plug in (x, y) into both equations to determine if the inequality is true.