Name _____ Date _____

Solving Linear Inequalities: Find the Error

Directions: Each question shows a student's worked solution to a linear inequality, and each solution has exactly one wrong step. Find it, then answer the question.

1. Ava solved the inequality $6 - 2x \le 3x - 14$. One step in her work is wrong.

1. $6 - 5x \le -14$
2. $-5x \le -20$
3. $x \le 4$

Which step is wrong?

A. From $-5x \le -20$ to $x \le 4$
B. From $6 - 2x \le 3x - 14$ to $6 - 5x \le -14$
C. From $6 - 5x \le -14$ to $-5x \le -20$

2. Here is Mateo's solution to $-3(x - 5) \ge 2x - 5$. Exactly one step has an error.

1. $-3x - 15 \ge 2x - 5$
2. $-5x - 15 \ge -5$
3. $-5x \ge 10$
4. $x \le -2$

Where does his work first go wrong?

A. From $-3x - 15 \ge 2x - 5$ to $-5x - 15 \ge -5$
B. From $-5x - 15 \ge -5$ to $-5x \ge 10$
C. From $-3(x - 5) \ge 2x - 5$ to $-3x - 15 \ge 2x - 5$
D. From $-5x \ge 10$ to $x \le -2$

3. Sofia was solving $6x - 5 < 2x - 17$, and her work below has one mistake.

1. $4x - 5 < -17$
2. $4x < -12$
3. $x > -3$

In which step did she make the mistake?

A. From $4x < -12$ to $x > -3$
B. From $6x - 5 < 2x - 17$ to $4x - 5 < -17$
C. From $4x - 5 < -17$ to $4x < -12$

4. Darnell needed five steps to solve $5(x - 2) + 6 > 3x + 12$, and one of them is wrong.

1. $5x - 10 + 6 > 3x + 12$
2. $5x - 4 > 3x + 12$
3. $8x - 4 > 12$
4. $8x > 16$
5. $x > 2$

Find the wrong step.

A. From $5x - 4 > 3x + 12$ to $8x - 4 > 12$
B. From $5(x - 2) + 6 > 3x + 12$ to $5x - 10 + 6 > 3x + 12$
C. From $5x - 10 + 6 > 3x + 12$ to $5x - 4 > 3x + 12$
D. From $8x > 16$ to $x > 2$
E. From $8x - 4 > 12$ to $8x > 16$

5. To solve $2x + 7 \geq 5x - 8$, Lucia kept the x terms on the right side. One step is incorrect.

1. $7 \geq 3x - 8$
2. $15 \geq 3x$
3. $5 \geq x$
4. $x \geq 5$

Which step is incorrect?

A. From $5 \geq x$ to $x \geq 5$
B. From $15 \geq 3x$ to $5 \geq x$
C. From $7 \geq 3x - 8$ to $15 \geq 3x$
D. From $2x + 7 \geq 5x - 8$ to $7 \geq 3x - 8$

6. Jun's solution to $4x + 9 > 2(3x - 1) + 5$ contains one error.

1. $4x > 2(3x - 1) - 4$
2. $4x > 6x - 1 - 4$
3. $4x > 6x - 5$
4. $-2x > -5$
5. $x < 2.5$

Which step contains the error?

A. From $4x > 2(3x - 1) - 4$ to $4x > 6x - 1 - 4$
B. From $4x + 9 > 2(3x - 1) + 5$ to $4x > 2(3x - 1) - 4$
C. From $4x > 6x - 5$ to $-2x > -5$
D. From $4x > 6x - 1 - 4$ to $4x > 6x - 5$
E. From $-2x > -5$ to $x < 2.5$

7. Kira's task was to solve $ax + 5 < 2$ for x, where a is a negative number. Her work has one error.

1. $ax < -3$
2. $x < -3/a$

What is the correct solution?

A. $x > -3/a$
B. $x < 3/a$
C. $x > 3/a$
D. $x < -3/a$

8. Dev's work on $10 - 2(x + 4) > 3x + 7$ has one error.

1. $8(x + 4) > 3x + 7$
2. $8x + 32 > 3x + 7$
3. $5x + 32 > 7$
4. $5x > -25$
5. $x > -5$

Fix the error and solve the inequality correctly. What is the greatest integer that makes $10 - 2(x + 4) > 3x + 7$ true?