### Worksheet: Solving Linear Equations

\*\*Instructions:\*\* Solve the following linear equations for the variable ( x ). Show all your work.

1. ( 2x + 3 = 11 )
2. ( 5x - 4 = 16 )
3. ( 3x + 2 = 2x + 10 )
4. ( 4x - 7 = 3x + 5 )
5. ( 6x + 9 = 3x + 24 )
6. ( 7x - 2 = 5x + 8 )
7. ( 2(x + 3) = 14 )
8. ( 3(x - 4) = 2x + 6 )
9. ( 4x + 5 = 3(x + 2) )

 10. ( 5(x - 1) = 3x + 7 )

\*\*Solutions:\*\*

1. \( 2x + 3 = 11 \)

 - Subtract 3 from both sides: \( 2x = 8 \)

 - Divide both sides by 2: \( x = 4 \)

2. \( 5x - 4 = 16 \)

 - Add 4 to both sides: \( 5x = 20 \)

 - Divide both sides by 5: \( x = 4 \)

3. \( 3x + 2 = 2x + 10 \)

 - Subtract 2x from both sides: \( x + 2 = 10 \)

 - Subtract 2 from both sides: \( x = 8 \)

4. \( 4x - 7 = 3x + 5 \)

 - Subtract 3x from both sides: \( x - 7 = 5 \)

 - Add 7 to both sides: \( x = 12 \)

5. \( 6x + 9 = 3x + 24 \)

 - Subtract 3x from both sides: \( 3x + 9 = 24 \)

 - Subtract 9 from both sides: \( 3x = 15 \)

 - Divide both sides by 3: \( x = 5 \)

6. \( 7x - 2 = 5x + 8 \)

 - Subtract 5x from both sides: \( 2x - 2 = 8 \)

 - Add 2 to both sides: \( 2x = 10 \)

 - Divide both sides by 2: \( x = 5 \)

7. \( 2(x + 3) = 14 \)

 - Distribute: \( 2x + 6 = 14 \)

 - Subtract 6 from both sides: \( 2x = 8 \)

 - Divide both sides by 2: \( x = 4 \)

8. \( 3(x - 4) = 2x + 6 \)

 - Distribute: \( 3x - 12 = 2x + 6 \)

 - Subtract 2x from both sides: \( x - 12 = 6 \)

 - Add 12 to both sides: \( x = 18 \)

9. \( 4x + 5 = 3(x + 2) \)

 - Distribute: \( 4x + 5 = 3x + 6 \)

 - Subtract 3x from both sides: \( x + 5 = 6 \)

 - Subtract 5 from both sides: \( x = 1 \)

10. \( 5(x - 1) = 3x + 7 \)

 - Distribute: \( 5x - 5 = 3x + 7 \)

 - Subtract 3x from both sides: \( 2x - 5 = 7 \)

 - Add 5 to both sides: \( 2x = 12 \)

 - Divide both sides by 2: \( x = 6 \)

\*\*Answer Key:\*\*

1. \( x = 4 \)

2. \( x = 4 \)

3. \( x = 8 \)

4. \( x = 12 \)

5. \( x = 5 \)

6. \( x = 5 \)

7. \( x = 4 \)

8. \( x = 18 \)

9. \( x = 1 \)

10. \( x = 6 \)