Name: _____ **Date:** _____ **Period:** _____

Practice Worksheet: Linear Equations

Instructions: Solve each problem carefully. Show all work clearly. Write your final answer in the space provided or on a separate sheet as directed.

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1. Solve for x: $3x + 7 = 22$.

2. Solve for y: $5y - 9 = 2y + 6$.

3. Solve for a: $4(a-3) = 2a + 8$.

4. Solve for b: $\dfrac{b}{5} + 2 = 7$.

5. Solve for c: $6c + 4 = 2c - 12$.

6. A number increased by 9 is equal to 24. Find the number.

7. The sum of twice a number and 5 is 19. What is the number?

8. Three times a number, minus 4, is equal to 11. Find the number.

9. A rectangle has a length that is 3 inches more than its width. The perimeter is 30 inches. Find the width and length.

10. Tickets to a play cost \$8 for adults and \$5 for children. A group of 12 people paid \$78 total. How many adults and how many children were in the group?

Answer Key

1. $3x + 7 = 22$
   Subtract 7: $3x = 15$
   Divide by 3: $x = 5$
   Final answer: $x = 5$

2. $5y - 9 = 2y + 6$
   Subtract $2y$: $3y - 9 = 6$
   Add 9: $3y = 15$
   Divide by 3: $y = 5$
   Final answer: $y = 5$

3. $4(a - 3) = 2a + 8$
   Distribute: $4a - 12 = 2a + 8$
   Subtract $2a$: $2a - 12 = 8$
   Add 12: $2a = 20$
   Divide by 2: $a = 10$
   Final answer: $a = 10$

4. $\frac{b}{5} + 2 = 7$
   Subtract 2: $\frac{b}{5} = 5$
   Multiply by 5: $b = 25$
   Final answer: $b = 25$

5. $6c + 4 = 2c - 12$
   Subtract $2c$: $4c + 4 = -12$
   Subtract 4: $4c = -16$
   Divide by 4: $c = -4$
   Final answer: $c = -4$

6. Let n be the number.
   $n + 9 = 24$
   Subtract 9: $n = 15$
   Final answer: The number is 15.

7. Let n be the number.
   $2n + 5 = 19$
   Subtract 5: $2n = 14$
   Divide by 2: $n = 7$
   Final answer: The number is 7.

8. Let n be the number.
   $3n - 4 = 11$
   Add 4: $3n = 15$
   Divide by 3: $n = 5$
   Final answer: The number is 5.

9. Let w be the width. Then length $= w + 3$.
   Perimeter: $2w + 2(w + 3) = 30$
   Simplify: $2w + 2w + 6 = 30$
   $4w + 6 = 30$
   Subtract 6: $4w = 24$
   Divide by 4: $w = 6$
   Length: $6 + 3 = 9$
   Final answer: Width = 6 inches, Length = 9 inches.

10. Let a be number of adults, c be number of children.
    $a + c = 12$
    $8a + 5c = 78$
    From first equation: $c = 12 - a$
    Substitute: $8a + 5(12 - a) = 78$
    $8a + 60 - 5a = 78$
    $3a + 60 = 78$
    Subtract 60: $3a = 18$
    Divide by 3: $a = 6$
    Then $c = 12 - 6 = 6$
    Final answer: 6 adults and 6 children.