Name _____ Date _____

Solving Quadratic Equations by Factoring

Directions: Each question is about solving a quadratic equation by factoring. Check every solution in the original equation.

1. What is the best first step to solve $x^2 + 3x = 10$ by factoring?

A. Divide both sides by x to get $x + 3 = 10$.

B. Subtract 10 from both sides to get $x^2 + 3x - 10 = 0$.

C. Factor the left side as $x(x + 3)$, then solve $x = 10$ and $x + 3 = 10$.

D. Add 10 to both sides to get $x^2 + 3x + 10 = 0$.

2. To solve $(x - 4)(x + 9) = 0$, Priya writes $x - 4 = 0$ or $x + 9 = 0$. Which reason justifies this step?

A. A product of two factors can be split this way whatever number is on the other side.

B. If a product of two numbers is 0, then both numbers must be 0.

C. If a product of two numbers is 0, then at least one of the numbers is 0.

D. The factors $x - 4$ and $x + 9$ are always equal to each other.

3. Match each equation to its solutions.

Write the letter of the matching answer on each line.

1. _____ $x(x - 6) = 0$
2. _____ $(x + 6)(x - 1) = 0$
3. _____ $(x - 6)(x + 1) = 0$
4. _____ $(x - 6)^2 = 0$

A. $x = 6$ or $x = -1$

B. $x = -6$ or $x = 6$

C. $x = -6$ or $x = 1$

D. $x = 0$ or $x = -6$

E. $x = 0$ or $x = 6$

F. $x = 6$ only

4. What are the solutions of $x^2 - 2x - 15 = 0$?

A. $x = -3$ or $x = 5$

B. $x = -1$ or $x = 15$

C. $x = 5$ only

D. $x = -5$ or $x = 3$

5. Which statement about the solutions of $x^2 + 14x + 49 = 0$ is true?

A. It has no solutions, because $x^2 + 14x + 49$ cannot be factored.

B. It has exactly one solution, $x = -7$.

C. It has two solutions, $x = -7$ and $x = 7$.

D. It has exactly one solution, $x = 7$.

6. What is the negative solution of $x^2 = 3x + 28$?

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7. Leo solved $x^2 = 9x$ like this.

1. Divide both sides by x: $x = 9$.
2. So the only solution is $x = 9$.

Which statement explains what went wrong?

A. $x = 9$ does not check, because 9^2 is not equal to 9(9).
B. Dividing by x is allowed only when x is not 0, so the solution $x = 0$ was lost.
C. Dividing by x is fine, but the solutions should be $x = 9$ and $x = -9$.
D. An equation with an x^2 term can never have 0 as a solution.

8. Find the sum of the two solutions of $5x^2 - 10x - 40 = 0$.

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9. Which of these equations have $x = -2$ as a solution? Select the three correct equations.

☐ A. $x^2 - 4 = 0$ ☐ B. $x^2 - 2x = 0$ ☐ C. $x^2 - 5x + 6 = 0$
☐ D. $x^2 + 2x = 0$ ☐ E. $x^2 + 5x + 6 = 0$

10. Solve $x(x - 3) = 18$. Which choice gives all of its solutions?

A. $x = -3$ or $x = 6$ B. $x = 0$ or $x = 3$
C. $x = 3$ or $x = -6$ D. $x = 18$ or $x = 21$