Adding And Subtracting Radicals Worksheet

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Part 1: Foundational Knowledge

What is the simplest form of the radical expression √50?

Hint: Consider the prime factorization of 50.

- ◯ 5√2
- ◯ 10√5
- ◯ 25√2
- ◯ 2√5

Which of the following are like radicals?

Hint: Look for radicals that have the same index and radicand.

- ☐ 3√7 and 5√7
- ☐ √3 and √5
- ☐ 2√2 and 3√3
- ☐ 4√x and 6√x

Explain why only like radicals can be added or subtracted directly.

Hint: Consider the properties of radicals and their coefficients.

List the steps to simplify the radical expression √72.

Hint: Think about prime factorization and perfect squares.

1. Step 1

2. Step 2

3. Step 3

Part 2: comprehension

Which expression represents the sum of 2√3 and 3√3?

Hint: Combine the coefficients of like radicals.

- ◯ 5√3
- ◯ 6√3
- ◯ 5√6
- ◯ 2√6

Which of the following expressions are equivalent to 4√18?

Hint: Look for simplifications of the radical expression.

- ☐ 12√2
- ☐ 6√3
- ☐ 2√9
- ☐ 12√3

Describe the process of rationalizing the denominator of the fraction 5/√2.

Hint: Consider multiplying by a form of 1.

Part 3: Application

If √x = 3, what is the value of x?

Hint: Square both sides of the equation.

- ◯ 6
- ◯ 9
- ◯ 12
- ◯ 15

Simplify the expression 3√8 + 2√18 and select the correct form.

Hint: Look for common factors in the radicals.

- ☐ 9√2
- ☐ 5√2 + 6√3
- ☐ 3√2 + 6√3
- ☐ 9√3

Solve the equation √(x + 3) = 5 and provide the value of x.

Hint: Square both sides to eliminate the square root.

Part 4: Analysis

Which of the following is the correct simplification of √(48) - √(12)?

Hint: Simplify each radical before subtract.

- ◯ 2√3
- ◯ 3√3
- ◯ 4√3
- ◯ 5√3

Analyze the expression 2√5 + √20 and identify the correct simplification.

Hint: Look for common factors in the radicals.

- ☐ 4√5
- ☐ 5√5
- ☐ 3√5
- ☐ 6√5

Explain how you would simplify the expression √(x^2y) when x and y are positive integers.

Hint: Consider the properties of square roots and perfect squares.

Part 5: Evaluation and Creation

Which method would be most effective for simplifying the expression √(75) + √(27)?

Hint: Consider the properties of radicals and common factors.

- ◯ Direct addition
- ◯ Factoring out common factors
- ◯ Rationalizing the denominator

◯ Using the distributative property

Evaluate the expression √(50) - 2√(2) and select the correct simplification.

Hint: Simplify each radical before subtract.

- ☐ 3√2
- ☐ 5√2
- ☐ 4√2
- ☐ 6√2

Create a real-world problem that involves adding or subtracti ng radicals, and solve it. Provide a detailed explanation of your solution.

Hint: Think about scenarios where measurements are involved.