

Simplifying Radicals Worksheet

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Part 1: Building a Foundation

What is the square root of 64?

Hint: Think of the number that, when multiplied by itself, gives 64.

- 6
- 7
- 8
- 9

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Which of the following are perfect squares?

Hint: Identify the numbers that can be expressed as the square of an integer.

- 16
- 20
- 25
- 30

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Define a radical in mathematical terms and provide an example.

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Hint: Consider how radicals are used in equations.

List the first four perfect squares and their square roots.

Hint: Think of the squares of the first four integers.

1. What is the first perfect square?

2. What is the second perfect square?

3. What is the third perfect square?

4. What is the fourth perfect square?

Part 2: Understanding and Interpretation

Which property of radicals allows you to write $\sqrt{a * b}$ as $\sqrt{a} * \sqrt{b}$?

Hint: Consider the properties of multiplication in relation to square roots.

- Product Property
- Quotient Property
- Sum Property
- Difference Property

Which property of radicals allows you to write $\sqrt{a * b}$ as $\sqrt{a} * \sqrt{b}$?

Hint: Think about how multiplication works with roots.

- Product Property
- Quotient Property
- Sum Property
- Difference Property

When simplifying $\sqrt{72}$, which of the following steps are correct?

Hint: Think about how to factor 72 into its prime factors.

- Factor 72 into $36 * 2$
- Write $\sqrt{72}$ as $\sqrt{36} * \sqrt{2}$
- Simplify to $6\sqrt{2}$
- Leave as $\sqrt{72}$

When simplifying $\sqrt{72}$, which of the following steps are correct?

Hint: Consider how to factor the number under the radical.

- Factor 72 into $36 * 2$
- Write $\sqrt{72}$ as $\sqrt{36} * \sqrt{2}$
- Simplify to $6\sqrt{2}$
- Leave as $\sqrt{72}$

Explain why $\sqrt{a + b}$ is not equal to $\sqrt{a} + \sqrt{b}$. Provide an example to support your explanation.

Hint: Consider the properties of addition and square roots.

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Part 3: Application and Analysis

Simplify the expression $\sqrt{50}$.

Hint: Factor 50 into its prime factors to simplify.

- $5\sqrt{2}$
- $10\sqrt{5}$
- $2\sqrt{5}$
- 25

Simplify the expression $\sqrt{50}$.

Hint: Look for perfect squares that can be factored out.

- $5\sqrt{2}$
- $10\sqrt{5}$
- $2\sqrt{5}$
- 25

Which of the following expressions are equivalent to $\sqrt{8/2}$?

Hint: Consider how to simplify the fraction under the square root.

- $\sqrt{4}$
- 2
- $\sqrt{8} / \sqrt{2}$
- $2\sqrt{2}$

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Hint: Consider how to simplify fractions under a radical.

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- $\sqrt{8} / \sqrt{2}$
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Simplify the radical expression $\sqrt{45}$ and explain each step of your process.

Hint: Factor 45 into its prime factors to simplify.

Simplify the radical expression $\sqrt{45}$ and explain each step of your process.

Hint: Break down the number under the radical into its factors.

Part 4: Evaluation and Creation

Consider the expression $\sqrt{(x^2 * y)}$. Which of the following are true?

Hint: Think about the properties of square roots and variables.

- It can be simplified to $x\sqrt{y}$ if $x \geq 0$.
- It can be simplified to $\sqrt{x} * \sqrt{y}$.
- It is already in its simplest form.
- It can be rewritten as $\sqrt{(xy)} * \sqrt{x}$.

Analyze the expression $\sqrt{(75)} - \sqrt{(3)}$ and determine if it can be simplified further. Justify your answer.

Hint: Consider the prime factorization of 75.

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Hint: Think about the properties of radicals and variables.

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- It is already in its simplest form.
- It can be rewritten as $\sqrt{(xy)} * \sqrt{x}$.

Analyze the expression $\sqrt{(75)} - \sqrt{(3)}$ and determine if it can be simplified further. Justify your answer.

Hint: Consider the properties of subtraction and radicals.

Evaluate the following statements and select those that are true about rationalizing the denominator:

Hint: Consider the process of rationalizing denominators in fractions.

- It involves multiplying by a conjugate.
- It eliminates radicals from the denominator.
- It simplifies the expression.
- It increases the complexity of the expression.

Create a real-world problem that involves simplifying a radical expression. Provide a solution to your problem.

Hint: Think of a scenario where you might need to simplify a radical.

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Hint: Consider the process of eliminating radicals from the denominator.

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Create a real-world problem that involves simplifying a radical expression. Provide a solution to your problem.

Hint: Think of a scenario where you might need to simplify a radical.

