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Simplify Radicals Worksheet Answer Key PDF

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Part 1: Building a Foundation

What is the square root of 64?

undefined. 6

undefined. 7

undefined. 8 ✓

undefined. 9

The square root of 64 is 8.

Which of the following are perfect squares? (Select all that apply)

undefined. 16 ✓

undefined. 20

undefined. 25 ✓

undefined. 30

The perfect squares among the options are 16 and 25.

Explain what a radical expression is and provide an example.

A radical expression involves roots, such as square roots, and an example is √16.

List the first three perfect cubes.

1. First perfect cube

1

2. Second perfect cube

8

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3. Third perfect cube
27

The first three perfect cubes are 1, 8, and 27.

Which property of radicals allows you to simplify √(9 * 4) to 6?

undefined. Product Property ✓
undefined. Quotient Property
undefined. Sum Property
undefined. Difference Property

The Product Property allows this simplification.

Part 2: Understanding and Application

Which of the following expressions are equivalent to √(36/4)? (Select all that apply)

undefined. √36 / √4 ✓
undefined. 6 / 2 ✓
undefined. √9 ✓
undefined. 3 ✓

The equivalent expressions are √36 / √4, 6 / 2, √9, and 3.

Describe the process of rationalizing the denominator and why it is used.

Rationalizing the denominator involves eliminating radicals from the denominator to simplify expressions.

Simplify the expression √50 and choose the correct answer.

undefined. 5√2 ✓
undefined. 10√5
undefined. 25√2
undefined. 2√5

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The simplified form of √50 is 5√2.

Which of the following are simplified forms of √72? (Select all that apply)

undefined. 6√2 ✓

undefined. 3√8

undefined. 2√18

undefined. 4√3 ✓

The simplified forms of √72 include 6√2 and 4√3.

Given the expression 3√18 + 2√8, simplify it by combining like radicals.

The expression simplifies to 9√2.

Part 3: Analysis, Evaluation, and Creation

If √x = 5, what is the value of x?

undefined. 10

undefined. 15

undefined. 20

undefined. 25 ✓

The value of x is 25.

Which of the following steps are necessary to simplify the expression √(x^2 * y^2)? (Select all that apply)

undefined. Apply the product property of radicals ✓

undefined. Simplify each variable separately ✓

undefined. Combine like terms

undefined. Rationalize the denominator

The necessary steps include applying the product property and simplifying each variable separately.

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Analyze the expression √(x^2 + 2x + 1) and explain how it can be simplified.

The expression can be simplified to x + 1 by recognizing it as a perfect square.

Evaluate the expression √(49) + √(16) and choose the correct answer.

undefined. 10 ✓

undefined. 11

undefined. 12

undefined. 13

The evaluated expression equals 10.

Which of the following expressions can be simplified to a whole number? (Select all that apply)

undefined. √81 ✓

undefined. √45

undefined. √121 ✓

undefined. √144 ✓

The expressions that can be simplified to whole numbers are √81, √121, and √144.

Create a real-world problem that involves simplifying a radical expression, and solve it.

An example could involve calculating the length of a diagonal in a square garden.

Propose two different methods to simplify the expression √(48) and explain each method briefly.

1. First method

Factor 48 into 16 and 3, then simplify to 4√3.

2. Second method

Use prime factorization: 48 = 2^4 * 3, simplify to 4√3.

One method is to factor 48 into 16 and 3, and another is to use the prime factorization method.

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