ALBERT

Name _____ Date _____

Radicals and Rational Exponents Worksheet

Algebra 1 · Common Core HSN-RN.A.2

> Rewrite expressions involving radicals and rational exponents using the properties of exponents.

Practice

Builds the skill step by step.

1. $\sqrt{50} = a\sqrt{2}$. What is a?

2. $\sqrt{12} = a\sqrt{3}$. What is a?

3. The cube root of 16 equals a times the cube root of 2. What is a?

4. $x^{1/2} \cdot x^{1/2} = x^{k}$. What is k?

5. For $x \geq 0$, $\sqrt{(x^{6})} = x^{k}$. What is k?

6. The cube root of $x^{6} = x^{k}$. What is k?

7. For $x \geq 0$, $(x^{4})^{1/2} = x^{k}$. What is k?

8. What is $\sqrt{18} \cdot \sqrt{2}$?

9. $\sqrt{75} = a\sqrt{3}$. What is a?

10. $x^{2/3} \cdot x^{1/3} = x^{k}$. What is k?

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On Level

Grade-level practice.

1. $\sqrt{48} = a\sqrt{3}$. What is a?

2. The cube root of 54 equals a times the cube root of 2. What is a?

3. $x^{1/2} \div x^{1/4} = x^k$. What is k?

4. For $x \geq 0$, $\sqrt{(x^3)} = x^k$. What is k?

5. The cube root of $8x^3$ can be written as ax. What is a?

6. For $x \geq 0$, which equals $\sqrt{(9x^4)}$?

   A. $3x^4$

   B. $3x^2$

   C. $9x^2$

   D. $81x^2$

7. The fourth root of $x^3 = x^k$. What is k?

8. Which equals $x^{-1/2}$?

   A. $-x \div 2$

   B. $\sqrt{x} \div 2$

   C. $-\sqrt{x}$

   D. $1 \div \sqrt{x}$

9. $\sqrt{8} + \sqrt{18} = a\sqrt{2}$. What is a?

10. For $x \geq 0$, which equals $\sqrt{(x^5)}$?

    A. $x^2\sqrt{x}$

    B. $x^5\sqrt{x}$

    C. $x\sqrt{x}$

    D. x^3

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Challenge

Multi-step and word problems that stretch it.

1. $(27x^6)^{2/3} = ax^4$. What is a?

2. For $x > 0$, $\sqrt{(50x^2)} = ax\sqrt{2}$. What is a?

3. $x^{3/4} \cdot x^{1/2} \div x^{1/4} = x^k$. What is k?

4. The cube root of x^2 times $\sqrt{x} = x^k$. What is k?

5. Which equals $(x^{1/3}y^{1/2})^6$?

   A. x^2y^2

   B. x^3y^2

   C. x^2y^3

   D. x^6y^6

6. $\sqrt{12} + \sqrt{27} = a\sqrt{3}$. What is a?

7. The cube root of $-8x^3$ can be written as ax. What is a?

8. What is $2^{3/2} \cdot 2^{1/2}$?

9. Which does NOT equal 4?

   A. $8^{2/3}$

   B. $16^{1/2}$

   C. $32^{1/2}$

   D. $64^{1/3}$

10. $\sqrt{x} \cdot (\text{cube root of } x) \cdot (\text{sixth root of } x) = x^{k}$. What is k?