

Bellwork

1. What is a composite number?
2. What is a prime number?
3. What is a perfect square?
4. What does it mean to take the square root of a given number?

Simplifying Square Roots

What is given:

A radical expression, specifically a square root expression, that could potentially be reduced and simplified.

What the answer will look like:

$$a\sqrt{b}$$

Where a = any real number

b = a number with no perfect square factor remaining in it

Multiplication Property of Radicals

If we have a composite number c , with factors a and b ,

$$\text{Then } \sqrt{c} = \sqrt{a \cdot b} = \sqrt{a} \cdot \sqrt{b}$$

NOTE: This property is the key to simplifying radical expressions!

Decimal solutions **WILL NOT** be accepted!

Simplifying Radical Expressions

Procedure:

1. Factor the number that is under the radical. (Create the U)
2. Identify the set of factors that have the largest perfect square.
3. Apply the Multiplication Property of radicals to this set of factors.
(Placing the perfect square in front.)
4. Take the square root of the perfect square.
5. Multiply that number by any number that is already outside of the radical to start.

Examples

Simplify each of the given Square Roots:

1. $\sqrt{320}$

2. $9\sqrt{147}$

3. $-\sqrt{75}$

4. $-6\sqrt{20}$