Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Date\_\_\_\_\_\_\_\_\_\_Block\_\_\_

 index radical sign Note: When there is no index shown, the index is understood to be 2 (square root)

  radicand

 *PARTS OF A RADICAL*

**A radical is in simplest form when:**

1. The radicand has no factor that is a perfect square other than 1. Some perfect squares are:

 4, 9, 16, 25, 36, 49, 64, 81, 100, 121, 144, 169, 196, 225, and 625.

1. The radicand does not contain a fraction.
2. No radical appears in the denominator.

**☺ To simplify a radical when the radicand contains a factor that is a perfect**

 **square, apply the product property of square roots:**

**PRODUCT PROPERTY**: 

1. Write the radicand as a product of factors – one of which is a perfect square.
2. Apply the product property and write as a product of 2 radicals *(preferably the perfect square first).*
3. Take the square root of the perfect square and express as a product – the square root of the perfect square and the other square root factor.

**Examples:** **a.**  **b.** 

 **c.** 

**Simplify the following:**

**1.**  **9.** 

**2.**  **10.** 

**3.**  **11.** 

**4.**  **12.** 

**5.**  **13.** 

**6.**  **14.** 

**7.**  **15.** 

**8.**  **16.** 

**☺ To simplify a fraction when the denominator contains a radical, you apply the**

 **quotient property of square roots. It is called “Rationalizing the Denominator”.**

**QUOTIENT PROPERTY: **

1. Multiply the fractions by an expression that will make the denominator a perfect square.
2. Write the new product.
3. Apply the quotient property and simplify the denominator – rationalize it.
4. Simplify the numerator.
5. Reduce any fractions outside the radical.

Rationalizing the Denominator: When there is a radical in the denominator, apply the following:

|  |  |  |
| --- | --- | --- |
| If the denominator is: | Multiply the numerator and denominator by: | Examples: |
|  |  |  |

**More Examples:**

**a.**   **b.**  **c.** 

**Simplify the following:**

**17.**  **22.** 

**18.**  **23.** 

**19.**  **24.** 

**20.**  **25.** 

**21.**  **26.** 