**Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Per: \_\_\_\_\_\_**

**U11 CW #3** *Exponents pt. 3 – Multiply and Divide with Exponents*

**Directions**: Complete the table below. First write the expanded notation, then the simplified exponential notation.

|  |  |  |
| --- | --- | --- |
| **Product** | **Factors** | **Simplified Exponential Notation** |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

**Discovery:** Do you notice a pattern that you might use as a general rule for multiplying two powers that have the same base?

|  |
| --- |
| **Exponent Rule:** In general, if x is any number and m, n are positive integers, then:    because  m times n times m+n times  **Checklist to Multiply the Same Base in Exponential Form:**  1. \_\_\_\_\_\_\_\_\_\_\_ the \_\_\_\_\_\_\_\_\_\_\_\_\_\_.  2. \_\_\_\_\_\_\_\_\_\_\_ the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.  **Examples:**  or |

Always remember: If in doubt, expand it out!!!!

**1.Directions:** Expand out and simplify each expression. Write your answer in exponential notation.

|  |  |
| --- | --- |
| a. | b. |
| c. | d. |
| e. | f. •4-2 |
| g. • a0 | h. |
| i. **Find and Fix the Mistake:**   |  | | --- | | **X** | | j. Is  equal to 45? Explain why or why not. |

**Division of Numbers or Variables in Exponential Form**

**Directions**: Complete the table below. First write the expanded notation, then the simplified exponential notation.

|  |  |  |
| --- | --- | --- |
| **Quotient** | **Factors** | **Simplified Exponential Notation** |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

**Discovery:** Do you notice a pattern that you might use as a general rule for multiplying two powers that have the same base?

|  |
| --- |
| **Exponent Rule:** In general, if x is any number and m, n are positive integers, then:  m times    because    n times m-n times  **Checklist to Divide the Same Base in Exponential Form:**  1. \_\_\_\_\_\_\_\_\_\_\_ the \_\_\_\_\_\_\_\_\_\_\_\_\_\_.  2. \_\_\_\_\_\_\_\_\_\_\_ the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.  **Examples:**  or |

Always remember: If in doubt, expand it out!!!!

**2. Directions:** Expand out and simplify each expression. Write your answer in exponential notation.

|  |  |
| --- | --- |
| a. | b. |
| c. | d. |
| e. | f. |
| g. | h. |
| i. Find and Fix the Mistake:   |  | | --- | | **X** | | j. Is equal to 22 ? Why or why not? |

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