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

**U11 CW #5** *Exponents pt. 5 – Raising an Exponent to a Power*

**Directions:** Complete the table below.

|  |  |  |
| --- | --- | --- |
| **Expression** | **Factors** | **Simplified Exponential Notation** |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

|  |
| --- |
| **Exponent Power Rule:** Raising a Power to a Power  To raise a base a \_\_\_\_\_\_\_\_\_\_\_\_\_ to a \_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_ the \_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the exponents.  **Example:** (45)3 = 415 |

**Quick Check:** What is the difference between the two problems below? Expand each term out and then evaluate the simplified exponential term.

32  35 (32)5

**Directions:** Simplify, use both expanded notation and exponential notation. Write your answer in positive exponential notation.

|  |  |
| --- | --- |
| a). ((-4)3)5 | b) (32)2 |
| c) ((-7)4)-2 | d) ((-4)-1)-3 |
| e) ((n)3)4 | f) ((2x)2)-2 |

**Directions:** Complete the table below.

|  |  |  |
| --- | --- | --- |
| **Expression** | **Factors** | **Simplified Exponential Notation** |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
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|  |
| --- |
| **Exponent Power Rule:** Power of a Product Property and Power of a Quotient Property  When you raise a multiplication or division problem to a power, \_\_\_\_\_\_\_\_\_\_\_\_\_ the \_\_\_\_\_\_\_\_\_\_\_**\_\_** to **ALL** parts of the problem in the (parenthesis).  **Examples:** |

**Directions:** Simplify using expanded and exponential form. Final answer should be in positive exponential notation.

|  |  |  |
| --- | --- | --- |
| a) | b) | c) |
| d) | e) | f) |
| g) (2x)3 | h) (3x)4 | i) (ab)6 |
| j) | k) | l) |

**Directions:** Simplify. Write your answer in positive exponential notation. Show your work!

|  |  |  |
| --- | --- | --- |
| 1. | 2. | 3. |
| 4. | 5. | 6. |

7. What is the area of a square with a side length of ? Hint: Draw a picture.