**Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Per.\_\_\_\_\_\_\_ Score:\_\_\_\_\_**

**U11 HW #5** *Power Rule with Exponents (in Parenthesis)*

1. Write each expression in expanded form. Then write the simplified expression in exponential form.

|  |  |  |
| --- | --- | --- |
| Expression | Expanded Form | Exponential Form |
| $$(3^{2})^{4}$$ |  |  |
| $$(k^{4})^{2}$$ |  |  |
| $$(2^{3}•5^{4})^{2}$$ |  |  |
| $$(6^{2}ab^{3})^{2}$$ |  |  |
| $$\left(\frac{x^{2}}{x^{3}}\right)^{3}$$ |  |  |
| $$\left(\frac{2}{y^{2}}\right)^{4}$$ |  |  |
| $$\left(\frac{10s^{2}}{2t^{4}u}\right)^{3}$$ |  |  |

1. **Directions:** Complete each exponent property by filling in the space using letters to represent the rules algebraically.

|  |  |  |
| --- | --- | --- |
|  $a^{b}∙a^{c}=a^{\\_\\_\\_\\_\\_\\_}$ | $$a^{-1}=\frac{ }{ }$$ |  $\frac{a^{b}}{a^{c}}=a^{\\_\\_\\_\\_\\_\\_}$ |
|  $\left(a^{b}\right)^{c}=a^{\\_\\_\\_\\_\\_\\_}$ | $$a^{0}=$$ |  $\left(ab\right)^{c}=a^{\\_\\_}b^{\\_\\_}$ |
| $$ \left(\frac{a}{b}\right)^{c}=\frac{a^{\\_\\_}}{b^{\\_\\_}}$$ |  |  |
|  |  |  |

1. Mixed Review: Simplify each term. Write your answers in positive exponential terms only.

 Show ALL steps!!!

|  |  |
| --- | --- |
| 1. $\frac{x^{5}y^{2}z}{\left(xyz\right)^{2}}$
 | 1. $-8x^{-2}•\frac{5^{2}}{x}$
 |
| 1. $\frac{4x^{0}y^{-2}z^{-3}}{4xy^{-1}}$
 | 1. $\frac{2k^{3}k^{2}}{k^{-3}}$
 |
| 1. $\left(\frac{12c^{20}d}{48bc^{46}}\right)^{0}$
 | 1. $\left(\frac{p^{-3}r^{0}}{2p^{3}r^{-1}}\right)^{2}$
 |

1. What is the area of a rectangle with a length of $12x^{3}$ units and a width of $6x^{2}$ units?

Hint: Draw a picture.