**Algebra 2,** Unit 8: Exponent Properties  **WS#19**

**Day 19: Positive Exponent Properties**

**Product of Powers Property**

**Complete the table.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Expression** | **Expression as repeated multiplication** | **Number of factors** | **Simplified expression** |
| **74 • 75** | **7 • 7 • 7 • 7 • 7 • 7 • 7 • 7 • 7** | **9** | **7 9** |
| **(–4)2 • (–4)3** |  |  |  |
| ***x*1 • *x*5** |  |  |  |

|  |
| --- |
| **Product of Powers Rule:**  **xa • xb =** |

**Power of a Power Property**

**Complete the table.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Expression** | **Expanded expression** | **Expression as repeated multiplication** | **Number of factors** | **Simplified expression** |
| **(53)2** |  |  |  |  |
| **[(–6)2]4** |  |  |  |  |
| **(*a*3)3** |  |  |  |  |

|  |
| --- |
| **Power of a Power Rule:**  **(xa)b =** |

**Practice**

**Simplify the expression. Write your answer using exponents.**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **1. 52 • 53** | **2. (–6)1 • (–6)4** | **3. *m*6 • *m*4** |
|  | **4. (103)3** | **5. [(–2)3]4** | **6. (*c*2)6** |

|  |
| --- |
| **Power of a Product Rule: (xaxb)m =** |

**Quotient of Powers Property**

**Complete the table.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Expression** | **Expression as repeated multiplication** | **Simplified expression** | **Simplified expression as a power** |
|  |  |  |  |
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|  |  |  |  |
|  |  |  |  |

|  |
| --- |
| **Quotient of Powers Rule:** |

**Practice**

**Simplify the expression. Write your answer using exponents.**

**1. 2. 3. 4. 5.** 

**Power of a Quotient Property**

**Complete the table.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Expression** | **Expanded expression** | **Product of fractions** | **Product as a quotient of powers** |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

|  |
| --- |
| **Power of a Quotient Rule:** |

**Practice**

**Simplify the expression. Write your answer using exponents.**

**1. 2. 3. 4. 5.** 

**Practice: Positive Exponent Properties**

**Write the Rules from the boxes on the previous pages:**

Product of Powers: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Power of a Power: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Power of a Product: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Quotient of Powers: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Power of a Quotient: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Product of Powers PRACTICE:** Simplify the expression.

1. 32 37 2. 54 59 3. (-7)2 (-7) 4. x2  x6 x

**Power of a Power PRACTICE:** Simplify the expression.

5. (42)7 6. [(-2)4]5 7. (n3)6 8. [(m+1)5]4

**Power of a Product PRACTICE:** Simplify the expression.

9. (x y)2 10. (-3n)2 11. (9m3n)4  12. 5x(5x2)4

**Quotient of Powers PRACTICE:** Simplify the expression.



**Power of a Quotient PRACTICE:** Simplify the expression.

**15.**  **16.**

**Combined PRACTICE:**

Simplify the following expression. **Only the variables should have exponents. Compute any bases with actual numbers!**

18. (-5x)2 19. –(7xy2)2  20. (3x5)(2x7)2

**Algebra 2,Unit 8**: Exponent Properties **#20**

**Day 20:** **Exploring Zero and Negative Exponents**

Complete the table below.

|  |  |
| --- | --- |
| **Expression** | **Value** (written as a whole number or fraction) |
| 24 |  |
| 23 |  |
| 22 |  |
| 21 |  |
| 20 |  |
| 2-1 |  |
| 2-2 |  |
| 2-3 |  |
| 2-4 |  |

|  |
| --- |
| **Zero Exponents:**  **x0 =** |

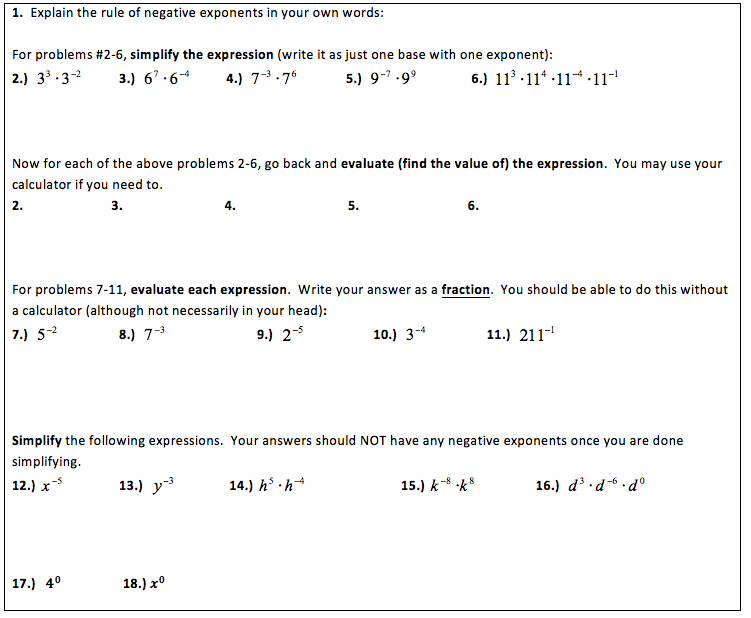
|  |
| --- |
| **Negative Exponents:**  **x-a =** |

**Examples:**

**1. 2.**

**3. 4.**

**Practice: Negative and Zero Exponent Properties**



**MORE Exponent Examples and Practice**

**Combining Positive Properties**

Example 1: Example 2:

**Combining Negative Properties**

Example 1: Example 2:

**You Try:**

1. (3x4y5)(2x3)2 2.

**Review**

