Math 2 **8.EE.1**

Assessment Title: Reviewing Properties of Exponents Pre-Assessment
Unit 1: Extending the Number System

Learning Targets:

- I can use properties of exponents to simplify expressions

Part I

Directions: Complete each table and answer any questions posed.

1. Complete the table:

Product of Powers	Write the Factors	Write As a Single Power
$7^4 \times 7^2$	$(7 \times 7 \times 7 \times 7) \times (7 \times 7)$ $= 7 \times 7 \times 7 \times 7 \times 7 \times 7$	7^6
$2^3 \times 2^6$		
$4^2 \times 4^9$		
$6^8 \times 6^7$		

2. Looking at the table above what do you notice?

3. Complete the table:

Quotient of Powers	Write the Factors	Write As a single Power
$\frac{2^6}{2^3}$	$\frac{2 \times 2 \times 2 \times 2 \times 2 \times 2}{2 \times 2 \times 2}$ $= 2 \times 2 \times 2$	2^3
$\frac{8^5}{8^4}$		
$\frac{9^9}{9^7}$		
$\frac{3^8}{3^5}$		

4. Looking at the table above what do you notice?

5. Explain your procedure for writing $5^{10} \times 5^7$ as a single term.

6. Explain your procedure for writing $\frac{5^{10}}{5^7}$ as a single term.

Math 2 **8.EE.1**

Assessment Title: Reviewing Properties of Exponents Pre-Assessment
Unit 1: Extending the Number System

Part II

Directions: Complete each table and answer any questions posed.

7. Choose a number between 1 and 10 and complete the table below.

For example, I chose 11.

Raise your number to the powers 1-6 and give the result	Raise your numbers to 3-8 and give the result	Multiply the first two columns and give the result	Give a single term that equals the same thing as the previous columns result.
$11^1 = \mathbf{11}$	$11^3 = \mathbf{1331}$	$11^1 \times 11^3 = \mathbf{14641}$	$\mathbf{11^4} = 14641$

8. How are the exponents in the third and fourth column related?

9. Using your observations from the table, write an equation that summarizes the property for multiplying exponents with the same base.

Assessment Title: Reviewing Properties of Exponents Pre-Assessment
Unit 1: Extending the Number System

10. Choose a number between 1 and 10 and complete the table below.

For example, I chose 11.

Raise your number to the powers 5-10 and give the result	Raise your numbers to 2-7 and give the result	Divide the first two columns and give the result	Give a single term that equals the same thing as the previous columns result.
$11^5 = 161051$	$11^2 = \mathbf{121}$	$11^5 \div 11^2 = \mathbf{1331}$	$\mathbf{11^3} = 1331$

11. Write an equation that summarizes the division property.

12. Using the same method used in the tables above (if needed, you can create your own table), complete the equation below to summarize the "power to a power" property.

$$(x^a)^b = x^{a\,?\,b}$$

Assessment Title: Reviewing Properties of Exponents Pre-Assessment
Unit 1: Extending the Number System

Part III

Directions: Complete each problem below by writing each product, quotient, or power to a power as one term.

Simplify. Your answer should contain only positive exponents.

1) $4m^2 \cdot 4m^3$

2) $a^2b^2 \cdot 4ba^2$

3) $x^3 \cdot 4x^4$

4) $(n^4)^3$

5) $(x^3y^3)^2$

6) $(2v^2)^3$

7) $\frac{3x^3}{2x}$

8) $\frac{u^3v^2}{3u^3v^2}$

9) $\frac{3xy^2}{3x^3y^2}$

10) $\frac{4a^3}{2a}$

11) Ron has a collection of chocolate frog cards containing 4^6 cards. He organizes the cards into boxes that hold 4^4 each. How many boxes will Ron need to hold the cards? Write your answer as one term.

12) Write the expression for a number used as a factor seventeen times being multiplied by a number used as a factor fifteen times. Then write the product as one power.