Name: _____ Date: _____

MBF 3C **Quiz: The Exponent Laws**

Expectation
Through this assessment, you will have another opportunity to demonstrate your ability to …
____ demonstrate an understanding of exponents

1. True OR False? **Correct** each false statement in the space provided below each statement.

   a. _____ The *base* in the power $(-3)^4$ is (-3).

   b. _____ When multiplying powers of the same base (E.g., $2^3 \times 2^4$), *multiply* the exponents.

   c. _____ The power $\left(\frac{1}{2}\right)^3$ means $\frac{1}{2} \times \frac{1}{2} \times \frac{1}{2}$.

   d. _____ When dividing powers of the same base (E.g., $2^4 \div 2^3$), *subtract* the exponents.

   e. _____ When a power is raised to an exponent—E.g., $(2^3)^4$—*add* the exponents.

2. Simplify by writing as a single power (E.g., $2^2 \times 2^4 = 2^6$)

   a. $10^2 \times 10^4 =$ b. $(2^3)^2 =$ c. $\frac{7^{23}}{7^{21}} =$

3. Simplify by writing as a single power.

   a. $\left(\frac{3^4}{3^2}\right)^2 =$ b. $\frac{5^7 \times 5^4}{5^6 \times 5^2} =$

4. Read the *Example* and *Solution* that follow.

Example

The table shows the first 10 powers of 2.

2^1	2^2	2^3	2^4	2^5	2^6	2^7	2^8	2^9	2^{10}
2	4	8	16	32	64	128	256	512	1024

Use the table to evaluate 32×16 without multiplying or dividing.

Solution

$32 \times 16 = 2^5 \times 2^4$ Use the table to represent each number as a power of 2.

$= 2^9$ Use the exponent rules to simplify the expression.

$= 512$ Use the table to evaluate the power.

- Use the table below.
- Evaluate each expression <u>WITHOUT</u> multiplying or dividing. Show two lines in each of your solutions.
- Consider the *Example* and *Solution* that you read on the first page for guidance.

3^1	3^2	3^3	3^4	3^5	3^6
3	9	27	81	243	729

a. $3^2 \times 3^3 =$ b. $\frac{729}{81} =$ c. $(3^2)^3 =$

5. <u>Create</u> AND and <u>simplify</u> your own expression that involves the use of **each of the exponents laws**.

Assessment:

KU	#1 & #2	Demonstrates an understanding of the basic principles of the exponent laws	*Still learning…*	*Almost there ☺*	*Got It!*
KU	#3	Applies understanding to simplifying expressions effectively	*Still learning…*	*Almost there ☺*	*Got It!*
T/PS	#4	Identifies everything that's important to solving the problem	*Still learning…*	*Almost there ☺*	*Got It!*
T/PS	#5	-Shows a complete solution process -Identifies everything that's important to solving the problem -Shows full understanding of how important parts of the problem relate to one another	*Still learning…*	*Almost there ☺*	*Got It!*

Reflection: If you chose "Still learning…" and/or "Almost there ☺", please describe your choice and what you will do/need to deepen your learning.