Grade 6 Accelerated
Day 3

Standard	***7.EEI.5*** Understand and apply the laws of exponents (i.e., product rule, quotient rule, power to a power, product to a power, quotient to a power, zero power property) to simplify numerical expressions that include whole-number exponents.
Learning Targets **I Can Statements**	I can apply the laws of exponents.
Essential Question(s)	How can the laws of exponents be applied in real-world situations?
Resources	You will need a pair of scissors and a glue stick to complete this assignment. All answers should be written on the page provided.
Learning Activities or Experiences	1. Complete at least 3 topics of your **ALEKS** pathway. (if available) 2. Review attached notes and complete the "Exponent Rules Puzzle." 3. Complete the "Today's Thought" activity.

NOTE: *For additional practice aligned to your grade for SC READY review please refer to the 6th grade level assignments.*

Lesson Notes

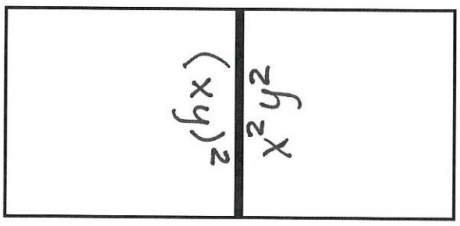
Rules of Exponents or Laws of Exponents	
Multiplication Rule	$a^x \times a^y = a^{x+y}$
Division Rule	$a^x \div a^y = a^{x-y}$
Power of a Power Rule	$\left(a^x\right)^y = a^{xy}$
Power of a Product Rule	$(ab)^x = a^x b^x$
Power of a Fraction Rule	$\left(\frac{a}{b}\right)^x = \frac{a^x}{b^x}$
Zero Exponent	$a^0 = 1$

Exponent Rules Puzzle

1. Cut out the nine puzzle pieces.

2. Pair up the matching expressions (each non-simplified expression has a matching simplified expression).

3. When complete, the puzzle will be a three-by-three square. Glue your final arrangement on the page provided. **GOOD LUCK!**



$\frac{(2x^2)^0}{x^2}$

E

1

$10xy^3 \cdot 8x^5y^3$

$\left(\frac{x^2}{y}\right)^3$

E

$\frac{x^8}{25y^{16}}$

$(3x \cdot 2x)^2$

$\frac{5x^3}{3}$

N

$\frac{1}{x^2}$

$\frac{18x^8y^8}{10x^3}$

$(3x^2 \cdot 2x^2)^2$

$\frac{3yz}{x}$

N

$\frac{10x^4}{6x}$

$\frac{3x^3y^1z^1}{x^4y^0z^0}$

$\frac{x^6}{y^3}$

O

$(2y^2)^4$

$80x^6y^6$

P

$36x^8$

$\frac{2x^5y^4 \cdot 4x^2y \cdot 3x}{3yz}$

$36x^4$

T

$8x^8y^6$

$(7a^3b^2)^0$

S

$\left(\frac{5x^3y}{20xy^5}\right)^4$

$\frac{9x^5y^8}{5}$

X

$16y^8$

Exponent Rules Puzzle Solution

Today's Thought

1. What is the value of the expression $\frac{8^6 \div 8^3}{4^0 \div 4^2}$?

    a. 16

    b. 32

    c. 512

    d. 4,096

2. Which value is $\frac{7^2 \cdot 7^0 \cdot 3^3}{3^2}$ simplified?

    a. 0

    b. 49

    c. 147

    d. 210

3. What is the value of $(9^2 \times 9^0)^2$?

    a. 9^0

    b. 9^3

    c. 9^4

    d. 9^5

For problems 4 – 6, you will need to simplify each expression.

4. $(2x^4y^4)^3$

5. $\frac{x^3y^3 \cdot x^3}{4x^2}$

6. $(5a^4b^3)^0$