Exponents

Agenda

Warm-Up
Set up Unit 7
Notes p.89
HW #1-18

Reminders

-Bathroom Passes due Thurs
-Quiz Friday
No AM Thurs Tutoring

Essential Question

How do I simplify monomial expressions?

Warm-Up Monday

1. Are the expressions 2^2 and $(-2)^2$ equivalent? Why or why not?

Yes!

$2^2 = 2 \cdot 2 = 4$

$(-2)^2 = (-2)(-2) = 4$

$-2^2 = -4$

On page 87&88, set up unit 7 in your notebook.

Put your "7" tab on page 87 (fold along the dotted line)

p.86 is blank :)

UNIT 7

TITLE: Polynomials

87

Page #	Page Title
88	Words Worth Knowing
89	Exponent Rules

On page 87&88, set up unit 7 in your notebook.

Put your "7" tab on page 87 (fold along the dotted line)

88

Unit 7 Words Worth Knowing

Unit 7: Polynomials

- ☐ Exponent
- ☐ Base
- ☐ Expanded Form
- ☐ Simplify
- ☐ Evaluate
- ☐ Exponent Properties
- ☐ Monomial
- ☐ Binomial
- ☐ Trinomial
- ☐ Polynomial
- ☐ Term
- ☐ Sum
- ☐ Difference
- ☐ Product
- ☐ Quotient
- ☐ Algebra Tiles
- ☐ The Box or Double Rainbow Method

Exponents

89

Essential Question

How do I simplify monomial expressions?

Glue or tape strip near the right edge. Only glue a portion so you may still write underneath.

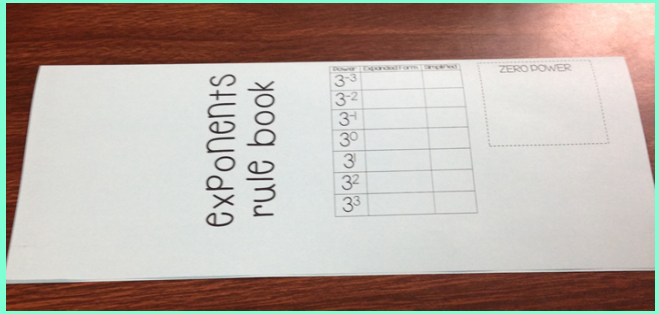
Exponents Practice

Simplify completely. Leave no negative exponents!

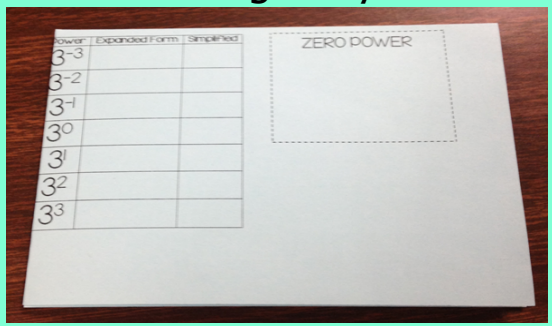
1. 5^{-4}
2. $(3a)^{-2}$
3. $\frac{1}{x^{-2}}$
4. x^2y^{-4}
5. $\frac{32m^{-2}}{16p^{-3}}$
6. $5^{10} \bullet 5^{23}$
7. $(-8)^2(-8)^5$
8. $5x^{-2} \bullet 6x^7$
9. $2(x^2)^{-3}$
10. $(2x^2)^{-3}$
11. $(4ab^3c^2)^2$
12. $\frac{x^9}{x^3}$
13. $\frac{a^5}{a^{10}}$

Setting up the Rule Book

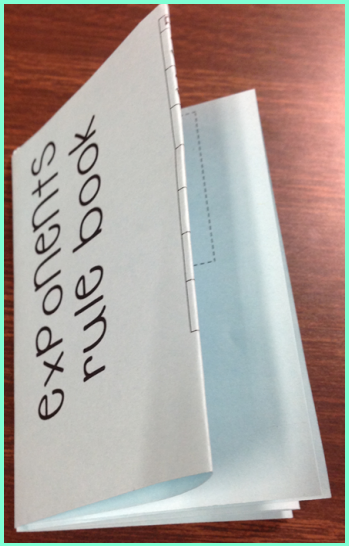
1. Fold with text side out hot dog style.



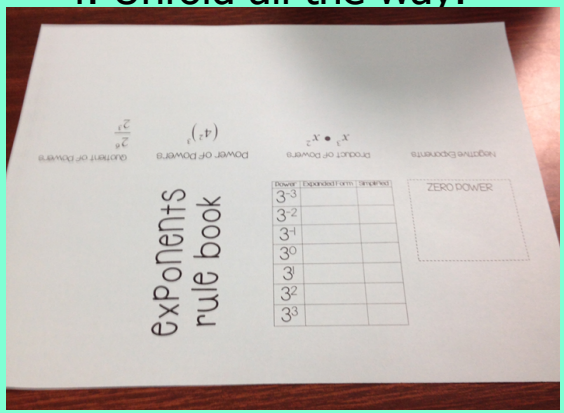
2. Fold in half again, hamburger style.



3. Fold in half again, hamburger style so "Exponents rule book" is on top.

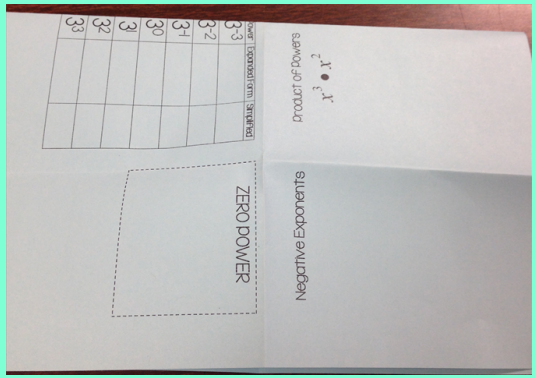


4. Unfold all the way.

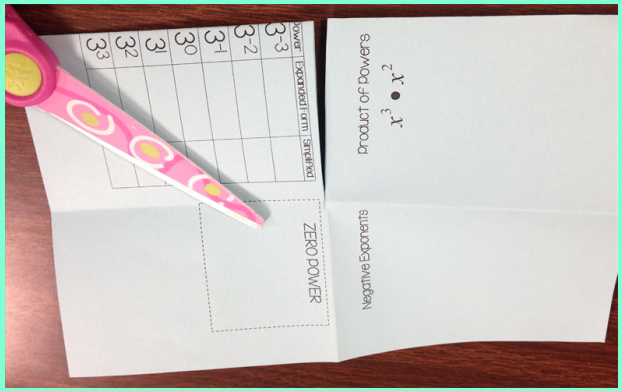


Setting up the Rule Book

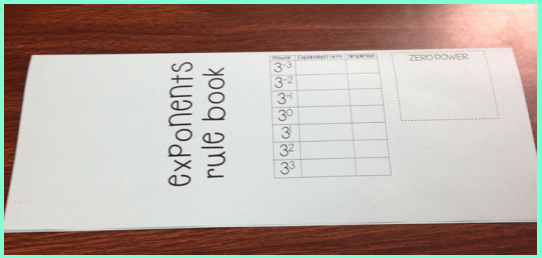
5. Fold in half hamburger style, text side out.



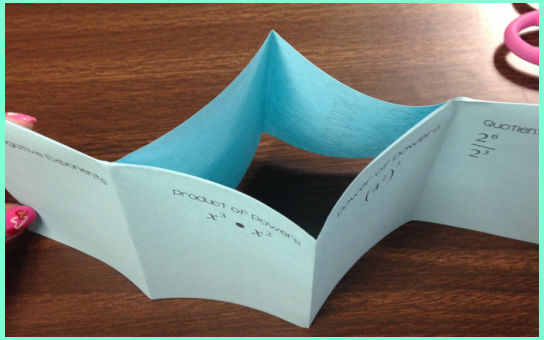
6. Cut between the table and "Product of Powers", DO NOT CUT ALL THE WAY ACROSS.



7. Unfold. Refold hot dog style.



8. Open up "poof" and collapse it.



Exponents

89

Essential Question: How do I simplify monomial expressions?

Anatomy of a Power

power

$2^3 = \underbrace{2 \cdot 2 \cdot 2}_{\text{expanded form}} = 8$

exponent

base

simplified form

exponents rule book

Exponents Practice

Simplify completely. Leave no negative exponents!

1. 5^{-4}
2. $(3a)^{-2}$
3. $\frac{1}{x^{-2}}$
4. x^2y^{-4}
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13. $\frac{a^5}{a^{10}}$

Complete the table

Power	Expanded Form	Simplified
3^{-3}	$\frac{1}{3^3} = \frac{1}{3\cdot3\cdot3}$	$\frac{1}{27}$
3^{-2}	$\frac{1}{3^2} = \frac{1}{3\cdot3}$	$\frac{1}{9}$
3^{-1}	$\frac{1}{3^1}$	$\frac{1}{3}$
3^0		$\frac{3}{3} = 1$
3^1	3	3
3^2	$3\cdot3$	9
3^3	$3\cdot3\cdot3$	27

÷3

÷3

÷3

÷3

x3

x3

$xy^2z = x^1y^2z^1$

Zero Power

Anything raised to the zero power equals 1

ex1. $x^0 = 1$

ex2. $1000000^0 = 1$

ex3. $\left(\frac{6x^2y^3}{7z^{-8}}\right)^0 = 1$

ex. $\boxed{a^0}b = \boxed{b}$

$=1$

$(ab)^0 = 1$

Negative Exponents

Cannot leave negative exponents!!

CROSS the line &
CHANGE the sign

ex. $x^{-2} = \boxed{\frac{1}{x^2}}$

ex. $\frac{1}{a^{-3}} = \frac{a^3}{1} = \boxed{a^3}$

#1-5

Negative Exponents #1_5

Simplify completely. Leave no negative exponents!

1. $\frac{5^{-4}}{1} = \frac{1}{5^4} = \frac{1}{625}$

2. $(3a)^{-2} = \frac{1}{(3a)^2}$

3. $\frac{1}{x^{-2}} = x^2$

4. $\frac{x^2 y^{-4}}{1} = \frac{x^2}{y^4}$

5. $\frac{32m^{-2}}{16p^{-3}} = \frac{\cancel{32}p^3}{\cancel{16}m^2} = \boxed{\frac{2p^3}{m^2}}$

$\div 16$

$\div 16$

Test Statistics

2nd – 68
3rd – 72
4th – 78
5th – 69

Please make sure there are no discrepancies on your progress report. If there are, please highlight/circle and explain, and turn your progress report back to the bin

Unless you turn in bathroom passes, this is your report card grade!

Algebra I – Unit 7: Topic 1 – Integer Exponents

Practice – Integer Exponents **pp 446-448**

Name _____ Date _____ Period _____

Simplify the expressions below.

1. 4^{-2}
2. $(-5)^{-2}$
3. $\frac{1}{2^0}$
4. $\left(\frac{1}{4}\right)^2$
5. -5^2
6. $\frac{4}{2^{-3}}$

Simplified expressions are shown below. Fill in the box with the value that makes each equation true.

7. $4n^{\square} = \frac{4}{n^2}$
8. $\frac{a^{\square}}{3b^{\square}} = \frac{ab^3}{3}$

In the lab, the population of a certain bacteria doubles every month. A study uses the expression $3000 \bullet 2^m$ to model a population of 3000 bacteria after m months of growth.

9. What is the population of bacteria at the beginning of the study when m=0?

10. What is the population of bacteria at m=-2? What does this value represent?

Evaluate each expression for x=-3 and y=5. Plug it in!

11. $3y^{-2}$

$3(5)^{-2}$

12. $(4x)^{-2}$

$(4(-3))^{-2}$

13. $\frac{1}{x^{-3}y^2}$
14. x^0y^{-3}

Simplify each expression.

15. $a^{-5}b^{-7}$
16. a^1c^0
17. $\frac{7ab^{-2}}{3w}$
18. $\frac{15s}{5t^{-3}}$

1. $\frac{1}{16}$
2. $\frac{1}{25}$
3. 1
4. $\frac{1}{16}$
5. -25
6. 32
7. $4n^{-2}$
8. $\frac{a^1}{3b^{-3}}$
9. 3000
10. 750. This value represents the population of bacteria 2 months before the study began.
11. $\frac{3}{25}$
12. $\frac{1}{144}$
13. $-\frac{27}{25}$
14. $\frac{1}{125}$
15. $\frac{1}{a^5b^7}$
16. a
17. $\frac{7a}{3b^2w}$
18. $3st^3$