Name:

Group member(s):

Date: 20-3-17

What's the rule?

$\frac{3^1}{3^3}$	$\frac{3}{3\cdot3\cdot3} = \frac{1}{3^2}$	3^{-2}
$\frac{5^2}{5^3}$	$\frac{5\cdot5}{5\cdot5\cdot5} = \frac{1}{5^1}$	5^{-1}
$\frac{4^4}{4^7}$	$\frac{4\cdot4\cdot4\cdot4}{4\cdot4\cdot4\cdot4\cdot4\cdot4\cdot4} = \frac{1}{53}$	4^{-3}
$\frac{2^3}{2^4}$	$\frac{2\cdot2\cdot2}{2\cdot2\cdot2\cdot2} = \frac{1}{2^1}$	2^{-1}
$\frac{3^2}{3^5}$	$\frac{3\cdot3}{3\cdot3\cdot3\cdot3\cdot3} = \frac{1}{3^3}$	3^{-3}

1. What do you notice happening in each row of the table?

Numbers are being subtracted

2. Based on what you notice, fill in the blanks in the table.
3. If you didn't have the middle column, how would you explain to someone how to get from the first column to the last column?

-find the difference

4. Make it simple! Rewrite your explanation so that it's a general rule about exponents using x^m and x^n, where x, m, and n represent numbers like in the table.

$\frac{x^m}{x^n} = x^{m-n} = \frac{1}{x^{-m+(-n)}} = \frac{1}{x^{-m+n}}$

m = less than n

Divid 1 by the base and the opisit of what the original exponent is.

Names: Negative exponents Date:

Teacher Lesson Planner:

- ❑ Overall goal(s) of lesson - What's the big idea?

Make sure everyone knows how to do it.

- ❑ Skills/concepts

What do we want students to know?	What do we want students to be able to do?
How to do negative expenents	How to solve them.

- ❑ Lesson notes and ideas (brainstorm)

$\frac{12^3}{12^5}$ $12^{-2} = \frac{1}{12^2}$

$\frac{12 \cdot 12 \cdot 12}{12 \cdot 12 \cdot 12 \cdot 12 \cdot 12}$

Nothing always use invisible one.

- ❑ What can we do to ensure that our students accomplish the learning goals?

Help each one individualy if they still don't understand.

❑ What are some good examples and nonexamples that will help explain our rule?

Examples	Nonexamples
$\frac{2^3}{2^4}$  2^{-1}	Not useful non examples.

❑ Think ahead: What kinds of questions might our students ask?

Why because that's how we figure out what the negative exponent is.

❑ What obstacles might we run into? How should we be prepared to handle each one?

Possible obstacle	How we might handle it
The original rule	only show not explain.

❑ Lesson Outline

Timing	What Students Will Do	What Teacher Will Do
5 3	listen worksheet	teach helping those who don't understand.

❑ Create worksheet (with solutions)

❑ Try out lesson and make any necessary changes. Decide how you will present it; remember that everyone needs to be involved!