

# Homework #5

## Exponent Rules

Name: \_\_\_\_\_

Class Period: \_\_\_\_\_

Date: \_\_\_\_\_

**Homework Feedback**

You understand this. 😊:

Correct a few questions. 😐:

Repair. Resubmit for credit. 😞:

Extra Help might be needed. 😱:

Methods and vocabulary reminders:

Exponent Rules. Fill in the blanks with an example as well.

A number raised to a negative exponent will not be a \_\_\_\_\_ number.

Example: \_\_\_\_\_

Any number (except 0) raised to the zero power equals \_\_\_\_\_.

Example: \_\_\_\_\_

When we multiply two expressions with the same base we \_\_\_\_\_ the \_\_\_\_\_.

Example: \_\_\_\_\_

When we divide two expressions with the same base we \_\_\_\_\_ the \_\_\_\_\_.

Example: \_\_\_\_\_

When we raise an exponent to another exponent we \_\_\_\_\_ the two exponents.

Example: \_\_\_\_\_

1. For each of the following expressions simply rewrite each expression using only one exponent. The first one is done for you.

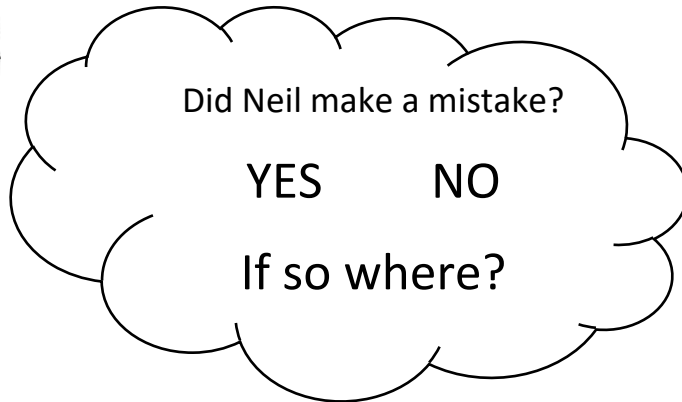
a. $8^2 \cdot 8^7 = 8^9$	f. $\frac{5^8}{5^2}$	k. $(4^5)^2$
b. $4^{-2}$	g. $b^2 \cdot b^3$	l. $\frac{3^2}{3^9}$
c. $(-3)^0$	h. $(y^2)^3$	m. $\left(\frac{3}{2}\right)^{-3}$
d. $x^4 \cdot x^2$	i. $\frac{4}{4^{-2}}$	n. $a^3 \cdot a^3$
e. $5^{-6} \cdot 5^6$	j. $(2^{-2})^3$	o. $(x^3)^4$

2. Evaluate each of the following expressions and write your answer as a single real number.

a. $\frac{8^9}{8^7}$	f. $\frac{3^2 \cdot 3^{-3}}{3^4}$	k. Evaluate the expression $5^{-3} \cdot 5^4 \cdot 5$ .
b. $8x^0$	g. $7^0$	l. Evaluate $(x^3)^2$ when $x = 2$ .
c. Determine the value of $3^2 \cdot 3$ .	h. $\frac{4^3}{4^6}$	m. Evaluate the expression $2^0(2^{-6})$ .
d. $\frac{10^2}{10^{-2}}$	i. $-3^4$	n. $\left(-\frac{5}{3}\right)^3$
e. If $\frac{y^f}{y^4} = y^{12}$ , what is the value of $f$ ?	j. $(-3)^4$	o. $\left(\frac{1}{3}\right)^{-4} \cdot 3^{-2}$

3. Neil tried to rewrite the expression  $\frac{5^{-6}}{5^{-4}}$ .

$$\begin{aligned} & \frac{5^{-6}}{5^{-4}} \\ &= 5^{-6-(-4)} \quad \text{Step 1} \\ &= 5^{-2} \quad \text{Step 2} \\ &= \frac{1}{5^2} \quad \text{Step 3} \end{aligned}$$



4. The answers for the simplified version of each problem are below. Match them up. No Calculator.

- 1.  $4^2 \cdot 4^4$
- 2.  $(5^{-2})^3$
- 3.  $\frac{5^2}{5^5}$
- 4.  $\left(\frac{3}{7}\right)^3$
- 5.  $\frac{2^2}{2^{-9}}$
- 6.  $(-9)(-9)^3$

6,561	2,048	4,096	1/125	27/343	1/15,625
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