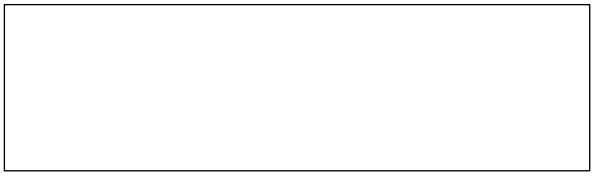
Math 9 Section 1.7 – Exponent Rules Part 2

Homework: Section 1.7 on Pg. 40; 1all,2-3 right, 5-6 right, 8left, 10-11left – Answers on Pg. 364

Write the following in repeated factor form, then as a single exponential. What do you notice?

$(2^2)^3 =$_____= _____ = _____

Power of a Power Rule:



When we raise an exponential to another power, we _____ the powers and keep the _____ the same.

For example, write as a single exponential:

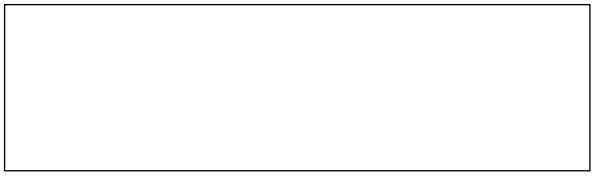
$(4^5)^4 =$

$((-2)^4)^{10} =$

Write the following in repeated factor form, then as a single exponential. What do you notice?

$(4 \times 6)^2 =$ _____= _____ = _____

Power of a Product Rule:



When we raise a product (multiplication) to a power, we can take each part of the _____ and raise it to the same _____.

For example, simplify to a product of exponential(s):

$(8 \times 7)^5 =$

$(8^3 \times 7^2)^5 =$

$(8 + 7)^5 =$

Write the following in repeated factor form, then as a single exponential. What do you notice?

$\left(\frac{7}{8}\right)^3 =$ _____= _____ = _____

Power of a Quotient Rule:

When we raise a product (division) to a power, we can take the _____ as well as the _____ and raise both to the same _____.

For example, simplify to a fraction:

$\left(\frac{5}{12}\right)^3 =$

$\left(\frac{2^3}{3^2}\right)^4 =$

All of these are **WRONG!!** Explain **why** and **fix** the mistakes!

$2^3 \times 2^4 = 4^{3+4} = 4^7$

$5^3 \times 5^4 = 5^{3\times4} = 5^{12}$

$\frac{3^8}{3^2} = 1^{8-2} = 1^6$

$\frac{9^6}{9^2} = 9^{6\div2} = 9^3$

$8^0 = 0$

$(6+7)^4 = 6^4 + 7^4$

$(3^4)^9 = 3^{13}$

$\left(\frac{5}{7}\right)^3 = \frac{5^3}{7}$