

Multiplying Exponents

What happens when we multiply exponents? For example what is the result of $2^5 \times 2^7$? Find the answer and put it back into exponential form.

Another way of thinking of this is in an equation $2^5 \times 2^7 = 2^x$, what value of x makes this statement true?

Can you find a rule for any combination of powers of 2? Can that rule work for any base number? If so finish the equation $x^a \times x^b = x^?$

Dividing Exponents

What happens when we divide exponents? For example what is the result of $\frac{2^9}{2^2}$? Find the answer and put it back into exponential form.

Another way of thinking of this is in an equation $\frac{2^9}{2^2} = 2^x$, what value of x makes this statement true?

Can you find a rule for any combination of powers of 2? Can that rule work for any base number? If so finish the equation $\frac{x^a}{x^b} = x^?$

Exponentiating Exponents

What happens when we exponentiate exponents? For example what is the result of $(2^5)^2$? Find the answer and put it back into exponential form.

Another way of thinking of this is in an equation $(2^5)^2 = 2^x$, what value of x makes this statement true?

Can you find a rule for any combination of powers of 2? Can that rule work for any base number? If so finish the equation $(x^a)^b = x^?$

Challenge: What is x^0 ?

What is the value of $\frac{5^7}{5^7}$? of $\frac{8^3}{8^3}$? of $\frac{c^{12}}{c^{12}}$? What is the value of any number divided by itself?

If you apply the common-base rule dealing with exponents and division, $\frac{5^7}{5^7}$ should equal 5 raised to what power? and $\frac{c^{12}}{c^{12}}$ should equal c raised to what power? It therefore makes sense to define c^0 to be what?