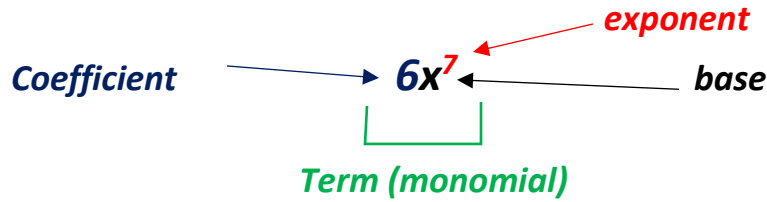


Expo Law Review

Terminology



Expo Law 1

$(x^a)(x^b) = x^{a+b}$ When multiplying like bases – add exponents and multiply coefficients

Expo Law 2

$\frac{x^a}{x^b} = x^{a-b}$ When dividing like bases – subtract exponents and reduce coefficients

Expo Law 3

$(x^a)^b = x^{ab}$ When raising to a power – multiply exponents and raise coefficients to this new power.

1) Simplify

a) $(8x^3y^3)(3x^4y^7)$
 $= 24x^7y^{10}$

b) $-5x(3x^3y)(7xy^7)$
 $= -105x^5y^8$

c) $\frac{-24x^8y^{10}}{78x^4y^7}$
 $= \frac{-4x^4y^3}{13}$

d) $(-6x^5)^2$
remember brackets (-6)²
 $= 36x^{10}$

e) $\frac{-12x^6y^7}{2xy^2}$
 $= -6x^5y^5$

f) $(-4x^2y)^3$
remember brackets (-4)³
 $= -64x^6y^3$

g) $\left(\frac{-5}{x^7}\right)^4$
remember brackets (-5)⁴
 $= \frac{625}{x^{28}}$

h) $\left(\frac{4x^{11}}{7y^7}\right)^3$
everybody gets power of 3
 $= \frac{64x^{33}}{343y^{21}}$

i) $-2(-3(-4x^9y^3)^2)$
apply power of 2 first
 $= -2(-3(16x^{18}y^6))$
 $= 96x^{18}y^6$

2) Evaluate if $x = -5$ and $y = -2$

a) $-9x^3y^3$
 $-9(-5)^3(-2)^3$
 $-9(-125)(-8) = -9000$

b) $\frac{-12x^5y^{22}}{10x^4y^{20}}$
simplify first ...
 $\frac{-6xy^2}{5}$
 $\frac{-6(-5)(-2)^2}{5} = 24$

Assignment = Worksheet

Expo Law Review

1) Simplify the following using your exponent laws

a) $(3x^3)(-2x^7)$

b) $(-7x^3)(4x^7)$

c) $-2x(6x^4)(5x^2)$

d) $(2x^2y)(3xy^2)$

e) $(-3x^2y)(4y^2x)$

f) $(-3a^2b^2)(-2ab^3)$

g) $(2ab^2c)(5a^2bc^2)$

h) $(4m^2n^2p)(-3mp^2)$

i) $(7x^2)^2$

j) $(-4x^3)^2$

k) $\frac{-6x^6y^7}{2xy^2}$

l) $(-7x^2y)^3$

m) $(-2x^5)^4$

n) $5x(9x^4)(-2x^3)$

o) $(-2x^2yz^2)(-5xy^2)$

p) $(12x^4y^5z^3)^2$

q) $(-4x^3y^5)^3$

r) $(x^2)(-x)$

s) $\frac{-8x^2y^6}{2xy^4}$

t) $\frac{-18x^9y^{10}}{6x^6y^4}$

u) $(-3x^6)^3$

v) $(-5x^2y^3)^3$

w) $(-2x^5y^3)^5$

x) $-6xy(-7x^2)$

y) $xu(4xu^8)$

z) $-(-3x^2)(-4x)$

μ) $-2(-3(9x^2y^3))$

2) *Simplify the following fractions*

a) $\left(\frac{2}{x^3}\right)^3$

b) $\left(\frac{-3}{x^4}\right)^3$

c) $\left(\frac{y^5}{x^3}\right)^7$

d) $\left(\frac{2x^4}{3y^7}\right)^3$

e) $\left(\frac{-2x^2}{y^4}\right)^5$

f) $\left(\frac{-3x^{10}y}{z^6}\right)^5$

3) *Evaluate the following if $x = -1$ and $y = 2$*

a) $8x^2y^3$

b) $-4x^5y$

c) $(-24x^2)\left(\frac{1}{4}y\right)$

d) $(-7x^2)(12x^4y^2)$

e) $-2x(5x^2)(5 - y)$

f) $(-x^3y^2)^3$

4) *Simplify*

a) $(x^4y^6)^0$

b) $(5x^{56}y^{12})^0$

c) x^0

5a) *As an exponent what is $(10^{89})(10^{21})$*

b) *why does your calculator overflow?*