

Math 9 – Unit 2: Algebra One

Name: _____

Lesson 2.4: More Distributive Property and Powers of Monomials

Date: _____

Learning Goal: We are learning to expand and simplify more complicated expressions.

Let's start off by continuing our lesson on the Distributive Property. Take a look at the following questions:

Expand AND simplify (put your answers in descending order):

a) $3x(4x^2 - 7x + 2) + 4x^2(2x - 3)$

b) $-4y^2(3y^2 - 5) - 5y^3(6 + y)$

c) $3mn(2m - 7n) - 5m^2(4n + 8) + 6n^2(3m - n)$

Now we are going to go back to discussing monomials. How do we simplify $(3x^2y^5)^3$? This is called a monomial raised to a power. How does the outside exponent affect the question? First, how does it work with just a number?

Simplify $(4^3)^2$

The initial exponents were 3 and 2, with the final exponent a _____. So, $3 \times 2 = 6$! This leads to our second exponent law. When raising a power to a power, _____ the exponents. Try it out!

a) $(x^4)^5$

b) $(y^2)^8$

c) $(m^3n^6)^4$

That's all well and good (hopefully), but how do you handle a question with a coefficient?

Consider the expression from before, $(3x^2y^5)^3$. Expand it without using the laws.

The coefficient was just raised to the power of 3! Awesome. Try out some more, this time following the laws.

a) $(2x^4y^2)^5$

b) $(-3m^7n)^2$

c) $(5a^2b^3c^4d^5)^6$

d) $(3x^2y^5)^2(2xy^3)$

e) $(-4m^3n^2)^3(3m^4n^3)^2$

Success Criteria:

- I can use the distributive property to multiply a polynomial with a monomial
- I can use the distributive property to combine multiple variables into a single term
- I can simplify a monomial raised to a power by multiplying the exponents of each variable
- I can recognize that when a coefficient is raised to a power, it is NOT NOT NOT multiplied
- I can understand that raising to the power of zero equals one.