Steps to Simplify a Monomial in Fraction Form with No ( ) in Problem

1. W.O.P.
2. Simplify numerator and denominator separately. The numerator and denominator are simplified when there is just one coefficient and one instance of any particular variable.
3. Simplify the entire fraction by first simplifying the coefficients; watch the signs. The result will be just **ONE** sign in front of the fraction.
4. Simplify the same variable in numerator and denominator by subtracting the exponent in the denominator from the exponent in the numerator. The variable will only appear **ONCE** in the numerator with the new exponent.

Examples:

1. Simplify $\dfrac{45y^{12}}{15y^9}$

Comments	Simplification
Write original problem. The monomials in the numerator and denominator are simplified. We now simplify the coefficients and see a 45 divided by a 15 which is 3. We see a common variable of a *y* in numerator and denominator and we can subtract the exponents. The fraction just has a denominator of one and thus the problem can be simplified to just have the monomial in numerator.	$\dfrac{45y^{12}}{15y^9} = \dfrac{3y^{12-9}}{1}$ $= \dfrac{3y^3}{1}$ $= 3y^3$

2. Simplify $\dfrac{5r^{11}}{25r^{10}}$

Comments	Simplification
Write original problem. The monomials in the numerator and denominator are simplified. We now simplify the coefficients and see a 5 divided by a 25 or we can say a 5 over 25 which reduces to one fifth. Caution: A common error is to say $\dfrac{5}{25}$ is 5 and not $\dfrac{1}{5}$. We see a common variable of a *r* in numerator and denominator and we can subtract the exponents. Usually coefficients of **one** and exponents of **one** are not shown so are final form does not show the one's. Note: Sometimes a fraction with only variables in the numerator is show with a fractional coefficient in front of a variable expression. You may see an answer as, $\dfrac{1}{5}r$.	$\dfrac{5r^{11}}{25r^{10}} = \dfrac{1r^{11-10}}{5}$ $= \dfrac{1r^{11-10}}{5}$ $= \dfrac{1r^1}{5}$ $= \dfrac{r}{5}$

3. Simplify $\dfrac{-48x^{16}y^9z^{11}}{12x^{11}y^4z^3}$

Comments	Simplification
Write original problem. The monomials in the numerator and denominator are simplified. We now simplify the coefficients and see a -48 divided by a 12. The result is negative and just one negative sign is in front of faction. We see multiple common variables so the exponents are subtracted on each one. A fraction with one in denominator is simplified to just the numerator.	$\dfrac{-48x^{16}y^9z^{11}}{12x^{11}y^4z^3} = -\dfrac{4x^{16-11}y^{9-4}z^{11-3}}{1}$ $= -\dfrac{4x^5y^5z^8}{1}$ $= -4x^5y^5z^8$

4. Simplify $\dfrac{18x^7}{-24x^2y^6z^8}$

Comments	Simplification
Write original problem. The monomials in the numerator and denominator are simplified. We now simplify the coefficients and see a 18 divided by a -24. A positive divided by a negative is a negative. The coefficients in fraction form of, $\dfrac{18}{24}$ can be reduced to a fraction of, $\dfrac{3}{4}$. The reduction is shown below using factors. We see many variables, but only the x is common in the numerator and denominator and we can subtract the exponents.	$\dfrac{18x^7}{-24x^2y^6z^8} = -\dfrac{3x^{7-2}}{4y^6z^8}$ $= -\dfrac{3x^5}{4y^6z^8}$

Reducing $\dfrac{18}{24}$

Comments	Simplification
Write original problem. Factor numerator and denominator completely and cancel out like factors. Write remaining factors. Multiply remaining factors.	$\dfrac{18}{24} = \dfrac{(\cancel{2})(\cancel{3})(3)}{(2)(\cancel{2})(2)(\cancel{3})}$ $= \dfrac{(3)}{(2)(2)}$ $= \dfrac{3}{4}$