Mathematics9 Date _____

Unit 6 Multiplying & Dividing Polynomials
6.1 Multiplying & Dividing Monomials

- **Use exponent laws from unit 3**

1. Multiplication - add exponents

Ex. Simplify

$3^4 \times 3^2$

$= 3^{4+2}$

$= 3^6$

$x^4 \cdot x^2$

$= x^6$

$b \cdot b^3$

$= b^4$

Ex. Simplify

$2x \cdot 3x$

$= 6x^2$

$-4q^2 \cdot 2q$

$= -8q^3$

$2(3x)(5x^3)$

$= 30x^4$

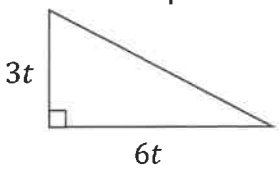
$-a(-2b)$

$= 2ab$

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

$= -8x^3y^5$

Ex. Find an expression for the area of the triangle shown:



$A_\Delta = \frac{b \cdot h}{2}$

$= \frac{6t^1 \cdot 3t^1}{2}$

$= \frac{18t^2}{2}$

$= 9t^2$

2. Division - subtract exponents

Ex. Simplify

$\frac{5^6}{5^2}$

$= 5^{6-2}$

$= 5^4$

$\frac{x^6}{x^2}$

$= x^4$

$\frac{b^3}{b}$

$= b^2$

$\frac{q^2}{q^5}$

$= q^{-3}$

$= \frac{1}{q^3}$

* no negative exponents - reciprocal

Ex. Simplify

$\frac{12x}{4x}$

$= \boxed{3}$

$\frac{-8x^3}{2x}$

$= \boxed{-4x^2}$

$\frac{10xy}{5x}$

$= \boxed{2y}$

$\frac{6q^5}{8q^2}$

$= \frac{3}{4} q^3$

$= \boxed{\frac{3q^3}{4}}$

Ex. Simplify

$\frac{-10b^1}{-25b^3}$

$= \frac{2b^{-2}}{5}$

$= \frac{2 \times 1}{5 b^2}$

$= \boxed{\frac{2}{5b^2}}$

$\frac{-4x^2}{12x^6}$

$= \frac{-1}{3x^4}$

$\frac{18x^2y^3}{3xy^6}$

$= \frac{6x}{y^3}$

$\frac{y^3}{y^6} = y^{-3}$

Ex. The area of a rectangle is $15x^2y$. If the width is $3x$, determine an expression for the length.

$\boxed{A = 15x^2y}$ $3x$

?

$A = L \cdot w$

$\div w \quad \div w$

$L = \frac{A}{w}$

$L = \frac{15x^2y}{3x}$

$= \boxed{5xy}$

Practice: Worksheet (#63/76) – write answers on sheet