

Unit 6 Multiplying & Dividing Polynomials

6.1 Multiplying & Dividing Monomials

- Use exponent laws from unit 3

1. Multiplication - add exponents

Ex. Simplify

$$3^4 \times 3^2$$

$$= 3^{4+2}$$

$$= \boxed{3^6}$$

$$x^4 \cdot x^2$$

$$= \boxed{x^6}$$

$$b^1 \cdot b^3$$

$$= \boxed{b^4}$$

Ex. Simplify

$$2x^1 \cdot 3x^1$$

$$= \boxed{6x^2}$$

$$-4q^2 \cdot 2q^1$$

$$= \boxed{-8q^3}$$

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

$$= \boxed{30x^4}$$

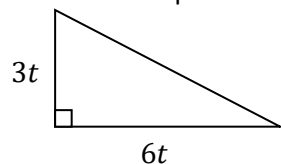
$$-a(-2b)$$

$$= \boxed{2ab}$$

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

$$= \boxed{-8x^3y^5}$$

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



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

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

$$= \frac{18t^2}{2} = \boxed{9t^2}$$

2. Division - subtract exponents

Ex. Simplify

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

$$= 5^{6-2}$$

$$= \boxed{5^4}$$

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

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

$$\frac{b^3}{b^1}$$

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

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

$$= q^{-3}$$

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

* no negative exponents
- reciprocal!

Ex. Simplify

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

$$= \boxed{3}$$

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

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

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

$$= \boxed{2y}$$

no decimals!
+ reduce if
doesn't
divide ;)

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

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

Ex. Simplify

$$\frac{-10b}{-25b^3} = \frac{2}{5}b^{-2}$$

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

$$\begin{array}{r} \cancel{* -10b} \\ -25 \cancel{b} \cancel{b} \cancel{b} \end{array}$$

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

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

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

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

$$\begin{array}{l} * -5x^{-2}y^3z^{-4} \\ = \boxed{\frac{-5y^3}{x^2z^4}} \end{array}$$

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

$$A = l \cdot w$$

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

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

$$= \boxed{5xy}$$