Chapter 6 Review

Chapter 6:

- Write a number in scientific notation
- Simplify numbers with negative exponents
- Simplify a group of equations with negative exponents (move negatives either above or below the fraction bar to make them positive)
- Simplify numbers to the power of zero (anything to the power of 0 equals 1!)
- Put negative numbers in parentheses when entering them into your calculator!!!!!!!!!
- Simplify a number that has a fraction as an exponent
- Find the degree of a monomial
- Classify a polynomial by its degree and number of terms
- Write a polynomial in standard form
- Give the leading coefficient of a polynomial
- Solve story problems involving polynomials
- Add and subtract polynomials
- Multiply polynomials (distributive property, FOIL, box method)

*only move negative exponents

$2^{-3} = \frac{1}{2^3} = \boxed{\frac{1}{8}}$

$(-3)^{-4} = \frac{1}{(-3)^4} = \frac{1}{81}$

$-3^{-4} = -\frac{1}{3^4} = \boxed{\frac{-1}{81}}$

$\frac{-4}{k^{-1}} = \boxed{-4k^4}$

$\frac{3w^{-5}}{x^{-6}} = \frac{3x^6}{w^5}$ $\frac{a^{-7}b^2}{c^3d^{-4}} = \frac{b^2d^4}{c^3a^7}$

* a simplified expression has no negative exponents

$125^{\frac{1}{3}} = (\sqrt[3]{125})^1$ $81^{\frac{1}{4}} = (\sqrt[4]{81})^1$

. $27^{\frac{4}{3}}$ $= (\sqrt[3]{27})^4$

$16^{\frac{3}{4}}$ $= (\sqrt[4]{16})^3$

$5^0 = 1$

$(10-d)^0$ for $d = 11$

$(10-11)^0 = 1$

↳ add up the degree

Find the degree of each monomial.

A $-2a^2b^4$ = 6th degree $8y$ → 1st degree

0 2 4 0 1

↳ go off of the highest degree

Find the degree of each polynomial.

A $4x - 18x^5$ → 5th degree $0.5x^2y + 0.25xy + 0.75$

2 1 ↳ 3rd degree

The **standard form of a polynomial** that contains one variable is written with the terms in order from greatest degree to least degree. When written in standard form, the coefficient of the first term is called the **leading coefficient**.

↳(when in standard form)

Write each polynomial in standard form. Then give the leading coefficient.

A $20x - 4x^3 + 2 - x^2$

$-4x^3 - x^2 + 20x + 2$

lc: -4

$y^3 + y^5 + 4y$

$y^5 + y^3 + 4y$ lc: 1

Degree	Name
0	Constant
1	Linear
2	Quadratic
3	Cubic
4	Quartic
5	Quintic
6 or more	6th degree, 7th degree, and so on

Terms	Name
1	Monomial
2	Binomial
3	Trinomial
4 or more	Polynomial

Classify each polynomial according to its degree and number of terms.

4a. $x^3 + x^2 - x + 2$ **4b.** 6 **4c.** $-3y^8 + 18y^5 + 14y$

A firework is launched from a platform 6 feet above the ground at a speed of 200 feet per second. The firework has a 5-second fuse. The height of the firework in feet is given by the polynomial $-16t^2 + 200t + 6$, where t is the time in seconds. How high will the firework be when it explodes?

$-16(5)^2 + 200(5) + 6$ –

$15m^3 + 6m^2 + 2m^3$

$17m^3 + 6m^2$

$(20.2y^2 + 6y + 5) + (1.7y^2 - 8)$

$21.9y^2 + 6y + -3$

$(3x^2 - 2x + 8) + (x^2 + 4)$

$2x^2 - 2x + 12$

$(11z^3 - 2z) + (z^3 + 5)$

$10z^3 - 2z + 5$

* the exponents don't change → combine like terms only

$(5x^{2})(4x^{3})$

$20x^{5}$

* when multiplying #s, add the exponents

$5(2x^2+x+4)$

$10x^2+5x+20$

FOIL

$(x+2)(x-5)$

$x^2-5x+2x-10$

$\boxed{x^2-3x-10}$

$\star$

$(x+5)^2$

$(x+5)(x+5)$

$x^2+5x+5x+25$

$\boxed{x^2+10x+25}$

*Box Method

$(2x+3)(x^2-6x+5)$

$(5x-1)(-2x^3+4x-3)$

	x^2	$-6x$	5
$2x$	$2x^3$	$-12x^2$	$10x$
3	$3x^2$	$-18x$	15

$2x^3 - 12x^2 + 10x + 3x^2 - 18x + 15$

$2x^3 - 9x^2 - 8x + 15$