Algebra 1          8.1

Write polynomials in standard form
Add and subtract polynomials

monomial    $number,\ variable,\ product$

polynomial    $more\ than\ 3\ terms$

binomial    $2a + 7n$

trinomial    $5x^2 + 2 + 7y$

degree (of a monomial)

degree (of a polynomial)

activ:      algebra tiles
            whiteboards

yes

$-6 \qquad n \qquad 2xy$

no

$\dfrac{3}{x} \qquad 2 + a \qquad 2a^{-3} = \dfrac{2}{a^3}$

| Monomial | Binomial | Trinomial |
|---|---|---|
| $5x^1$ | $2x^2 + 7$ | $x^3 - 10x + 1$ |

degree → exponent (s)

$$\frac{10}{x^3} \qquad x^{-b}$$

p. 465

| Degree | Name |
|--------|------|
| 0 | constant |
| 1 | linear |
| 2 | quadratic |
| 3 | cubic |
| 4 | quartic |
| 5 | quintic |
| 6 or more | 6th degree, 7th degree, and so on |

$-6$

Polynomials are named based on their degree (exponents) and/or number of terms.

$x^1$

$a^2$

$y^3$

$n^4$

$x^5$

$8^{th}$ degree

$r^8$

$3x^2$

leading coefficient

greatest degree

Standard form:     $4x^3 - 5x^2 + 2x^1 + 7$

$L.C =$   Standard Form

**2A.** $8 - 2x^2 + 4x^4 - 3x$

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

$$LC = 4$$

**2B.** $y + 5y^3 - 2y^2 - 7y^6 + 10$

$$-7y^6 + 5y^3 - 2y^2 + y + 10$$

$$L.C = -7$$

Algebra tiles

Like terms $4x^2 + 3x + 5$

Terms
Like terms

## Example 3 Add Polynomials

Find each sum.

a. $(2x^2 + 5x - 7) + (3 - 4x^2 + 6x)$

$$-2x^2 + 11x + ^-4$$

**b.** $\left(3y + y^3 - 5\right) + \left(4y^2 - 4y + 2y^3 + 8\right)$

$$3y^3 + 4y^2 - 1y + 3$$

$$-y$$

$$+^-y$$

Activ: 5 in a row (10 min?)

**Guided**Practice

**3A.** $\left(5x^2 - 3x + 4\right) + \left(6x - 3x^2 - 3\right)$

**3B.** $\left(y^4 - 3y + 7\right) + \left(2y^3 + 2y - 2y^4 - 11\right)$

Distributive property

WB 8.1 prac.    odds + 18

**Example 4** Subtract Polynomials

**Find each difference.**

a. $(3 + {}^-2x + 2x^2) + {}^-1(4x - 5 + 3x^2)$

Danger!

$3 + {}^-2x + 2x^2 + {}^-4x + 5 + {}^-3x^2$

$-6x + 8 - 1x^2$

$-x^2 - 6x + 8$

**b.** $\left(7p + 4p^3 - 8\right) - \left(3p^2 + 2 - 9p\right)$

**Guided**Practice

**4A.** $(4x^3 - 3x^2 + 6x - 4) - (-2x^3 + x^2 - 2)$

**4B.** $(8y - 10 + 5y^2) - (7 - y^3 + 12y)$