"Like" terms have the <u>same</u> <u>variable</u> raised to the <u>same</u> <u>power</u>.

> ***Examples:*** $2x^3$ *and* $6x^3$ ***Non Examples****:* $2x^3$ *and* $4y^3$ $3x^2$ *and* $7x$

<u>**Adding Polynomials**</u> - *Let's Look at Two Examples!*

Adding polynomials <u>horizontally</u> means…

1. *Rewrite each polynomial by removing the parenthesis, "( )".*
2. *Identify the "like" terms.*
3. *Group "like" terms together, ordering the terms from highest to lowest exponent.*
    - *Count your terms. Make sure you don't lose one!*
4. *Combine "like" terms by adding the coefficients and constants.*

$(11x - x^2 + 13) + (2x^2 - 23 - 5x)$

Adding polynomials <u>vertically</u> means…

1. *Line up each polynomial vertically.*
    a. *Rewrite the 1st polynomial by removing the parenthesis, "( )", and ordering the terms from highest to lowest exponent.*
    b. *Remove the parenthesis from the 2nd polynomial and line up the "like" terms below the 1st polynomial.*
2. *Fill in the blank spots (where there are no terms) with zeros. Zero just acts as a placeholder.*
3. *Combine "like" terms by adding the coefficients and constants.*

$(4x^2 + 6x + 7) + (2x^2 - 9x + 1)$

Subtracting Polynomials - *Let's Look at Two Examples!*

Subtracting polynomials <u>horizontally</u> means…

1. *Rewrite the 1st polynomial by removing the parenthesis, "( ).*
2. *Distribute the negative, "–", to each term in the 2nd polynomial, meaning multiply each term in the 2nd polynomial by –1, and remove the parenthesis.*
3. *Identify the "like" terms.*
4. *Group "like" terms together, ordering the terms from highest to lowest exponent.*
   - *Count your terms. Make sure you don't lose one!*
5. *Combine "like" terms by adding the coefficients and constants.*

$(4x^2 + 5x) - (7x + 3x^2 + 1)$

Subtracting polynomials <u>vertically</u> means…

1. *Distribute the negative, "–", to each term in the 2nd polynomial, meaning multiply each term in the 2nd polynomial by –1, and remove the parenthesis.*
2. *Line up each polynomial vertically.*
   a. *Rewrite the 1st polynomial by removing the parenthesis, "( )", and ordering the terms from highest to lowest exponent.*
   b. *Line up the "like" terms in the 2nd polynomial below the 1st polynomial.*
3. *Fill in the blank spots (where there are no terms) with zeros. Zero is just a placeholder.*
4. *Combine "like" terms by adding the coefficients and constants.*

$(2x^3 + 5x^2 - 3x) - (x^3 - 8x^2 + 11)$

Find the sum or difference.

1. $(x+5)+(4x-7)$	2. $(k^2-4k+7)+(k^2+9k-3)$
3. $(w^3-2w^2-5)+(3w^2-11)$	4. $(9x-5y)+(3x+2y-7)$
5. $(8-p^2+5p)+(p^2-15-4p)$	6. $(6a^2-5a)+(a-5a+3a^3)$
7. $(x^2+17x)-(3x^2+5x)$	8. $(5r-2s)-(9r-11s)$
9. $(4c-11)-(4c+11)$	10. $(3m^2+7m-1)-(m^2+2m-5)$
11. $(7v-v^2+14)-(15+8v+v^2)$	12. $(8x-3y)-(2y-13+5x)$

13. Find the <u>sum</u> of $(8p^2-2p+15)$ and $(11-2p^2-1)$.

14. Subtract $(2w^2-5w+10)$ from (w^3+6w^2-2). *Think about it! How would you write "subtract 3 from 6?"*