Terms are things that are made up of numbers, variables and exponents. Individual terms are separated by "+" and "-" signs. They are things being added and subtracted. If they’re "alike" they’ll be combined. The sign in front of the term is part of that term. Terms put together make expressions. If a term does not have a number in front, it is "1". If a term does not have a sign it is "+". A number without a variable is a constant term or a "constant".

Terms that have the same variables with the same exponents are "like". If any part is different, they are "unlike".

An important phrase is **combine like terms**. It means to add or subtract things that are "like".

*p. 93 Ex 2*  
\[5x + 4x\]  
The variable "x" is acting like a label or name just as in "5 cookies + 4 cookies". The 5 and 4 are combined (added) and the answer is "9 cookies". In the same way 5 - x's plus 4 - x's = 9 - x's \((5x + 4x = 9x)\)  
The variable x stays the same in the answer.

*p. 94 Ex 3*  
Terms can be re-arranged so the "like" ones are together. (just like at the grocery store, items in any order on the conveyor belt cost the same total). When re-arranged, the sign at the front stays with the same term. Terms don’t have to be re-arranged. Your eyes should be looking at terms as groups of things being multiplied (being factors). Plus (+) and minus (-) signs are the "stop signs" of algebra. \(3b + 6a - 5 - 2a\)  
You should see this: \(3b + 6a - 5 - 2a\)
2.1-2 COMBINING LIKE TERMS

Notes by Linda Shirk – To accompany Elementary Algebra for College Students by Angel & Runde, 8th Ed.

p. 95 Use the Distributive Property

\[ ax(b+c) = axb + axc \] or ab + ac

The distributive property is used to remove parentheses, to get around the Order of Operations rule that says, "Do the operations in parentheses first." Sometimes that can't be done.

p. 95 Ex 8  a) \[ 2(x+4) \] is multiplied by each term inside the parentheses

\[ 2x + 8 \]

b) \[ -5(p+3) \] negative 5(-5) is multiplied by each term inside the parentheses

\[ -5p - 15 \]

To be "distributive", an expression (number and/or variables) is multiplied by 2 or more terms inside parentheses.

- \[ 2(4+w) \] is distributive

- \[ 2(4\cdot w) \] is NOT distributive (because of multiplication of 4 and w)

- \[ 2 + (4+w) \] is NOT distributive (because 2 is added to the parentheses)

p. 95 Ex 9b \[ -2(4x-3) \] the signs inside the parentheses can be negative

\[ -8x + 6 \]

p. 96 middle The distributive property can be expanded \[ -2(x+y-3z) = -2x + 2y - 6z \]

p. 97 Removing Parentheses When Preceded By a Plus or Minus Sign

No sign or plus sign in front - Drop the parentheses

Negative sign in front - Drop the parentheses AND CHANGE ALL THE SIGNS INSIDE THE PARENTHESES TO THE OPPOSITE

Examples: \[ (x+3) = x+3 \]  \[ -(2x-5) = 2x - 5 \]

\[ -(-2x+3) = +2x - 3 \]  \[ -(5x-y) = -5x + y \]
An alternate way of thinking of the rules for removing parentheses when preceded by a plus or minus — use +1 or -1.

\((x + 3) = 1(x + 3) = x + 3\)

\((2x - 5) = +1(2x - 5) = 2x - 5\)

\((-2x + 3) = -1(-2x + 3) = (-1)(-2x) - 1(+3) = 2x - 3\)

\((-5x - y) = -1(5x - y) = -1(5x) - 1(-y) = -5x + y\)

Rather than thinking of plus or minus in front of the parentheses, think of it as +1 or -1 in front of the parentheses.

p. 97 Simplifying Expressions

Remove parentheses using the distributive property and then combine like terms.

p. 98 Exercise 6 - (2x + 3)  
6 - 2x - 3  + 6 and -3 are alike
3 - 2x

OR

6 - 1(2x + 3)
6 - 2x - 3
3 - 2x

-2x + 3 is also correct (the order doesn’t matter in addition)

Note:  6 - (2x + 3) ≠ -6(2x + 3)

The negative sign does not belong to the 6. The sign of the 6 is an implied ‘+’ in front of 6.

p. 98 Helpful Hint box -
Terms are things added or subtracted.
Factors are things multiplied.