I. Systems of Linear Equations (in 2-variables):

$$a_1\boldsymbol{x} + b_1\boldsymbol{y} = c_1$$
$$a_2\boldsymbol{x} + b_2\boldsymbol{y} = c_2$$

where a_i, b_i, and c_i are real # constants

e.g.,
$$4\boldsymbol{x} + \boldsymbol{y} = 4$$
$$3\boldsymbol{x} - \boldsymbol{y} = 3$$

whose solution is $(\boldsymbol{x},\boldsymbol{y}) = (1,0)$

since $4(1) + 0 = 4$

and $3(1) - 0 = 3$

II. Three Methods of Solution:

1. Graphing (p.179) – intuitive, but time consuming, inefficient w/non-integer solutions, prone to error
2. Substitution (p.181) – abstract (algebraic), efficient, and less prone to error, but often involves fractions
3. Elimination (p.183) – abstract (algebraic), efficient, and less prone to error, but can be labor intensive

III. Examples (p.190): Exercises #12,28,34,68

IV. Three Possible Outcomes:

1. Unique solution (x,y) – lines intersect at 1 point only
2. No solution – lines are parallel
3. Infinitely many solutions – lines are identical of the form... $(x, mx+b)$ where x is any real #

HW: pp.190-191 / Exercises #9,17,25,33,39,55,63, 65,79

Read pp.194-203 (section 3.2)