# Systems of Linear Equations in Two Variables

## System of Linear Equations:

a. equations that are true for the same pairs of numbers

b. the solution is an ordered pair of numbers that satisfies both equations

A system of linear equations has:

a. only one solution if their graphs intersect at only one point.

b. no solution if their graphs do not inter-

sect.

c. infinitely many solutions if their graphs coincide.

**Kinds of Systems of Linear Equations**

1. Consistent and Dependent Equations:
   a. has infinitely many solutions
   b. the slopes of the lines are equal
   c. the y-intercepts are also equal
   d. the graphs coincide
2. Consistent and Independent Equations:
   a. has exactly one solution

b. the slopes are not equal
c. the y-intercepts could be equal or unequal
d. the graphs intersect

3. Inconsistent and Independent Equations
a. has no solution
b. the slopes are equal
c. the y-intercepts are not equal
d. the graphs are parallel

| Type | Graph | Slopes | y-intercepts | Solution |
|---|---|---|---|---|
| Consistent, Independent | Intersecting lines | Unequal | Equal or unequal | One |
| Inconsistent, Independent | Parallel lines | Equal | Unequal | None |
| Consistent, Dependent | Coinciding lines | Equal | Equal | Infinitely many |