# Chapter 4: Linear Functions

## Functions

- Domain
- Range
- Function – yes or no?
- Write the rule for the function

## Coordinate Plane

- x-axis and y-axis
- quadrants
- origin
- plot points

## Slope

- formula: $slope = \frac{y_1 - y_2}{x_1 - x_2} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{\Delta y}{\Delta x} = \frac{rise}{run}$
- find the slope between two points
- find x or y given a point and the slope
- the slope of a horizontal line is zero
- the slope of a vertical line is undefined (no slope)
- a line with a positive slope rises to the right
- a line with a negative slope falls to the right
- two lines with equal slopes are parallel
- two lines are perpendicular if their slopes are negative reciprocals

## Graphing lines

- use an x/y chart to graph a line
- use slope-intercept form to graph a line
- the graph of an equation in y = mx + b is a diagonal line
- the graph of an equation in y = # is a horizontal line
- the graph of an equation in x = # is a vertical line

## Intercepts

- to find an x-intercept, let y = 0   (x, 0)
- to find a y-intercept, let x = 0   (0, y)
- graph a line using the intercepts

## Function notation

- f(x) = mx + b
- Given one or more functions, find the following:
  - f(3)    substitute the number into the function for x    (3, y)
  - x when f(x) = 3    set the function equal to the number   (x, 3)
  - when f(x) = g(x)   set the two functions equal, solve for x, plug back into either function to solve for y     (x, y) represents the point of intersection