

# STAT 110

## Chapter 15 Definitions

regression line – a straight line that describes how a response variable  $y$  changes as an explanatory variable  $x$  changes

The equation of a line is  $y = mx + b$

- $m$  is the slope of the line
- slope = the amount by which  $y$  changes when  $x$  increases one unit
- $b$  is the intercept of the line
- intercept = the value of  $y$  when  $x=0$

*Three Things to Understand about Prediction:*

- Prediction is based on fitting some “model” to a set of data.
- Prediction works best when the model fits the data closely.
- Prediction outside the range of the available data is risky.

$r^2$  - the fraction of the variation in the values of  $y$  that is explained by the least-squares regression of  $y$  on  $x$

What are the criteria for giving evidence about causation when we can't do an experiment?

1. Strong association
2. Consistent association
3. Higher doses associated with stronger responses.
4. Alleged cause precedes the effect in time.
5. Alleged cause is plausible.