

**Mean of  $x$**   $\bar{x} = \frac{\sum x_i}{N}, \quad N = \text{Number of points.}$

**Mean of  $y$**   $\bar{y} = \frac{\sum y_i}{N}$

**Standard deviation of  $x$**   $\sigma_x = \sqrt{\frac{\sum x_i^2}{N} - \bar{x}^2}$

**Standard deviation of  $y$**   $\sigma_y = \sqrt{\frac{\sum y_i^2}{N} - \bar{y}^2}$

**Covariance**  $\sigma_{xy} = \frac{\sum x_i y_i}{N} - \bar{x} \bar{y}$

**Regression line: Y vs X**  $y - \bar{y} = \frac{\sigma_{xy}}{\sigma_x^2} (x - \bar{x})$

**Regression line: X vs Y**  $x - \bar{x} = \frac{\sigma_{xy}}{\sigma_y^2} (y - \bar{y})$

**Pearson's correlation coefficient**  $r = \frac{\sigma_{xy}}{\sigma_x \sigma_y}$