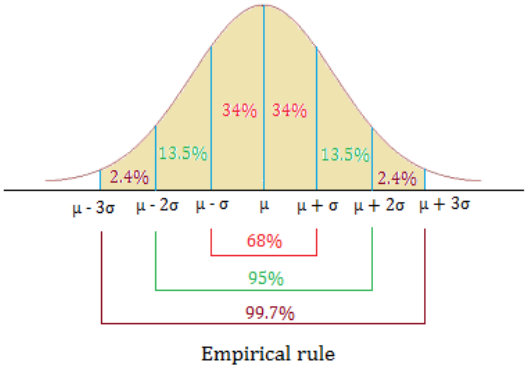
Formula Sheet for Econ 216 Exam 1
Spring 2023 - Dr. Sara Esfahani

Relative Frequency	$= \frac{Frequency of the class}{n}$
Relative Percent Frequency	$= RelativeFrequency * 100$
Sample Mean	$\bar{x} = \frac{\sum x_i}{n}$
Population Mean	$\mu = \frac{\sum x_i}{N}$
Weighted Mean	$\bar{x} = \frac{\sum w_i x_i}{\sum w_i}$
Percentage Change from x_1 to x_2	$\%\Delta = \frac{x_2 - x_1}{x_1} \times 100$
Location of the pth percentile	$L_p = \frac{p}{100} \times (n+1)$
Range	$MaximumValue - MinimumValue$
Inter-quartile Range	$IQR = Q_3 - Q_1$
Sample Variance	$s_x^2 = \frac{\sum (x_i - \bar{x})^2}{n-1}$
Population Variance	$\sigma_x^2 = \frac{\sum (x_i - \mu_x)^2}{N}$
Sample Standard Deviation	$s_x = \sqrt{\frac{\sum (x_i - \bar{x})^2}{n-1}}$
Population Standard Deviation	$\sigma_x = \sqrt{\frac{\sum (x_i - \mu_x)^2}{N}}$
z-Score	$z_i = \frac{x_i - \bar{x}}{s}$
Empirical Rule	 Empirical rule
Outlier limits	$LowerLimit = Q_1 - 1.5(IQR)$ $UpperLimit = Q_3 + 1.5(IQR)$
Sample Covariance	$s_{xy} = \frac{\sum (x_i - \bar{x})(y_i - \bar{y})}{n-1}$
Population Covariance	$\sigma_{xy} = \frac{\sum (x_i - \mu_x)(y_i - \mu_y)}{N}$
Sample Correlation Coefficient	$r_{xy} = \frac{s_{xy}}{s_x s_y}$
Population Correlation Coefficient	$\rho_{xy} = \frac{\sigma_{xy}}{\sigma_x \sigma_y}$