# GLOSSARY (CONT.) – METRICS

- **Mean Return** – The average monthly return = $\bar{r}$

$$\bar{r} = \frac{1}{n}\sum_{i=1}^{n} r_i$$

- **Annualized Return** – The calculated average yearly increase (or decrease) in the value of an investment, including the effects of compounding over a period other than a year = $r_A$. Annualized return indicates how an investment has performed and allows it to be compared to other investments.

$$r_A = \left(\prod_{i=1}^{n} 1 + r_i\right)^{12/n} - 1$$

- **Standard Deviation** *(sample)* – Measures the dispersal or uncertainty of investment returns = $s$. Specifically, it measures the degree of variation of monthly returns around the mean return. The higher the volatility of the investment returns, the higher the standard deviation. Standard deviation is often used as a measure of investment risk.

$$s = \sqrt{\frac{1}{n-1}\sum_{i=1}^{n}(r_i - \bar{r})^2}$$

- **Annualized Standard Deviation** – Statistic that converts the standard deviation of monthly returns to a number applicable to yearly returns = $s_A$.

$$s_A = s\sqrt{12}$$

- **Skewness** *(sample)* – Measures the asymmetry or lopsidedness of the distribution of investment returns. The more negatively skewed the returns, the more common a loss in the returns reflects a larger loss, rather than a smaller loss.

$$\frac{\frac{1}{n}\sum_{i=1}^{n}(r_i - \bar{r})^3}{s^3}$$

- **Correlation** – Indicates a measure of the strength and direction of the linear relationship between two variables or data sets over a period of time. Correlation can vary between +1 to -1. Values close to +1 indicate a high degree of relationship, values close to -1 indicate a high degree of negative relationship, and values close to 0 indicate very little relationship overall.

where:

$n$ = the total number of months

$i$ = the particular month referenced

$r_i$ = the return of the particular month referenced

$\sum_{i=1}^{n} x_i$ is Sigma notation. The capital Greek letter Sigma, (or, "S") stands for the Sum. It means the sum of $x_i$ as $i$ ranges from 1 to $n$.

$\prod_{i=1}^{n} x_i$ is Pi notation. The capital Greek letter Pi, (or "P") stands for the Product. It means the product of $x_i$ as $i$ ranges from 1 to $n$.

APPENDIX 13