

## Formula Sheet

### Exam ISA

EUR - IBCoM

$$\bar{x} = \frac{\sum x}{n}$$

$$s^2 = \frac{\sum (x - \bar{x})^2}{n}$$

$$s = \sqrt{\frac{\sum (x - \bar{x})^2}{n}}$$

$$V = \sqrt{\frac{\chi^2}{n \times (k - 1)}}$$

$$\chi^2 = \sum \frac{(f_o - f_e)^2}{f_e}$$

k = either number of rows or columns of the table, **whichever is smaller**

Degrees of freedom for ChiSquare test:

$$df = (\text{number\_of\_rows} - 1) \times (\text{number\_of\_columns} - 1)$$

$$\text{COV}_{xy} = \frac{\sum (x - \bar{x}) \times (y - \bar{y})}{n}$$

$$r_{xy} = \frac{\text{COV}_{xy}}{s_x \times s_y}$$

$$z = \frac{x - \mu}{\sigma}$$

One sample z-test:

$$z = \frac{\bar{x} - \mu}{\sigma / \sqrt{n}}$$

One sample t-test:

$$t = \frac{\bar{x} - \mu}{\hat{\sigma} / \sqrt{n}}$$

$$\hat{\sigma} = \sqrt{\frac{\sum (x - \bar{x})^2}{n - 1}}$$

Degrees of freedom for one sample t-test:  $df = n - 1$

F-test in ANOVA:

$$F = \frac{MS_B}{MS_W}$$

R<sup>2</sup> in regression analysis:

$$R^2 = \frac{SS_M}{SS_T}$$