# FORMULA SHEET FOR T-TESTS

#### I. **1 SAMPLE T-TEST** (df = n - 1)

- Estimated standard error Sn • *t*-observed
- Cohen's estimated d •

$$n = \sqrt{\frac{s^2}{n}}$$
$$t = \frac{M - \mu}{S_m}$$
$$d = \frac{M - \mu}{s}$$

## II. **INDEPENDENT SAMPLES T-TEST** (df = n1 + n2 - 2)

 $SS = \sum x^2 - \frac{(\sum x)^2}{n}$ Sum of Squares ٠  $s_p^2 = \frac{SS_1 + SS_2}{n_1 + n_2 - 2}$ Pooled Variance •  $S_{(M1-M2)} = \sqrt{\frac{s_p^2}{n_1} + \frac{s_p^2}{n_2}}$ Estimated Standard Error •  $t = \frac{M_1 - M_2}{S_{(M1 - M2)}}$ *t*-observed •  $d = \frac{M_1 - M_2}{\sqrt{s_p^2}}$ Cohen's estimated d•

#### III. PAIRED SAMPLES T-TEST (df = n - 1)

- $s_d^2 = \frac{\sum d^2 \frac{(\sum d)^2}{n}}{n-1}$ Sample Variance for d •  $S_{Md} = \sqrt{\frac{s_d^2}{n}}$ Estimated Standard Error •
- $t = \frac{M_d}{S_{Md}}$ *t*-observed •
  - $d = \frac{M_d}{\sqrt{s_d^2}}$ Cohen's estimated d

### IV. **GENERAL**

 $S^2 = \frac{SS}{n-1}$ Variance  $CI = \overline{X} \pm (t - crit)(s_M)$ **Confidence** Interval

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