TESTING OF HYPOTHESIS: (at significance level α)

$H_o: \mu = \mu_o$ **against** $H_1: \mu \neq \mu_o$ ... **2-SIDED alternative**

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$\mu > \mu_o$ ... **RIGHT-SIDED**

$\mu < \mu_o$ ... **LEFT-SIDED**

$\downarrow$

will be either **REJECTED**, or **NOT REJECTED**

$\downarrow$

it holds, that: $P(\ H_o \text{ was REJECTED} \mid H_o \text{ is RIGHT }) = \alpha$

generally: **1)**   compute **TEST STATISTIC:** $T(X_1, \dots, X_n) = \sqrt{n}\dfrac{\overline{X} - \mu_0}{S}$

2)   compute **CRITICAL REGION: W**

(set of values of $T(X_1, \dots, X_n)$
for which we reject H_0)

3)   decide: $T(X_1, \dots, X_n) \in W$ ...   **REJECT H_o**

$T(X_1, \dots, X_n) \notin W$ ...   **DO NOT REJECT H_o**

OR: use **P-VALUE:** $2\min\{P(T \geq t|H_0), P(T \leq t|H_0)\}$ **(2-sided)**

$P(T \geq t|H_0)$ **(right)**

$P(T \leq t|H_0)$ **(left)**

is p-value $< \alpha$? ...   we **REJECT H_o**

$>$ we do not **REJECT H_o**