Hypothesis testing with the independent samples t Test

- Use this test when you don't know population parameters and must use a sample to establish a baseline (eg, treatment and control)

Step 2

- df = $(n_1 - 1) + (n_1 - 1)$

Look up corresponding value of t in t table.

Step 3 A

- Find the Pooled Variance for the two Samples

$$S_p^2 = \frac{SS_1 + SS_2}{df_1 + df_2} = \frac{200 + 160}{9 + 9} = \frac{360}{18} = 20$$

Numbers have been plugged into the formulas to help you see the order of operations done correctly.

Step 3 B

- Use the Pooled Variance to compute the **estimated standard error**:

$$s_{(\bar{X}_1 - \bar{X}_2)} = \sqrt{\frac{s_p^2}{n_1} + \frac{s_p^2}{n_2}} = \sqrt{\frac{20}{10} + \frac{20}{10}} = \sqrt{2 + 2} = \sqrt{4} = 2$$

Step 3 C

- Compute t

$$t = \frac{\bar{X}_1 - \bar{X}_2}{s_{(\bar{X}_1 - \bar{X}_2)}}$$

Step 4

- Make a decision—the criteria is the same as for z and t that we've done before
- If the computed value is greater than the critical value, reject H_0