

# §10.2: Comparing Two Means

## Skills

- Construct a two sample  $t$  interval for the difference in population means

# Confidence Interval

$$(\bar{x}_1 - \bar{x}_2) \pm t^* \sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}$$

*remember to use the Satterthwaite Approximation  
(from the calculator) to get degrees of freedom*

# Conditions

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- Random Samples or Assignment
  - 10% condition
  - Both samples are large, or both samples are free from strong skew and outliers
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# Example

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As a test of a new reading program, 21 students followed the new curriculum while another 23 students followed the standard curriculum.

The data are the changes in the Degree of Reading Power (DRP) Test

Estimate the difference in DRP scores with 90% confidence.

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# Example

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	New			Standard		
24	62	44	42	53	54	
43	54	67	43	42	20	
58	57	49	55	37	85	
71	33	53	26	42	46	
43	46	56	62	55	10	
49	43	59	37	28	17	
61	57	52	33	48	60	
			41	19		

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# One Sample or Two?

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Read carefully!

There must be **two** independent samples!

If there is any indication of pairing between the samples, then they are *not independent*, and you must conduct *one sample procedures* on the *set of differences*.

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