

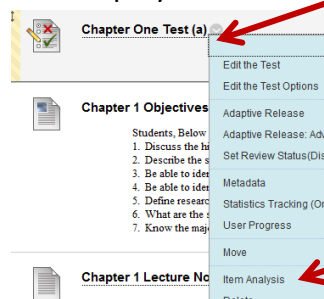
# Using Item Analysis to Measure Question Validity

This will generate a report with a list of all questions. There will be red dots next to questions that need investigation. Those questions are chosen through two statistics:

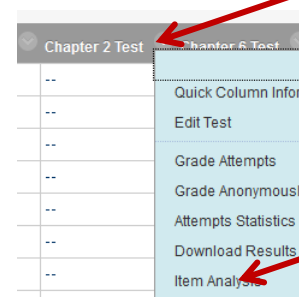
- A Discrimination factor (correlation coefficient) between the overall standing on a test as it relates to an individual question. This ranges from -1 to 1.
  - Positive value indicates that students that did well on test also did well on the question OR students that did not do well on test also missed the question.
  - Negative value is a question that did not meet the expectation. Students that did well on the test missed the question, or the reverse.
  - The flag for a question is set at an  $r \leq 0.1$ .
- Question difficulty (percent that got question correct) also flags a question. Difficulties above 80% (classified easy) or below 30% (classified hard) are flagged.
- If using a question set, remember the questions will each be used fewer times. The measure will be statistically slightly less accurate than if all students have the same test.

1. Run Item Analysis from either of these places on deployed test:

a. The place of deployment- CONTENT



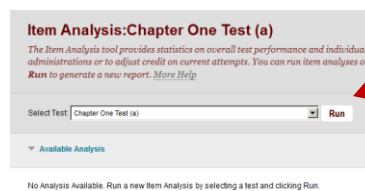
b. Grade Center column



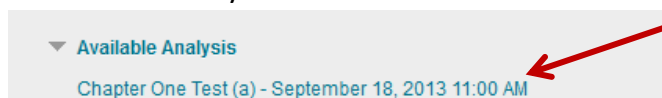
2. Choose one of the above and click on <Item Analysis> for the deployed test.

- a. It can be run before all students have taken the test, but it must have a good number of students to have taken the test for the data to be valid.

3. Click <Run>



4. Click on the analysis.



# Using Item Analysis to Measure Question Validity

## 5. Test Summary

Test Summary						Discrimination	Difficulty
122.0	61	0	28	94.22	00 hr 34 min	57 Good Questions	32 Easy Questions
						3 Fair Questions	28 Medium Questions
						1 Poor Questions	1 Hard Questions
						0 Cannot Calculate	
Possible Points	Possible Questions	In Progress Attempts	Completed Attempts	Average Score	Average Time		

### Filter Questions

## 6. Discrimination question flags

- Good question has a discrimination value greater than 0.3, fair is 0.1-0.3.
- If a negative discrimination and a hard question (difficulty <30%) check and be sure the correct answer was marked on a multiple choice.
- Click on the question to check

Question	Question Type	Discrimination	Difficulty
At Folger U. Drs. C2: At Folger U., Drs. Chase and Sanborn are conducting an experiment on the effe...	Multiple Choice	-0.15	21.43%

- Analyze the following:

### Question:

- At Folger U., Drs. Chase and Sanborn are conducting an experiment on the effects of caffeine on memory. Par \_\_\_\_\_ variable.

Answers	Total	Top 25%	2nd 25%	3rd 25%	Bottom 25%
experiment	5(17.86%)	1	3	1	0
control	1(3.58%)	1	0	0	0
<input checked="" type="checkbox"/> independent	6(21.43%)	2	4	0	0
dependent	15(53.58%)	14	0	1	0

Notice that 14/18 of the top 25% on the test chose the last answer and only 2 chose the one that was marked correct. Having the low discrimination and the numbers in the top 25% that missed can be an indicator of a mismarked correct answer. Click < Edit > in upper right corner to correct if that is the case. This will correct test for the future and recalculate the grades.



# Using Item Analysis to Measure Question Validity

## 7. Difficulty Question Flags

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### Filter Questions

- These are two samples of questions flagged for difficulty.
- Greater than 80% is classified as easy and less than 30% as hard.

	Question Type	Discrimination
• When we make a hypot: When we make a hypothesis, we are:	Multiple Choice	0.46
• Between which pair o: Between which pair of values is one most likely to find a positive correlation?	Multiple Choice	0.47

Notice that because students did so well (none in the bottom 25% and only one overall missed the question), perhaps the answer choices for non-correct answers could be addressed.

Answers	Total	25%	25%	25%	25%
alcohol consumption and GPA	1(3.58%)	1	0	0	0
GPA and height	0(0.0%)	0	0	0	0
<input checked="" type="checkbox"/> GPA and amount of studying	26(92.86%)	17	7	2	0
GPA and depression	0(0.0%)	0	0	0	0

