QUANTITATIVE REASONING ASSESSMENT
CORRECT REASONING SKILLS

Objectives:	Items to Assess Objective:
1. Correctly interprets probabilities	3d, 23a
2. Correctly interprets measures of central tendency	2d, 32b, 33b, 34a, 35b, 36b, 37b
3. Understands how to select an appropriate average	1d, 4a/b
4. Correctly computes probability a. understands probabilities as ratios b. uses combinatorial reasoning	10c A) B) 38b, 39a, 40b
5. Understands independence	11e, 12b, 13a, 14b, 15a, 16e
6. Understands sampling variability	8a, 24b, 26d, 26c (1pt for 26c)
7. Distinguishes between correlation and causation	28b, 29a, 31b
8. Correctly interprets two-way tables	[5a, 6d]
9. Understands importance of large samples	19b, 25b
10. Understands sources of bias and error.	9a, 17a, 20b, 21a, 22a
11. Recognizes features of good experimental design.	7b, 18b, 27b, 30b

QUANTITATIVE REASONING ASSESSMENT
MISCONCEPTIONS & SKILL DEFICIENCIES

Objectives:	Items to Assess Objective:
1.Misconceptions involving averages a. Averages are the most common number b. Fails to take outliers into consideration when computing the mean c. Compares groups based on their averages d. Confuses mean with median	A) 1a B) 1c, 33a, 36a, 37a C) 26 b/e D) 32a 34b
2. Outcome orientation misconception	2e ,3a/b,11a/b/d, 16a/b/d, 25c
3. Good samples have to represent a high percentage of the population	18a,19a, 27a, 30a
4. Law of small numbers	24c, 25a
5. Representativeness misconception	11c, 12a, 13b, 14a, 15b, 16c
6. Correlation implies causation.	28a, 29b, 31a
7. Equiprobability bias	23c, 38a, 39d, 40d
8. Groups can only be compared if they are of the same size.	7a
9. Failure to distinguish the difference between a sample and a population.	4 c/d
10. Failure to consider and evaluate all of the data.	[5a, 6a] [5b, 6a], 26a, 35a
11. Inability to create and evaluate fractions or percents. (SD)	[5b, 6b/c] [5a, 6b/c], 10a/b
12. Only large effects can be considered meaningful	[5b, 6d]
13. Failure to recognize potential sources of bias and error.	8b, 9b, 17b, 20a, 21b, 22b
14. Assumes more decimal places indicate greater accuracy.	1b
15. Inability to interpret probabilities. (SD)	2a/b/c, 3c/e, 23b, 24a, 38c/d, 39b/c, 40a/c