

EXAM REPORTING



COURSE# - PROFNAME

Apr 19, 2017

UNIVERSITY OF MINNESOTA

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Letter from Director

OMS offers a variety of course scoring and reporting options that provide U of M faculty with flexible and speedy methods for scoring and reporting of midterm, final and other exams regardless of class size. We pride ourselves on prompt turn-around and accurate results and are dedicated to providing you with useful data that will help drive your decisions and get you what you need out of measurement.

In order to provide you with reports that more comprehensively assist with your test data analysis, we have developed a number of report package options that reflect those needs and what we, as assessment specialists, recommend as essential reports.

Packages include lists of student scores, statistical summaries of the results (frequency distributions, means, standard deviations), converted scores (percentiles, standard scores) and item analyses. We have worked to provide these reports to faculty in the most clear and effective way possible, by including result descriptions in the reports themselves.

OMS also provides Student Rating of Teaching support to the University. Department chairs and committees use course evaluations during annual faculty reviews to make decisions on salary increases, promotions and tenure. The information obtained from Student Ratings of Teaching is also used by instructors to help explain how different groups respond to his/her teaching style.

In addition to providing classroom resources such as the Course Exam reporting and Student Rating of Teaching reporting, OMS also offers a variety of assessment solutions employing a variety of tools, which can serve as a vital resource for data collection efforts and data utilization. Listed below are a few of our valued solutions:

- Training Grant Evaluation
- Customized Student Rating of Teaching forms
- Assessment of Learning Outcomes
- Program Evaluation

Please visit our site for more information and a complete list of solutions: <http://oms.umn.edu>

We look forward to providing you with the assessment solutions you need.

Sincerely,

Thomas Dohm Ph.D.

Results

Raw Score Class List (By Names)

All (With Names) (Sorted by name)

Name	Student ID	Score
30107, 30107	30107	132
30108, 30108	30108	132
30109, 30109	30109	144
30110, 30110	30110	136
30111, 30111	30111	124
30112, 30112	30112	152
30113, 30113	30113	124
30114, 30114	30114	92
30115, 30115	30115	120
30116, 30116	30116	136
30117, 30117	30117	144
30118, 30118	30118	140
30119, 30119	30119	120
30120, 30120	30120	92
30121, 30121	30121	128
30122, 30122	30122	112
30123, 30123	30123	112
30124, 30124	30124	124
30125, 30125	30125	96
30126, 30126	30126	112
30127, 30127	30127	128
30128, 30128	30128	68
30129, 30129	30129	96
30130, 30130	30130	140
30131, 30131	30131	68
30132, 30132	30132	104
30133, 30133	30133	100
30134, 30134	30134	112
30135, 30135	30135	88
30136, 30136	30136	108
30137, 30137	30137	132

Name	Student ID	Score
30138, 30138	30138	156
30139, 30139	30139	84
30140, 30140	30140	144
30141, 30141	30141	140
30142, 30142	30142	96
30143, 30143	30143	140
30144, 30144	30144	72
30145, 30145	30145	84
30146, 30146	30146	120
30147, 30147	30147	140
30148, 30148	30148	112
30149, 30149	30149	112
30150, 30150	30150	104
30151, 30151	30151	148
30152, 30152	30152	96
30153, 30153	30153	100
30154, 30154	30154	116
30155, 30155	30155	136
30156, 30156	30156	96
30157, 30157	30157	80
30158, 30158	30158	100
30159, 30159	30159	76
30160, 30160	30160	120
30161, 30161	30161	100
30162, 30162	30162	116
30163, 30163	30163	120
30164, 30164	30164	88
30165, 30165	30165	104
30166, 30166	30166	152
30167, 30167	30167	108
30168, 30168	30168	136
30169, 30169	30169	132
30170, 30170	30170	148
30171, 30171	30171	152
30172, 30172	30172	116
30173, 30173	30173	128

Name	Student ID	Score
30174, 30174	30174	100
30175, 30175	30175	36
30176, 30176	30176	104
30177, 30177	30177	120
30178, 30178	30178	112
30179, 30179	30179	76
30180, 30180	30180	72
30181, 30181	30181	60
30182, 30182	30182	132
30183, 30183	30183	104
30184, 30184	30184	112
30185, 30185	30185	64
30186, 30186	30186	96
30187, 30187	30187	124
30188, 30188	30188	44
30189, 30189	30189	84
30190, 30190	30190	112
30191, 30191	30191	100
30192, 30192	30192	56
30193, 30193	30193	128
30194, 30194	30194	112
30195, 30195	30195	100
30196, 30196	30196	132
30197, 30197	30197	88
30198, 30198	30198	92

Raw Score Class List (By Id Number)

All (No Names) (Sorted by ID)

Student ID	Score
30107	132
30108	132
30109	144
30110	136
30111	124
30112	152
30113	124
30114	92
30115	120
30116	136
30117	144
30118	140
30119	120
30120	92
30121	128
30122	112
30123	112
30124	124
30125	96
30126	112
30127	128
30128	68
30129	96
30130	140
30131	68
30132	104
30133	100
30134	112
30135	88
30136	108
30137	132
30138	156
30139	84

Student ID	Score
30140	144
30141	140
30142	96
30143	140
30144	72
30145	84
30146	120
30147	140
30148	112
30149	112
30150	104
30151	148
30152	96
30153	100
30154	116
30155	136
30156	96
30157	80
30158	100
30159	76
30160	120
30161	100
30162	116
30163	120
30164	88
30165	104
30166	152
30167	108
30168	136
30169	132
30170	148
30171	152
30172	116
30173	128
30174	100
30175	36

Student ID	Score
30176	104
30177	120
30178	112
30179	76
30180	72
30181	60
30182	132
30183	104
30184	112
30185	64
30186	96
30187	124
30188	44
30189	84
30190	112
30191	100
30192	56
30193	128
30194	112
30195	100
30196	132
30197	88
30198	92

Converted Score Class List

All (With Names)

All (Sorted by name)

Name	Student ID	Raw Score	Standard Score	Percentile Rank	Percent of Max
30107, 30107	30107	132	58	78	83
30108, 30108	30108	132	58	78	83
30109, 30109	30109	144	63	92	90
30110, 30110	30110	136	60	83	85
30111, 30111	30111	124	55	68	78
30112, 30112	30112	152	66	98	95
30113, 30113	30113	124	55	68	78
30114, 30114	30114	92	43	22	58
30115, 30115	30115	120	54	62	75
30116, 30116	30116	136	60	83	85
30117, 30117	30117	144	63	92	90
30118, 30118	30118	140	62	88	88
30119, 30119	30119	120	54	62	75
30120, 30120	30120	92	43	22	58
30121, 30121	30121	128	57	72	80
30122, 30122	30122	112	51	50	70
30123, 30123	30123	112	51	50	70
30124, 30124	30124	124	55	68	78
30125, 30125	30125	96	44	27	60
30126, 30126	30126	112	51	50	70
30127, 30127	30127	128	57	72	80
30128, 30128	30128	68	33	7	43
30129, 30129	30129	96	44	27	60
30130, 30130	30130	140	62	88	88
30131, 30131	30131	68	33	7	43
30132, 30132	30132	104	48	40	65
30133, 30133	30133	100	46	34	63
30134, 30134	30134	112	51	50	70
30135, 30135	30135	88	41	18	55
30136, 30136	30136	108	49	44	68
30137, 30137	30137	132	58	78	83
30138, 30138	30138	156	68	99	98

Name	Student ID	Raw Score	Standard Score	Percentile Rank	Percent of Max
30139, 30139	30139	84	40	15	53
30140, 30140	30140	144	63	92	90
30141, 30141	30141	140	62	88	88
30142, 30142	30142	96	44	27	60
30143, 30143	30143	140	62	88	88
30144, 30144	30144	72	35	9	45
30145, 30145	30145	84	40	15	53
30146, 30146	30146	120	54	62	75
30147, 30147	30147	140	62	88	88
30148, 30148	30148	112	51	50	70
30149, 30149	30149	112	51	50	70
30150, 30150	30150	104	48	40	65
30151, 30151	30151	148	65	95	93
30152, 30152	30152	96	44	27	60
30153, 30153	30153	100	46	34	63
30154, 30154	30154	116	52	58	73
30155, 30155	30155	136	60	83	85
30156, 30156	30156	96	44	27	60
30157, 30157	30157	80	38	13	50
30158, 30158	30158	100	46	34	63
30159, 30159	30159	76	37	11	48
30160, 30160	30160	120	54	62	75
30161, 30161	30161	100	46	34	63
30162, 30162	30162	116	52	58	73
30163, 30163	30163	120	54	62	75
30164, 30164	30164	88	41	18	55
30165, 30165	30165	104	48	40	65
30166, 30166	30166	152	66	98	95
30167, 30167	30167	108	49	44	68
30168, 30168	30168	136	60	83	85
30169, 30169	30169	132	58	78	83
30170, 30170	30170	148	65	95	93
30171, 30171	30171	152	66	98	95
30172, 30172	30172	116	52	58	73
30173, 30173	30173	128	57	72	80
30174, 30174	30174	100	46	34	63

Name	Student ID	Raw Score	Standard Score	Percentile Rank	Percent of Max
30175, 30175	30175	36	21	1	23
30176, 30176	30176	104	48	40	65
30177, 30177	30177	120	54	62	75
30178, 30178	30178	112	51	50	70
30179, 30179	30179	76	37	11	48
30180, 30180	30180	72	35	9	45
30181, 30181	30181	60	30	4	38
30182, 30182	30182	132	58	78	83
30183, 30183	30183	104	48	40	65
30184, 30184	30184	112	51	50	70
30185, 30185	30185	64	32	5	40
30186, 30186	30186	96	44	27	60
30187, 30187	30187	124	55	68	78
30188, 30188	30188	44	24	2	28
30189, 30189	30189	84	40	15	53
30190, 30190	30190	112	51	50	70
30191, 30191	30191	100	46	34	63
30192, 30192	30192	56	29	3	35
30193, 30193	30193	128	57	72	80
30194, 30194	30194	112	51	50	70
30195, 30195	30195	100	46	34	63
30196, 30196	30196	132	58	78	83
30197, 30197	30197	88	41	18	55
30198, 30198	30198	92	43	22	58

Converted Score Class List (Without Names)

All (Without Names)

All (Sorted by ID)

Student ID	Raw Score	Standard Score	Percentile Rank	Percent of Max
30107	132	58	78	83
30108	132	58	78	83
30109	144	63	92	90
30110	136	60	83	85
30111	124	55	68	78
30112	152	66	98	95
30113	124	55	68	78
30114	92	43	22	58
30115	120	54	62	75
30116	136	60	83	85
30117	144	63	92	90
30118	140	62	88	88
30119	120	54	62	75
30120	92	43	22	58
30121	128	57	72	80
30122	112	51	50	70
30123	112	51	50	70
30124	124	55	68	78
30125	96	44	27	60
30126	112	51	50	70
30127	128	57	72	80
30128	68	33	7	43
30129	96	44	27	60
30130	140	62	88	88
30131	68	33	7	43
30132	104	48	40	65
30133	100	46	34	63
30134	112	51	50	70
30135	88	41	18	55
30136	108	49	44	68
30137	132	58	78	83
30138	156	68	99	98

Student ID	Raw Score	Standard Score	Percentile Rank	Percent of Max
30139	84	40	15	53
30140	144	63	92	90
30141	140	62	88	88
30142	96	44	27	60
30143	140	62	88	88
30144	72	35	9	45
30145	84	40	15	53
30146	120	54	62	75
30147	140	62	88	88
30148	112	51	50	70
30149	112	51	50	70
30150	104	48	40	65
30151	148	65	95	93
30152	96	44	27	60
30153	100	46	34	63
30154	116	52	58	73
30155	136	60	83	85
30156	96	44	27	60
30157	80	38	13	50
30158	100	46	34	63
30159	76	37	11	48
30160	120	54	62	75
30161	100	46	34	63
30162	116	52	58	73
30163	120	54	62	75
30164	88	41	18	55
30165	104	48	40	65
30166	152	66	98	95
30167	108	49	44	68
30168	136	60	83	85
30169	132	58	78	83
30170	148	65	95	93
30171	152	66	98	95
30172	116	52	58	73
30173	128	57	72	80
30174	100	46	34	63

Student ID	Raw Score	Standard Score	Percentile Rank	Percent of Max
30175	36	21	1	23
30176	104	48	40	65
30177	120	54	62	75
30178	112	51	50	70
30179	76	37	11	48
30180	72	35	9	45
30181	60	30	4	38
30182	132	58	78	83
30183	104	48	40	65
30184	112	51	50	70
30185	64	32	5	40
30186	96	44	27	60
30187	124	55	68	78
30188	44	24	2	28
30189	84	40	15	53
30190	112	51	50	70
30191	100	46	34	63
30192	56	29	3	35
30193	128	57	72	80
30194	112	51	50	70
30195	100	46	34	63
30196	132	58	78	83
30197	88	41	18	55
30198	92	43	22	58

Descriptive Statistics

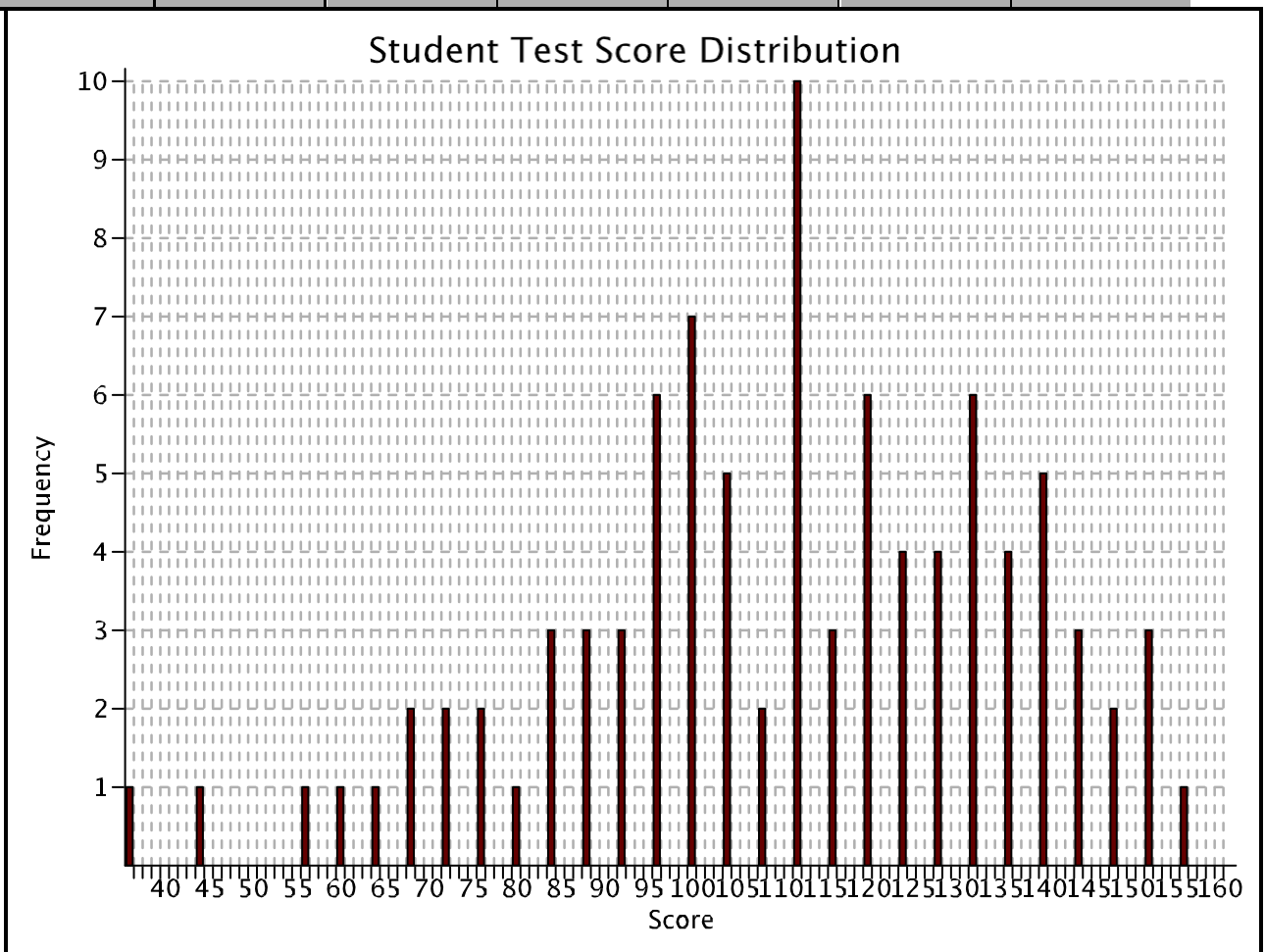
Overall Descriptive Statistics Summary

Group Size	92
Mean	110.30
Standard Deviation	25.58
Variance	654.34
Highest Possible Score	160
Highest Obtained Score	156
Lowest Obtained Score	36
Range of Scores	121
90th Percentile Score	140.46
75th Percentile Score	131.67
50th Percentile Score - Median	112.00
25th Percentile Score	95.83
10th Percentile Score	75.60

Overall Total Score Distribution Table

Raw Score	Frequency	Cumulative Frequency	Percent	Cumulative Percent	Percentile Rank	Standard Score
156	1	92	1.1%	100.0%	99	68
152	3	91	3.3%	98.9%	98	66
148	2	88	2.2%	95.7%	95	65
144	3	86	3.3%	93.5%	92	63
140	5	83	5.4%	90.2%	88	62
136	4	78	4.3%	84.8%	83	60
132	6	74	6.5%	80.4%	78	58
128	4	68	4.3%	73.9%	72	57
124	4	64	4.3%	69.6%	68	55
120	6	60	6.5%	65.2%	62	54
116	3	54	3.3%	58.7%	58	52
112 MODE	10	51	10.9%	55.4%	50	51
108	2	41	2.2%	44.6%	44	49
104	5	39	5.4%	42.4%	40	48
100	7	34	7.6%	37.0%	34	46
96	6	27	6.5%	29.3%	27	44
92	3	21	3.3%	22.8%	22	43
88	3	18	3.3%	19.6%	18	41
84	3	15	3.3%	16.3%	15	40

Raw Score	Frequency	Cumulative Frequency	Percent	Cumulative Percent	Percentile Rank	Standard Score
80	1	12	1.1%	13.0%	13	38
76	2	11	2.2%	12.0%	11	37
72	2	9	2.2%	9.8%	9	35
68	2	7	2.2%	7.6%	7	33
64	1	5	1.1%	5.4%	5	32
60	1	4	1.1%	4.3%	4	30
56	1	3	1.1%	3.3%	3	29
44	1	2	1.1%	2.2%	2	24
36	1	1	1.1%	1.1%	1	21



NOTES: Descriptive Statistics

Above is a table that represents the distribution of scores in several different ways:

Raw Score is the number of items answered correctly.

Mode is the most frequently appearing score (this is identified in the Raw Score column).

Percentile Rank is the percent of students who scored below the mid-point of a given score.

Frequency is the number of students with a given score.

Cumulative Percent is the percent of students at or below each score

Standard Score is computed by subtracting the population mean of the individual raw score and dividing the remainder by the standard deviation. The resulting scores have a mean of 50 and a standard deviation of 10. This is also referred to as a z-score.

Extended Item Analysis Report

Extended Item Analysis Report: Group

Group Size	92
Number of Items	40
Mean	110.30
Standard Deviation	25.58
Kuder-Richardson Formula 20 Reliability Coefficient *	1.01

Item 1											
Correct Response(s)			2			Item Difficulty			78		
Mean of Group With Item Right			117.3			Mean of Group With Item Wrong			85.2		
Point Biserial Correlation Coefficient			0.52			Confidence Level			0.001		
Group	Response Frequency										
	0	1	2	3	4	5	6	7	8	9	Omit
High 27%	0 (0%)	0 (0%)	24 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Low 27%	0 (0%)	2 (7%)	14 (52%)	3 (11%)	8 (30%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Difference	(0%)	(-7%)	(48%)	(-11%)	(-30%)	(0%)	(0%)	(0%)	(0%)	(0%)	(0%)
Total Group	0 (0%)	2 (2%)	72 (78%)	3 (3%)	15 (16%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)

Item 2											
Correct Response(s)			2			Item Difficulty			41		
Mean of Group With Item Right			117.8			Mean of Group With Item Wrong			105.0		
Point Biserial Correlation Coefficient			0.25			Confidence Level			0.004		
Group	Response Frequency										
	0	1	2	3	4	5	6	7	8	9	Omit
High 27%	0 (0%)	0 (0%)	15 (63%)	7 (29%)	2 (8%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Low 27%	0 (0%)	1 (4%)	6 (22%)	11 (41%)	8 (30%)	1 (4%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Difference	(0%)	(-4%)	(41%)	(-12%)	(-22%)	(-4%)	(0%)	(0%)	(0%)	(0%)	(0%)
Total Group	0 (0%)	2 (2%)	38 (41%)	30 (33%)	20 (22%)	2 (2%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)

Item 3											
Correct Response(s)			2			Item Difficulty			90		
Mean of Group With Item Right			114.1			Mean of Group With Item Wrong			75.6		
Point Biserial Correlation Coefficient			0.45			Confidence Level			0.009		
Group	Response Frequency										
	0	1	2	3	4	5	6	7	8	9	Omit
High 27%	0 (0%)	0 (0%)	24 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Low 27%	0 (0%)	2 (7%)	20 (74%)	1 (4%)	0 (0%)	4 (15%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Difference	(0%)	(-7%)	(26%)	(-4%)	(0%)	(-15%)	(0%)	(0%)	(0%)	(0%)	(0%)
Total Group	0 (0%)	3 (3%)	83 (90%)	2 (2%)	0 (0%)	4 (4%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)

Item 4											
Correct Response(s)			4			Item Difficulty			86		
Mean of Group With Item Right			114.8			Mean of Group With Item Wrong			83.1		
Point Biserial Correlation Coefficient			0.43			Confidence Level			0.010		
Group	Response Frequency										
	0	1	2	3	4	5	6	7	8	9	Omit
High 27%	0 (0%)	0 (0%)	0 (0%)	0 (0%)	24 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Low 27%	0 (0%)	6 (22%)	1 (4%)	0 (0%)	19 (70%)	1 (4%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Difference	(0%)	(-22%)	(-4%)	(0%)	(30%)	(-4%)	(0%)	(0%)	(0%)	(0%)	(0%)
Total Group	0 (0%)	7 (8%)	3 (3%)	1 (1%)	79 (86%)	2 (2%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)

Item 5											
Correct Response(s)			4			Item Difficulty			88		
Mean of Group With Item Right			114.3			Mean of Group With Item Wrong			80.7		
Point Biserial Correlation Coefficient			0.43			Confidence Level			0.002		
Group	Response Frequency										
	0	1	2	3	4	5	6	7	8	9	Omit
High 27%	0 (0%)	0 (0%)	0 (0%)	0 (0%)	24 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Low 27%	0 (0%)	1 (4%)	0 (0%)	6 (22%)	19 (70%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (4%)
Difference	(0%)	(-4%)	(0%)	(-22%)	(30%)	(0%)	(0%)	(0%)	(0%)	(0%)	(-4%)
Total Group	0 (0%)	1 (1%)	0 (0%)	9 (10%)	81 (88%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (1%)

Item 6												
Correct Response(s)				3				Item Difficulty				84
Mean of Group With Item Right				115.0				Mean of Group With Item Wrong				86.1
Point Biserial Correlation Coefficient				0.42				Confidence Level				0.001
Group	Response Frequency											
	0	1	2	3	4	5	6	7	8	9	Omit	
High 27%	0 (0%)	0 (0%)	0 (0%)	24 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
Low 27%	0 (0%)	5 (19%)	0 (0%)	16 (59%)	5 (19%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (4%)	
Difference	(0%)	(-19%)	(0%)	(41%)	(-19%)	(0%)	(0%)	(0%)	(0%)	(0%)	(-4%)	
Total Group	0 (0%)	8 (9%)	0 (0%)	77 (84%)	5 (5%)	1 (1%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (1%)	

Item 7												
Correct Response(s)				1				Item Difficulty				58
Mean of Group With Item Right				114.7				Mean of Group With Item Wrong				104.3
Point Biserial Correlation Coefficient				0.20				Confidence Level				0.007
Group	Response Frequency											
	0	1	2	3	4	5	6	7	8	9	Omit	
High 27%	0 (0%)	20 (83%)	0 (0%)	1 (4%)	0 (0%)	3 (13%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
Low 27%	0 (0%)	14 (52%)	1 (4%)	2 (7%)	1 (4%)	9 (33%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
Difference	(0%)	(31%)	(-4%)	(-3%)	(-4%)	(-20%)	(0%)	(0%)	(0%)	(0%)	(0%)	
Total Group	0 (0%)	53 (58%)	1 (1%)	7 (8%)	1 (1%)	30 (33%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	

Item 8												
Correct Response(s)				1				Item Difficulty				58
Mean of Group With Item Right				121.9				Mean of Group With Item Wrong				94.6
Point Biserial Correlation Coefficient				0.53				Confidence Level				0.001
Group	Response Frequency											
	0	1	2	3	4	5	6	7	8	9	Omit	
High 27%	0 (0%)	21 (88%)	3 (13%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
Low 27%	0 (0%)	6 (22%)	8 (30%)	8 (30%)	3 (11%)	2 (7%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
Difference	(0%)	(66%)	(-17%)	(-30%)	(-11%)	(-7%)	(0%)	(0%)	(0%)	(0%)	(0%)	
Total Group	0 (0%)	53 (58%)	23 (25%)	9 (10%)	4 (4%)	3 (3%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	

Item 9												
Correct Response(s)				4				Item Difficulty				74
Mean of Group With Item Right				118.9				Mean of Group With Item Wrong				86.0
Point Biserial Correlation Coefficient				0.56				Confidence Level				0.001
Group	Response Frequency											
	0	1	2	3	4	5	6	7	8	9	Omit	
High 27%	0 (0%)	0 (0%)	0 (0%)	0 (0%)	24 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
Low 27%	0 (0%)	9 (33%)	2 (7%)	1 (4%)	12 (44%)	3 (11%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
Difference	(0%)	(-33%)	(-7%)	(-4%)	(56%)	(-11%)	(0%)	(0%)	(0%)	(0%)	(0%)	
Total Group	0 (0%)	14 (15%)	3 (3%)	1 (1%)	68 (74%)	6 (7%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	

Item 10												
Correct Response(s)				5				Item Difficulty				49
Mean of Group With Item Right				122.0				Mean of Group With Item Wrong				99.1
Point Biserial Correlation Coefficient				0.45				Confidence Level				0.001
Group	Response Frequency											
	0	1	2	3	4	5	6	7	8	9	Omit	
High 27%	0 (0%)	0 (0%)	6 (25%)	0 (0%)	0 (0%)	18 (75%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
Low 27%	0 (0%)	1 (4%)	14 (52%)	4 (15%)	2 (7%)	6 (22%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
Difference	(0%)	(-4%)	(-27%)	(-15%)	(-7%)	(53%)	(0%)	(0%)	(0%)	(0%)	(0%)	
Total Group	0 (0%)	1 (1%)	35 (38%)	5 (5%)	6 (7%)	45 (49%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	

Item 11												
Correct Response(s)				2				Item Difficulty				84
Mean of Group With Item Right				116.1				Mean of Group With Item Wrong				80.8
Point Biserial Correlation Coefficient				0.51				Confidence Level				0.001
Group	Response Frequency											
	0	1	2	3	4	5	6	7	8	9	Omit	
High 27%	0 (0%)	0 (0%)	24 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
Low 27%	0 (0%)	3 (11%)	15 (56%)	3 (11%)	2 (7%)	4 (15%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
Difference	(0%)	(-11%)	(44%)	(-11%)	(-7%)	(-15%)	(0%)	(0%)	(0%)	(0%)	(0%)	
Total Group	0 (0%)	5 (5%)	77 (84%)	3 (3%)	3 (3%)	4 (4%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	

Item 12												
Correct Response(s)				4				Item Difficulty				76
Mean of Group With Item Right				116.3				Mean of Group With Item Wrong				91.1
Point Biserial Correlation Coefficient				0.42				Confidence Level				0.001
Group	Response Frequency											
	0	1	2	3	4	5	6	7	8	9	Omit	
High 27%	0 (0%)	0 (0%)	0 (0%)	0 (0%)	24 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
Low 27%	0 (0%)	2 (7%)	0 (0%)	5 (19%)	16 (59%)	4 (15%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
Difference	(0%)	(-7%)	(0%)	(-19%)	(41%)	(-15%)	(0%)	(0%)	(0%)	(0%)	(0%)	
Total Group	0 (0%)	4 (4%)	2 (2%)	6 (7%)	70 (76%)	10 (11%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	

Item 13												
Correct Response(s)				5				Item Difficulty				77
Mean of Group With Item Right				115.0				Mean of Group With Item Wrong				94.3
Point Biserial Correlation Coefficient				0.34				Confidence Level				0.012
Group	Response Frequency											
	0	1	2	3	4	5	6	7	8	9	Omit	
High 27%	0 (0%)	2 (8%)	0 (0%)	0 (0%)	1 (4%)	21 (88%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
Low 27%	0 (0%)	2 (7%)	3 (11%)	2 (7%)	4 (15%)	16 (59%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
Difference	(0%)	(1%)	(-11%)	(-7%)	(-11%)	(29%)	(0%)	(0%)	(0%)	(0%)	(0%)	
Total Group	0 (0%)	6 (7%)	6 (7%)	3 (3%)	6 (7%)	71 (77%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	

Item 14												
Correct Response(s)				4				Item Difficulty				53
Mean of Group With Item Right				122.4				Mean of Group With Item Wrong				96.6
Point Biserial Correlation Coefficient				0.50				Confidence Level				0.001
Group	Response Frequency											
	0	1	2	3	4	5	6	7	8	9	Omit	
High 27%	0 (0%)	0 (0%)	0 (0%)	1 (4%)	18 (75%)	5 (21%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
Low 27%	0 (0%)	11 (41%)	2 (7%)	3 (11%)	6 (22%)	5 (19%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
Difference	(0%)	(-41%)	(-7%)	(-7%)	(53%)	(2%)	(0%)	(0%)	(0%)	(0%)	(0%)	
Total Group	0 (0%)	13 (14%)	3 (3%)	10 (11%)	49 (53%)	17 (18%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	

Item 15											
Correct Response(s)			2			Item Difficulty			53		
Mean of Group With Item Right			121.4			Mean of Group With Item Wrong			97.7		
Point Biserial Correlation Coefficient			0.46			Confidence Level			0.001		
Group	Response Frequency										
	0	1	2	3	4	5	6	7	8	9	Omit
High 27%	0 (0%)	0 (0%)	21 (88%)	2 (8%)	0 (0%)	1 (4%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Low 27%	0 (0%)	0 (0%)	6 (22%)	14 (52%)	2 (7%)	5 (19%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Difference	(0%)	(0%)	(66%)	(-44%)	(-7%)	(-15%)	(0%)	(0%)	(0%)	(0%)	(0%)
Total Group	0 (0%)	1 (1%)	49 (53%)	32 (35%)	3 (3%)	7 (8%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)

Item 16											
Correct Response(s)			2			Item Difficulty			85		
Mean of Group With Item Right			114.5			Mean of Group With Item Wrong			87.1		
Point Biserial Correlation Coefficient			0.38			Confidence Level			0.066		
Group	Response Frequency										
	0	1	2	3	4	5	6	7	8	9	Omit
High 27%	0 (0%)	1 (4%)	22 (92%)	0 (0%)	1 (4%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Low 27%	0 (0%)	2 (7%)	20 (74%)	3 (11%)	1 (4%)	1 (4%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Difference	(0%)	(-3%)	(18%)	(-11%)	(0%)	(-4%)	(0%)	(0%)	(0%)	(0%)	(0%)
Total Group	0 (0%)	4 (4%)	78 (85%)	4 (4%)	4 (4%)	2 (2%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)

Item 17											
Correct Response(s)			2			Item Difficulty			91		
Mean of Group With Item Right			112.9			Mean of Group With Item Wrong			83.5		
Point Biserial Correlation Coefficient			0.32			Confidence Level			0.018		
Group	Response Frequency										
	0	1	2	3	4	5	6	7	8	9	Omit
High 27%	0 (0%)	0 (0%)	24 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Low 27%	0 (0%)	3 (11%)	22 (81%)	2 (7%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Difference	(0%)	(-11%)	(19%)	(-7%)	(0%)	(0%)	(0%)	(0%)	(0%)	(0%)	(0%)
Total Group	0 (0%)	5 (5%)	84 (91%)	3 (3%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)

Item 18												
Correct Response(s)				3				Item Difficulty				85
Mean of Group With Item Right				116.0				Mean of Group With Item Wrong				78.6
Point Biserial Correlation Coefficient				0.53				Confidence Level				0.001
Group	Response Frequency											
	0	1	2	3	4	5	6	7	8	9	Omit	
High 27%	0 (0%)	0 (0%)	0 (0%)	24 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
Low 27%	0 (0%)	2 (7%)	0 (0%)	16 (59%)	6 (22%)	3 (11%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
Difference	(0%)	(-7%)	(0%)	(41%)	(-22%)	(-11%)	(0%)	(0%)	(0%)	(0%)	(0%)	
Total Group	0 (0%)	2 (2%)	0 (0%)	78 (85%)	9 (10%)	3 (3%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	

Item 19												
Correct Response(s)				3				Item Difficulty				90
Mean of Group With Item Right				112.4				Mean of Group With Item Wrong				91.1
Point Biserial Correlation Coefficient				0.25				Confidence Level				0.082
Group	Response Frequency											
	0	1	2	3	4	5	6	7	8	9	Omit	
High 27%	0 (0%)	0 (0%)	1 (4%)	23 (96%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
Low 27%	0 (0%)	2 (7%)	0 (0%)	22 (81%)	3 (11%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
Difference	(0%)	(-7%)	(4%)	(15%)	(-11%)	(0%)	(0%)	(0%)	(0%)	(0%)	(0%)	
Total Group	0 (0%)	3 (3%)	2 (2%)	83 (90%)	3 (3%)	1 (1%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	

Item 20												
Correct Response(s)				4				Item Difficulty				76
Mean of Group With Item Right				113.4				Mean of Group With Item Wrong				100.5
Point Biserial Correlation Coefficient				0.21				Confidence Level				0.021
Group	Response Frequency											
	0	1	2	3	4	5	6	7	8	9	Omit	
High 27%	0 (0%)	0 (0%)	0 (0%)	0 (0%)	23 (96%)	1 (4%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
Low 27%	0 (0%)	0 (0%)	7 (26%)	0 (0%)	19 (70%)	1 (4%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
Difference	(0%)	(0%)	(-26%)	(0%)	(26%)	(0%)	(0%)	(0%)	(0%)	(0%)	(0%)	
Total Group	0 (0%)	0 (0%)	14 (15%)	4 (4%)	70 (76%)	4 (4%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	

Item 21												
Correct Response(s)				4				Item Difficulty				85
Mean of Group With Item Right				113.1				Mean of Group With Item Wrong				94.6
Point Biserial Correlation Coefficient				0.26				Confidence Level				0.308
Group	Response Frequency											
	0	1	2	3	4	5	6	7	8	9	Omit	
High 27%	0 (0%)	0 (0%)	3 (13%)	0 (0%)	21 (88%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
Low 27%	0 (0%)	2 (7%)	5 (19%)	0 (0%)	20 (74%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
Difference	(0%)	(-7%)	(-6%)	(0%)	(14%)	(0%)	(0%)	(0%)	(0%)	(0%)	(0%)	
Total Group	0 (0%)	3 (3%)	11 (12%)	0 (0%)	78 (85%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	

Item 22												
Correct Response(s)				4				Item Difficulty				82
Mean of Group With Item Right				115.8				Mean of Group With Item Wrong				86.1
Point Biserial Correlation Coefficient				0.45				Confidence Level				0.001
Group	Response Frequency											
	0	1	2	3	4	5	6	7	8	9	Omit	
High 27%	0 (0%)	0 (0%)	0 (0%)	0 (0%)	24 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
Low 27%	0 (0%)	1 (4%)	1 (4%)	3 (11%)	17 (63%)	5 (19%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
Difference	(0%)	(-4%)	(-4%)	(-11%)	(37%)	(-19%)	(0%)	(0%)	(0%)	(0%)	(0%)	
Total Group	0 (0%)	2 (2%)	3 (3%)	7 (8%)	75 (82%)	5 (5%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	

Item 23												
Correct Response(s)				4				Item Difficulty				62
Mean of Group With Item Right				121.0				Mean of Group With Item Wrong				92.9
Point Biserial Correlation Coefficient				0.53				Confidence Level				0.001
Group	Response Frequency											
	0	1	2	3	4	5	6	7	8	9	Omit	
High 27%	0 (0%)	0 (0%)	0 (0%)	0 (0%)	24 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
Low 27%	0 (0%)	11 (41%)	3 (11%)	0 (0%)	8 (30%)	5 (19%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
Difference	(0%)	(-41%)	(-11%)	(0%)	(70%)	(-19%)	(0%)	(0%)	(0%)	(0%)	(0%)	
Total Group	0 (0%)	26 (28%)	3 (3%)	0 (0%)	57 (62%)	6 (7%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	

Item 24												
Correct Response(s)				4				Item Difficulty				70
Mean of Group With Item Right				120.1				Mean of Group With Item Wrong				87.9
Point Biserial Correlation Coefficient				0.58				Confidence Level				0.001
Group	Response Frequency											
	0	1	2	3	4	5	6	7	8	9	Omit	
High 27%	0 (0%)	0 (0%)	0 (0%)	0 (0%)	24 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
Low 27%	0 (0%)	2 (7%)	7 (26%)	4 (15%)	10 (37%)	3 (11%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (4%)	
Difference	(0%)	(-7%)	(-26%)	(-15%)	(63%)	(-11%)	(0%)	(0%)	(0%)	(0%)	(-4%)	
Total Group	0 (0%)	5 (5%)	11 (12%)	6 (7%)	64 (70%)	5 (5%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (1%)	

Item 25												
Correct Response(s)				5				Item Difficulty				77
Mean of Group With Item Right				117.5				Mean of Group With Item Wrong				86.1
Point Biserial Correlation Coefficient				0.51				Confidence Level				0.001
Group	Response Frequency											
	0	1	2	3	4	5	6	7	8	9	Omit	
High 27%	0 (0%)	0 (0%)	1 (4%)	0 (0%)	0 (0%)	23 (96%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
Low 27%	0 (0%)	8 (30%)	2 (7%)	0 (0%)	3 (11%)	14 (52%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
Difference	(0%)	(-30%)	(-3%)	(0%)	(-11%)	(44%)	(0%)	(0%)	(0%)	(0%)	(0%)	
Total Group	0 (0%)	13 (14%)	4 (4%)	1 (1%)	3 (3%)	71 (77%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	

Item 26												
Correct Response(s)				2				Item Difficulty				52
Mean of Group With Item Right				122.0				Mean of Group With Item Wrong				97.5
Point Biserial Correlation Coefficient				0.48				Confidence Level				0.001
Group	Response Frequency											
	0	1	2	3	4	5	6	7	8	9	Omit	
High 27%	0 (0%)	2 (8%)	20 (83%)	1 (4%)	1 (4%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
Low 27%	0 (0%)	11 (41%)	4 (15%)	6 (22%)	6 (22%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
Difference	(0%)	(-33%)	(68%)	(-18%)	(-18%)	(0%)	(0%)	(0%)	(0%)	(0%)	(0%)	
Total Group	0 (0%)	25 (27%)	48 (52%)	8 (9%)	11 (12%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	

Item 27											
Correct Response(s)			2			Item Difficulty			84		
Mean of Group With Item Right			113.7			Mean of Group With Item Wrong			92.8		
Point Biserial Correlation Coefficient			0.30			Confidence Level			0.005		
Group	Response Frequency										
	0	1	2	3	4	5	6	7	8	9	Omit
High 27%	0 (0%)	1 (4%)	23 (96%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Low 27%	0 (0%)	5 (19%)	18 (67%)	1 (4%)	1 (4%)	2 (7%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Difference	(0%)	(-15%)	(29%)	(-4%)	(-4%)	(-7%)	(0%)	(0%)	(0%)	(0%)	(0%)
Total Group	0 (0%)	9 (10%)	77 (84%)	2 (2%)	1 (1%)	3 (3%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)

Item 28											
Correct Response(s)			2			Item Difficulty			79		
Mean of Group With Item Right			114.9			Mean of Group With Item Wrong			92.6		
Point Biserial Correlation Coefficient			0.35			Confidence Level			0.001		
Group	Response Frequency										
	0	1	2	3	4	5	6	7	8	9	Omit
High 27%	0 (0%)	0 (0%)	24 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Low 27%	0 (0%)	0 (0%)	18 (67%)	5 (19%)	3 (11%)	1 (4%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Difference	(0%)	(0%)	(33%)	(-19%)	(-11%)	(-4%)	(0%)	(0%)	(0%)	(0%)	(0%)
Total Group	0 (0%)	1 (1%)	73 (79%)	8 (9%)	7 (8%)	3 (3%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)

Item 29											
Correct Response(s)			1			Item Difficulty			65		
Mean of Group With Item Right			113.9			Mean of Group With Item Wrong			103.5		
Point Biserial Correlation Coefficient			0.19			Confidence Level			0.069		
Group	Response Frequency										
	0	1	2	3	4	5	6	7	8	9	Omit
High 27%	0 (0%)	19 (79%)	0 (0%)	5 (21%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Low 27%	0 (0%)	15 (56%)	1 (4%)	4 (15%)	7 (26%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Difference	(0%)	(23%)	(-4%)	(6%)	(-26%)	(0%)	(0%)	(0%)	(0%)	(0%)	(0%)
Total Group	0 (0%)	60 (65%)	2 (2%)	17 (18%)	13 (14%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)

Item 30											
Correct Response(s)			1			Item Difficulty			63		
Mean of Group With Item Right			118.4			Mean of Group With Item Wrong			96.5		
Point Biserial Correlation Coefficient			0.41			Confidence Level			0.001		
Group	Response Frequency										
	0	1	2	3	4	5	6	7	8	9	Omit
High 27%	0 (0%)	22 (92%)	2 (8%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Low 27%	0 (0%)	11 (41%)	7 (26%)	5 (19%)	1 (4%)	3 (11%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Difference	(0%)	(51%)	(-18%)	(-19%)	(-4%)	(-11%)	(0%)	(0%)	(0%)	(0%)	(0%)
Total Group	0 (0%)	58 (63%)	16 (17%)	14 (15%)	1 (1%)	3 (3%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)

Item 31											
Correct Response(s)			1			Item Difficulty			84		
Mean of Group With Item Right			113.9			Mean of Group With Item Wrong			92.0		
Point Biserial Correlation Coefficient			0.32			Confidence Level			0.308		
Group	Response Frequency										
	0	1	2	3	4	5	6	7	8	9	Omit
High 27%	0 (0%)	21 (88%)	1 (4%)	0 (0%)	1 (4%)	1 (4%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Low 27%	0 (0%)	20 (74%)	0 (0%)	3 (11%)	1 (4%)	3 (11%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Difference	(0%)	(14%)	(4%)	(-11%)	(0%)	(-7%)	(0%)	(0%)	(0%)	(0%)	(0%)
Total Group	0 (0%)	77 (84%)	1 (1%)	4 (4%)	4 (4%)	6 (7%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)

Item 32											
Correct Response(s)			2			Item Difficulty			55		
Mean of Group With Item Right			114.0			Mean of Group With Item Wrong			105.8		
Point Biserial Correlation Coefficient			0.16			Confidence Level			0.153		
Group	Response Frequency										
	0	1	2	3	4	5	6	7	8	9	Omit
High 27%	0 (0%)	2 (8%)	17 (71%)	0 (0%)	0 (0%)	5 (21%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Low 27%	0 (0%)	4 (15%)	13 (48%)	5 (19%)	0 (0%)	4 (15%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (4%)
Difference	(0%)	(-7%)	(23%)	(-19%)	(0%)	(6%)	(0%)	(0%)	(0%)	(0%)	(-4%)
Total Group	0 (0%)	10 (11%)	51 (55%)	8 (9%)	0 (0%)	22 (24%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (1%)

Item 33												
Correct Response(s)				3				Item Difficulty				61
Mean of Group With Item Right				111.1				Mean of Group With Item Wrong				109.0
Point Biserial Correlation Coefficient				0.04				Confidence Level				0.779
Group	Response Frequency											
	0	1	2	3	4	5	6	7	8	9	Omit	
High 27%	0 (0%)	0 (0%)	6 (25%)	13 (54%)	4 (17%)	1 (4%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
Low 27%	0 (0%)	0 (0%)	5 (19%)	15 (56%)	5 (19%)	2 (7%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
Difference	(0%)	(0%)	(6%)	(-2%)	(-2%)	(-3%)	(0%)	(0%)	(0%)	(0%)	(0%)	
Total Group	0 (0%)	0 (0%)	12 (13%)	56 (61%)	14 (15%)	10 (11%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	

Item 34												
Correct Response(s)				5				Item Difficulty				65
Mean of Group With Item Right				110.3				Mean of Group With Item Wrong				110.3
Point Biserial Correlation Coefficient				0.00				Confidence Level				0.764
Group	Response Frequency											
	0	1	2	3	4	5	6	7	8	9	Omit	
High 27%	0 (0%)	0 (0%)	0 (0%)	1 (4%)	7 (29%)	16 (67%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
Low 27%	0 (0%)	0 (0%)	2 (7%)	0 (0%)	7 (26%)	18 (67%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
Difference	(0%)	(0%)	(-7%)	(4%)	(3%)	(0%)	(0%)	(0%)	(0%)	(0%)	(0%)	
Total Group	0 (0%)	0 (0%)	2 (2%)	2 (2%)	28 (30%)	60 (65%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	

Item 35												
Correct Response(s)				1				Item Difficulty				78
Mean of Group With Item Right				115.9				Mean of Group With Item Wrong				90.2
Point Biserial Correlation Coefficient				0.41				Confidence Level				0.001
Group	Response Frequency											
	0	1	2	3	4	5	6	7	8	9	Omit	
High 27%	0 (0%)	24 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
Low 27%	0 (0%)	15 (56%)	8 (30%)	0 (0%)	1 (4%)	3 (11%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
Difference	(0%)	(44%)	(-30%)	(0%)	(-4%)	(-11%)	(0%)	(0%)	(0%)	(0%)	(0%)	
Total Group	0 (0%)	72 (78%)	12 (13%)	1 (1%)	2 (2%)	5 (5%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	

Item 36												
Correct Response(s)				3				Item Difficulty				43
Mean of Group With Item Right				126.0				Mean of Group With Item Wrong				98.2
Point Biserial Correlation Coefficient				0.54				Confidence Level				0.001
Group	Response Frequency											
	0	1	2	3	4	5	6	7	8	9	Omit	
High 27%	0 (0%)	0 (0%)	1 (4%)	21 (88%)	1 (4%)	1 (4%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
Low 27%	0 (0%)	2 (7%)	6 (22%)	4 (15%)	3 (11%)	12 (44%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
Difference	(0%)	(-7%)	(-18%)	(73%)	(-7%)	(-40%)	(0%)	(0%)	(0%)	(0%)	(0%)	
Total Group	0 (0%)	4 (4%)	18 (20%)	40 (43%)	7 (8%)	23 (25%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	

Item 37												
Correct Response(s)				3				Item Difficulty				60
Mean of Group With Item Right				116.1				Mean of Group With Item Wrong				101.7
Point Biserial Correlation Coefficient				0.27				Confidence Level				0.001
Group	Response Frequency											
	0	1	2	3	4	5	6	7	8	9	Omit	
High 27%	0 (0%)	0 (0%)	1 (4%)	21 (88%)	1 (4%)	1 (4%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
Low 27%	0 (0%)	2 (7%)	1 (4%)	10 (37%)	7 (26%)	7 (26%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
Difference	(0%)	(-7%)	(0%)	(51%)	(-22%)	(-22%)	(0%)	(0%)	(0%)	(0%)	(0%)	
Total Group	0 (0%)	5 (5%)	3 (3%)	55 (60%)	14 (15%)	15 (16%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	

Item 38												
Correct Response(s)				2				Item Difficulty				20
Mean of Group With Item Right				122.2				Mean of Group With Item Wrong				107.4
Point Biserial Correlation Coefficient				0.23				Confidence Level				0.107
Group	Response Frequency											
	0	1	2	3	4	5	6	7	8	9	Omit	
High 27%	0 (0%)	4 (17%)	9 (38%)	7 (29%)	1 (4%)	1 (4%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	2 (8%)	
Low 27%	0 (0%)	8 (30%)	4 (15%)	9 (33%)	4 (15%)	2 (7%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
Difference	(0%)	(-13%)	(23%)	(-4%)	(-11%)	(-3%)	(0%)	(0%)	(0%)	(0%)	(8%)	
Total Group	0 (0%)	26 (28%)	18 (20%)	30 (33%)	8 (9%)	8 (9%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	2 (2%)	

Item 39											
Correct Response(s)			2			Item Difficulty			51		
Mean of Group With Item Right			119.4			Mean of Group With Item Wrong			100.8		
Point Biserial Correlation Coefficient			0.36			Confidence Level			0.004		
Group	Response Frequency										
	0	1	2	3	4	5	6	7	8	9	Omit
High 27%	0 (0%)	2 (8%)	16 (67%)	0 (0%)	1 (4%)	5 (21%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Low 27%	0 (0%)	10 (37%)	6 (22%)	2 (7%)	3 (11%)	6 (22%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Difference	(0%)	(-29%)	(45%)	(-7%)	(-7%)	(-1%)	(0%)	(0%)	(0%)	(0%)	(0%)
Total Group	0 (0%)	17 (18%)	47 (51%)	2 (2%)	9 (10%)	17 (18%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)

Item 40											
Correct Response(s)			4			Item Difficulty			46		
Mean of Group With Item Right			122.7			Mean of Group With Item Wrong			99.9		
Point Biserial Correlation Coefficient			0.44			Confidence Level			0.001		
Group	Response Frequency										
	0	1	2	3	4	5	6	7	8	9	Omit
High 27%	0 (0%)	1 (4%)	2 (8%)	0 (0%)	20 (83%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (4%)
Low 27%	0 (0%)	5 (19%)	5 (19%)	5 (19%)	5 (19%)	7 (26%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Difference	(0%)	(-15%)	(-11%)	(-19%)	(64%)	(-26%)	(0%)	(0%)	(0%)	(0%)	(4%)
Total Group	0 (0%)	8 (9%)	16 (17%)	9 (10%)	42 (46%)	16 (17%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (1%)

Item Analysis Definitions

NOTES: Item Analysis

Above is a table that gives the information about the overall test reliability and about individual items to use in item and test improvement. See Appendix A for information on using these results in the classroom.

Frequency and Percent of Response Option shows the number (FRQ) and percent (%) of students who chose each of the possible answers to an item.

Item Number is the number of the item in the test. Any items omitted from scoring are not listed.

Correct Response(s) is the keyed correct response to the question. The correct response is also marked by bold text of the percent of responses listed to the right.

Item Difficulty shows the percent of students who answered the item correctly. Note that the higher the percentage, the easier the item.

Point Biserial Correlation shows the correlation between the item and the total score on the test and is used as an index of item discrimination. On highly discriminating items, students who know more about the subject matter in general do better than those who know less.

Response Frequency Frequency shows the number (FRQ) and percent (%) of students who chose each of the possible answers to the item. The correct response for a given item are indicated in bold.

Average Score Correct Response is the average score on the test for those who got the item correct.

Kuder-Richardson Formula 20 Reliability Coefficient (KR-20) is a measure of internal consistency reliability for measures with dichotomous choices. Values can range from 0.00 to 1.00 with high values indicating that the Examination is likely to correlate with alternate forms (a desirable characteristic). The KR20 is impacted by difficulty, spread in scores and length of the examination.

Confidence Level Level A statistical range with a specified probability that a given parameter lies within the range.

Scan Serial Reports

All Students

Name	ID	Scan Serial Number
30107, 30107	30107	3
30108, 30108	30108	4
30109, 30109	30109	5
30110, 30110	30110	6
30111, 30111	30111	7
30112, 30112	30112	8
30113, 30113	30113	9
30114, 30114	30114	10
30115, 30115	30115	11
30116, 30116	30116	12
30117, 30117	30117	13
30118, 30118	30118	14
30119, 30119	30119	15
30120, 30120	30120	16
30121, 30121	30121	17
30122, 30122	30122	18
30123, 30123	30123	19
30124, 30124	30124	20
30125, 30125	30125	21
30126, 30126	30126	22
30127, 30127	30127	23
30128, 30128	30128	24
30129, 30129	30129	25
30130, 30130	30130	26
30131, 30131	30131	27
30132, 30132	30132	28
30133, 30133	30133	29
30134, 30134	30134	30
30135, 30135	30135	31
30136, 30136	30136	32
30137, 30137	30137	33

Name	ID	Scan Serial Number
30138, 30138	30138	34
30139, 30139	30139	35
30140, 30140	30140	36
30141, 30141	30141	37
30142, 30142	30142	38
30143, 30143	30143	39
30144, 30144	30144	40
30145, 30145	30145	41
30146, 30146	30146	42
30147, 30147	30147	43
30148, 30148	30148	44
30149, 30149	30149	45
30150, 30150	30150	46
30151, 30151	30151	47
30152, 30152	30152	48
30153, 30153	30153	49
30154, 30154	30154	50
30155, 30155	30155	51
30156, 30156	30156	52
30157, 30157	30157	53
30158, 30158	30158	54
30159, 30159	30159	55
30160, 30160	30160	56
30161, 30161	30161	57
30162, 30162	30162	58
30163, 30163	30163	59
30164, 30164	30164	60
30165, 30165	30165	61
30166, 30166	30166	62
30167, 30167	30167	63
30168, 30168	30168	64
30169, 30169	30169	65
30170, 30170	30170	66
30171, 30171	30171	67
30172, 30172	30172	68
30173, 30173	30173	69

Name	ID	Scan Serial Number
30174, 30174	30174	70
30175, 30175	30175	71
30176, 30176	30176	72
30177, 30177	30177	73
30178, 30178	30178	74
30179, 30179	30179	75
30180, 30180	30180	76
30181, 30181	30181	77
30182, 30182	30182	78
30183, 30183	30183	79
30184, 30184	30184	80
30185, 30185	30185	81
30186, 30186	30186	82
30187, 30187	30187	83
30188, 30188	30188	84
30189, 30189	30189	85
30190, 30190	30190	86
30191, 30191	30191	87
30192, 30192	30192	88
30193, 30193	30193	89
30194, 30194	30194	90
30195, 30195	30195	91
30196, 30196	30196	92
30197, 30197	30197	93
30198, 30198	30198	94

Appendix A

Glossary

Average Score Correct Response is the average score on the test for those who got the question correct.

Confidence Level is a statistical range with a specified probability that a given parameter lies with the range.

Correct Response(s) is the keyed correct response to the question. The correct response is also marked by bold text of the percent of responses listed to the right.

Cumulated Percent is the percent of students at or below a given score.

Frequency is the number of students with a given score.

Frequency and Percent of Response Option shows the number (FRQ) and percent (%) of students who chose each of the possible answers to an item.

Item Difficulty shows the percent of students who answered the item correctly. The number of possible item responses affects how the difficulty is evaluated. Please see the chart below when analyzing the item difficulty percentage.

	2 Responses	3 Responses	4 Responses	5 Responses	6 Responses	10 Responses
Too Easy	91-100	88-100	86-100	85-100	84-100	83-100
Easy	81-90	74-87	71-85	69-84	67-83	65-82
Optimal	61-81	47-73	41-70	37-68	34-66	29-64
Hard	51-60	34-46	26-40	21-36	17-33	11-28
Too Hard	0-50	0-33	0-25	0-20	0-16	0-10

Item Number is the number of the item in the test.

Kuder-Richardson Formula 20 Reliability Coefficients (KR-20) is a measure of internal consistency reliability for measures with dichotomous choices. The reliability coefficient can range from 0 to 1. A coefficient of 0 for a test indicates no consistency. A coefficient of 1 indicates that exactly the same relative performance of one student would be expected on a parallel test of the same domain of knowledge. The KR20 is impacted by difficulty scores and length of the examination.

Mode is the most frequently appearing score (this is identified in the Raw Score column).

Percent is the percentages of students have each score.

Percentile Rank is the percent of students who scored below the mid-point of a given score.

Point Biserial Correlation shows the correlation between the item and the total score on the test, and is used as an index of item discrimination. A positive correlation shows that those correctly answering the item obtained higher average scores than those who incorrectly answered the item. A negative correlation indicates that those who got the item right had a lower average score than those who did not answer the item correctly. A near zero value suggests there is little relationship between total test scores and the item.

Raw Score is the number of items answered correctly.

Response Frequency show the number (FRQ) and percent (%) of students who chose each of the possible answers to the item. The correct response for a given item is indicated in bold.

Standard Score is computed by subtracting the population mean of the individual raw score and dividing the remainder by the standard deviation. The resulting scores have a mean of 50 and a standard deviation of 10. This is also referred to as a z-score.

For more information about using your test results please contact our partners in the Center for Teaching and Learning Services. You can find out more information about what they can do for you by visiting their website: <http://www1.umn.edu/ohr/teachlearn>

Appendix B

Using Item Analysis Results

REGARDING THE PRESENT TEST.

If examination of the item analysis results indicate one or more seriously flawed items, you may want to modify the test scores, either by re-scoring the entire group with a new key or by adjusting the scores of students affected by the faulty item(s).

REGARDING FUTURE TESTS.

The primary application of item analyses is to improve future tests by identifying items that are not performing as expected, so that they can be improved.

- An extremely easy item may identify a topic that all students have learned; alternatively, the item may have no plausible distracters.
- Difficult or negatively discriminating items may be confusing or ambiguous, or may have more than one reasonably correct answer.
- Seldom chosen incorrect answers should be examined to see if they contain irrelevant clues. If no more than 5 percent of students, over time, select a given response, that response is contributing little to the item.
- Incorrect answers chosen more frequently by high scoring students than by low-scoring students should be examined to determine why they are discriminating negatively.
- Plotting the items on a chart with the difficulty level as one axis and the validity index as the other may be helpful in differentiating items that contribute to the test's objectives from those that may require modification.

Item data are influenced by chance errors, the nature of the group tested, the number of students tested and the instruction the class has received. The other items in the test also are important if most of the items in the test relate to a certain content area or a small number of items related to different content are likely to have lower discrimination indices. Whether or not an item measures an important instructional objective is a more important consideration than the magnitude of the difficulty and validity indices. One should not be too hasty in discarding items with poor statistics from a single administration. If an item discriminates positively, is clear and unambiguous, is free from technical defects and measures an important instructional objective, it may be retained for another try in the future. Item statistics should probably be used more for item improvement than for discarding items.

Remember that the item analysis applications described above apply to tests whose objective is to provide maximum discrimination among all students taking the test. Different test characteristics are required if the objective is to determine whether all students have achieved mastery of certain material or to provide the greatest reliability of measurement at a specific cutting point.