

# West Virginia Education Standards Test

Technical Report  
2004 Supplement

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## Evidence for Validity

### *Construct, Purpose, and Interpretation-of-scores*

The purpose of the WESTEST scores is to demonstrate student ability in mathematics, reading/language arts, science, and social studies in West Virginia. It is intended by the developers of WESTEST that WESTEST scores be interpreted to mean that students who score more questions correct on WESTEST subject area tests have acquired more of the knowledge and skills taught in West Virginia classrooms in those subjects.

### *Reliability/Internal Test*

The degree of reliability that is required by an interpretation of a test score must be carefully considered. When the interpretation is highly leveraged by consequences to individuals or schools, it is better to narrow the scope of the construct and limit the breadth of the interpretation of a score to an area of performance that can be standardized and managed. For WESTEST this implies a focus on the mastery score used to classify students' and schools' performance on the Achievement Levels for each subject area.

The *Standards* indicate that...

...reliability evidence may be reported in terms of variances or standard deviations of measurement errors, in terms of one or more coefficients, or in terms of IRT-based test information functions. (p. 27)

The WESTEST internal consistency reliability coefficients reported indicate that tests with constructed-response tasks can be quite reliable. These coefficients were computed on all the students tested in each year the WESTEST has been operational. They are computed on the single form administered to all students in West Virginia in a given year. Generally, the number of students who took the WESTEST 2004 operational form ranged from around 20,000-22,000 from each grade/content and were used for most of the subsequent analyses.

### Internal Consistency Reliability Coefficients for WESTEST Operational Test 2004

Math (N)	Number of Items	Alpha	Stratified Alpha	Feldt-Raju
Grade 3 (20945)	52	.90	.91	.91
Grade 4 (21066)	52	.89	.90	.90
Grade 5 (21344)	52	.90	.91	.91
Grade 6 (22110)	52	.91	.92	.92
Grade 7 (22839)	52	.90	.90	.91
Grade 8 (22139)	52	.92	.92	.92
Grade 10 (19286)	49	.91	.92	.92
Reading/ Language Arts (N)	Number of Items	Alpha	Stratified Alpha	Feldt-Raju
Grade 3 (20940)	70	.94	.95	.95
Grade 4 (21056)	75	.94	.95	.95
Grade 5 (21350)	76	.94	.94	.94
Grade 6 (22134)	75	.94	.95	.95
Grade 7 (22837)	75	.94	.95	.95
Grade 8 (22136)	75	.94	.94	.94
Grade 10 (19274)	80	.95	.95	.95
Science (N)	Number of Items	Alpha	Stratified Alpha	Feldt-Raju
Grade 3 (20488)	50	0.85	0.85	0.85
Grade 4 (20628)	50	0.86	0.86	0.86
Grade 5 (20860)	50	0.85	0.85	0.85
Grade 6 (21731)	50	0.86	0.87	0.87
Grade 7 (22426)	50	0.88	0.88	0.88
Grade 8 (21723)	52	0.89	0.89	0.89
Grade 10 (18956)	50	0.87	0.89	0.89
Social Studies (N)	Number of Items	Alpha	Stratified Alpha	Feldt-Raju
Grade 3 (20502)	50	.89	.89	.89
Grade 4 (20650)	50	.88	.89	.89
Grade 5 (20871)	50	.87	.88	.88
Grade 6 (21746)	50	.90	.90	.90
Grade 7 (22440)	50	.88	.89	.89
Grade 8 (21744)	50	.90	.90	.90

The various reliability coefficients differ slightly in their assumptions. The preferred coefficient for these tests is Stratified Alpha. This coefficient is most appropriate for a mixture of binary and polytomous item types as found in WESTEST tests.

Whereas reliability coefficients refer to a test characteristic, accuracy of measurement is a concept usually applied to individual scores. It indicates the standard deviation of observed scores to expect if an examinee were re-tested under unchanged conditions. Conditional standard deviations of observed scores can be found for each score level. The estimate of measurement error increases as the number of observations decrease. Generally there are few students with extreme scores and these score levels are not measured accurately. The estimate of measurement error also increases when there are few observations taken at the level of a student's ability. If all the items are very difficult, or very easy for the examinees,

the error of measurement will be larger than when the items' difficulties are distributed across the levels of the students' ability being tested.

### ***Standard Error of Measurement***

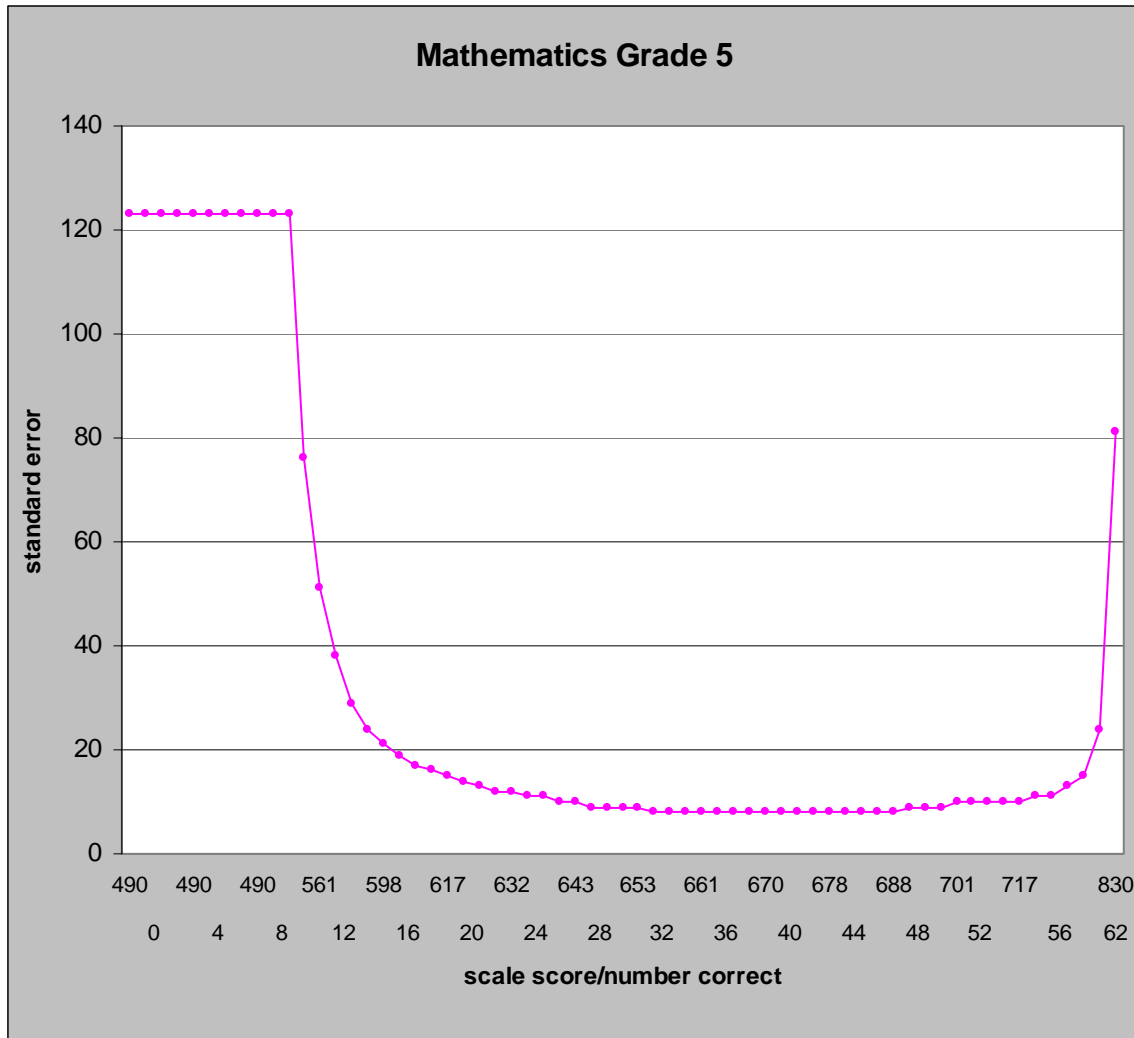
In addition to the classic internal consistency coefficients that describe the test characteristics, the Standard Error of Measurement (SEM) based on Item Response Theory (IRT) is also provided as reliability evidence of WESTEST. The IRT SEM provides the most complete and definitive description of reliability in scale score units. These standard errors were estimated as a function of the scale scores using IRT. Accuracy of measurement is especially important when applied to individual scores. The IRT-based SEM indicates the expected standard deviation of observed scores if an examinee were tested repeatedly under unchanged conditions. Accompanying each graph of the SEM curves for the operational tests are values of the average SEM for the scale scores ranging from the Partial Mastery to the Above Mastery levels. This is the typical SEM most students scores would have. The average SEM for the scale score range for Novice and Distinguished levels is also provided.





**IRT Standard Error Curves for WESTEST 2004 Operational Tests**

**Mathematics**



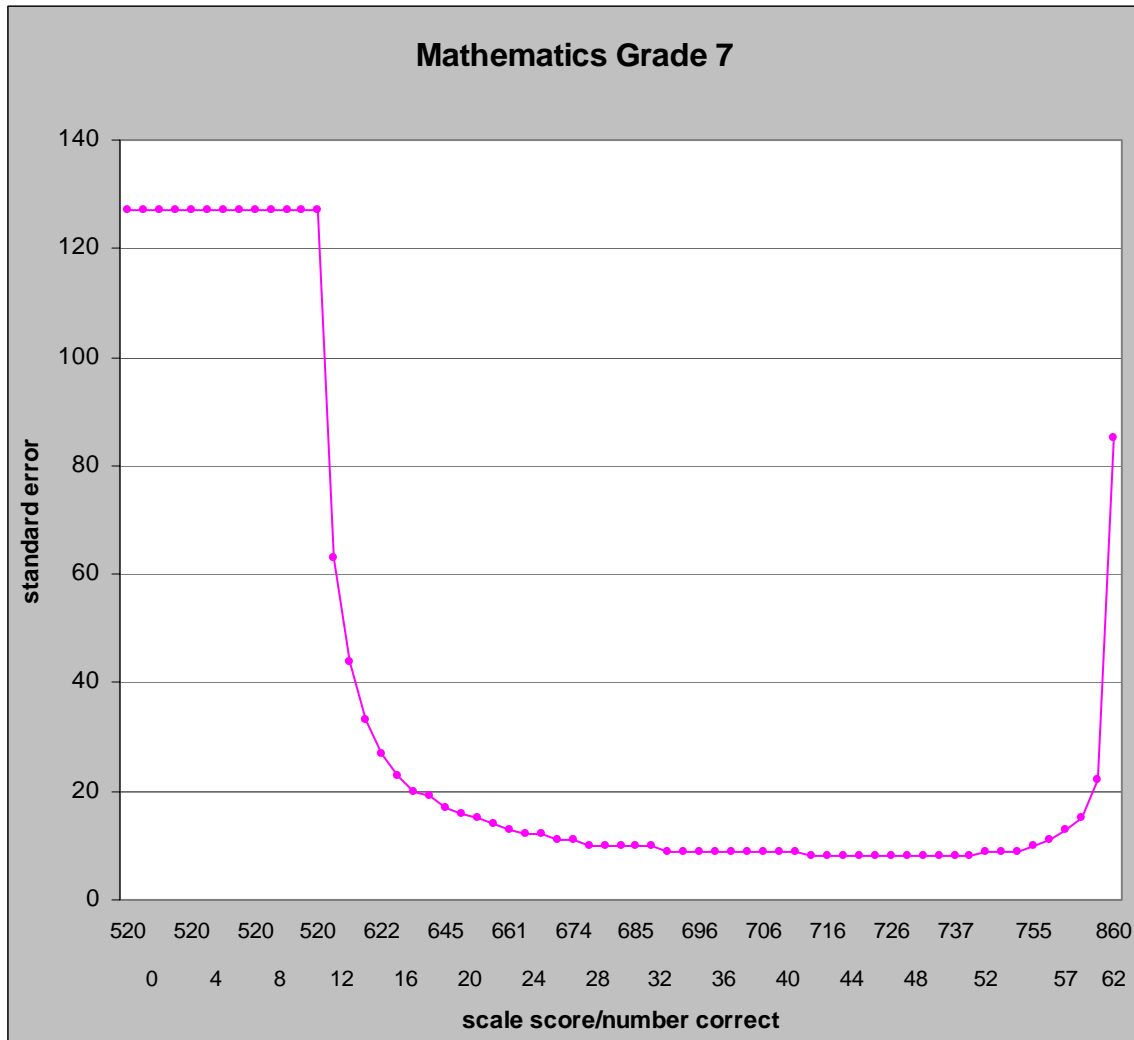
Average SEM Novice	Average SEM Partial to Above Mastery	Average SEM Distinguished
44	10	22

Lowest Obtainable Scale Score (LOSS) is 490. Highest Obtainable Scale Score (HOSS) is 830.



*IRT Standard Error Curves for WESTEST 2004 Operational Tests*

*Mathematics*



Average SEM Novice	Average SEM Partial to Above Mastery	Average SEM Distinguished
53	11	20

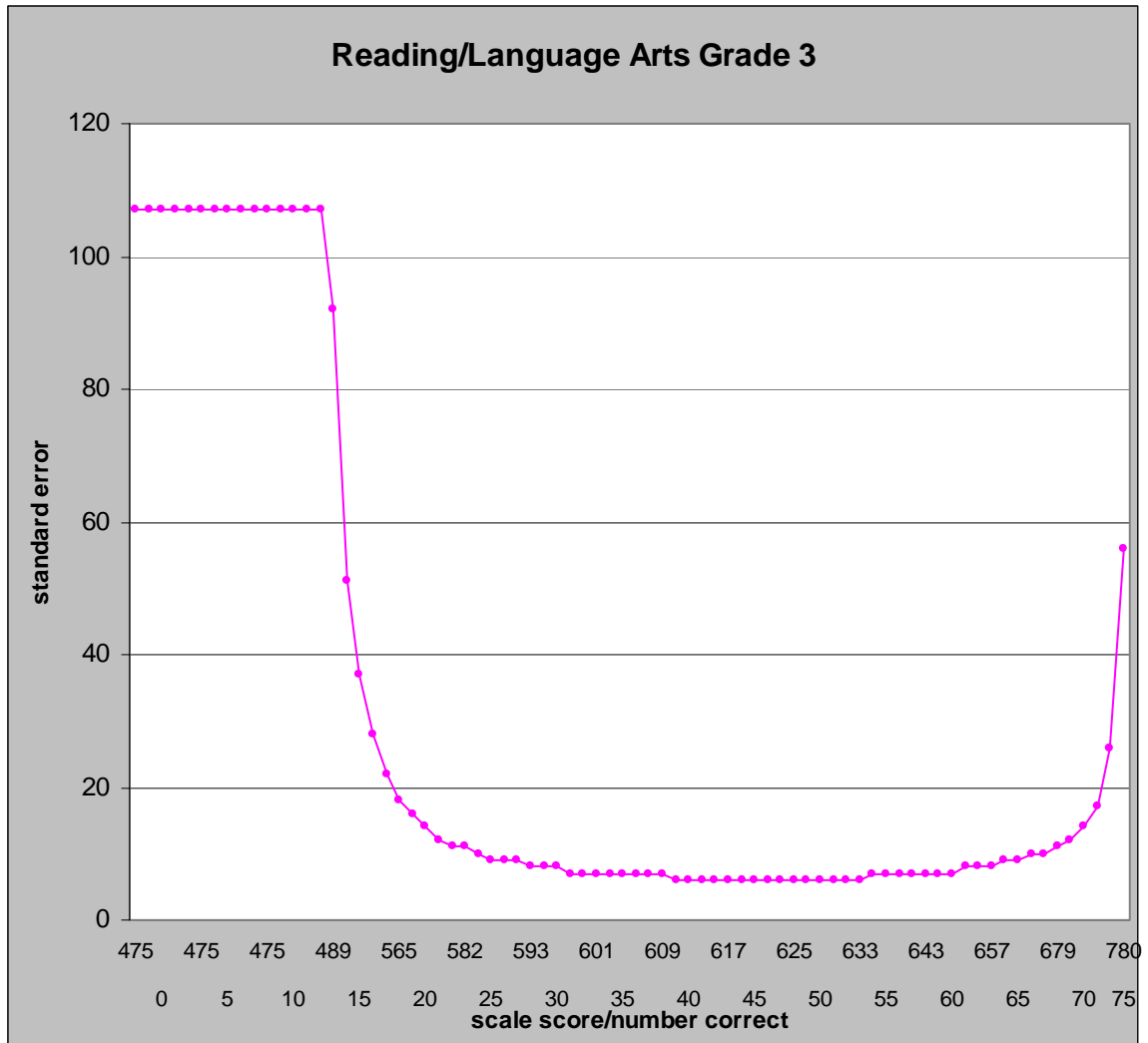
Lowest Obtainable Scale Score (LOSS) is 520. Highest Obtainable Scale Score (HOSS) is 860.





**IRT Standard Error Curves for WESTEST 2004 Operational Tests**

**Reading/Language Arts**



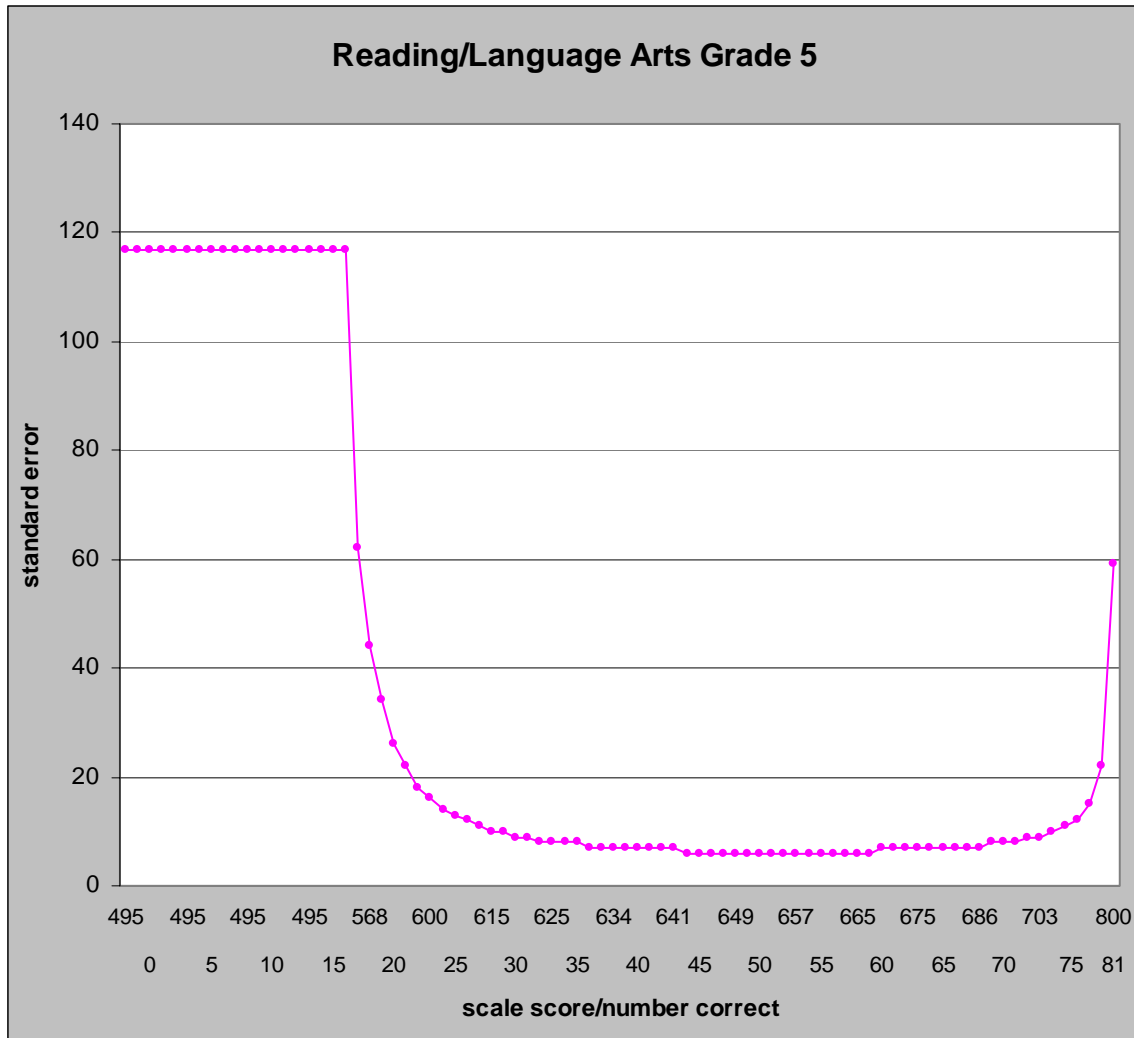
Average SEM Novice	Average SEM Partial to Above Mastery	Average SEM Distinguished
51	8	25

Lowest Obtainable Scale Score (LOSS) is 475. Highest Obtainable Scale Score (HOSS) is 780.



***IRT Standard Error Curves for WESTEST 2004 Operational Tests***

***Reading/Language Arts***



Average SEM Novice	Average SEM Partial to Above Mastery	Average SEM Distinguished
42	8	20

Lowest Obtainable Scale Score (LOSS) is 495. Highest Obtainable Scale Score (HOSS) is 800.

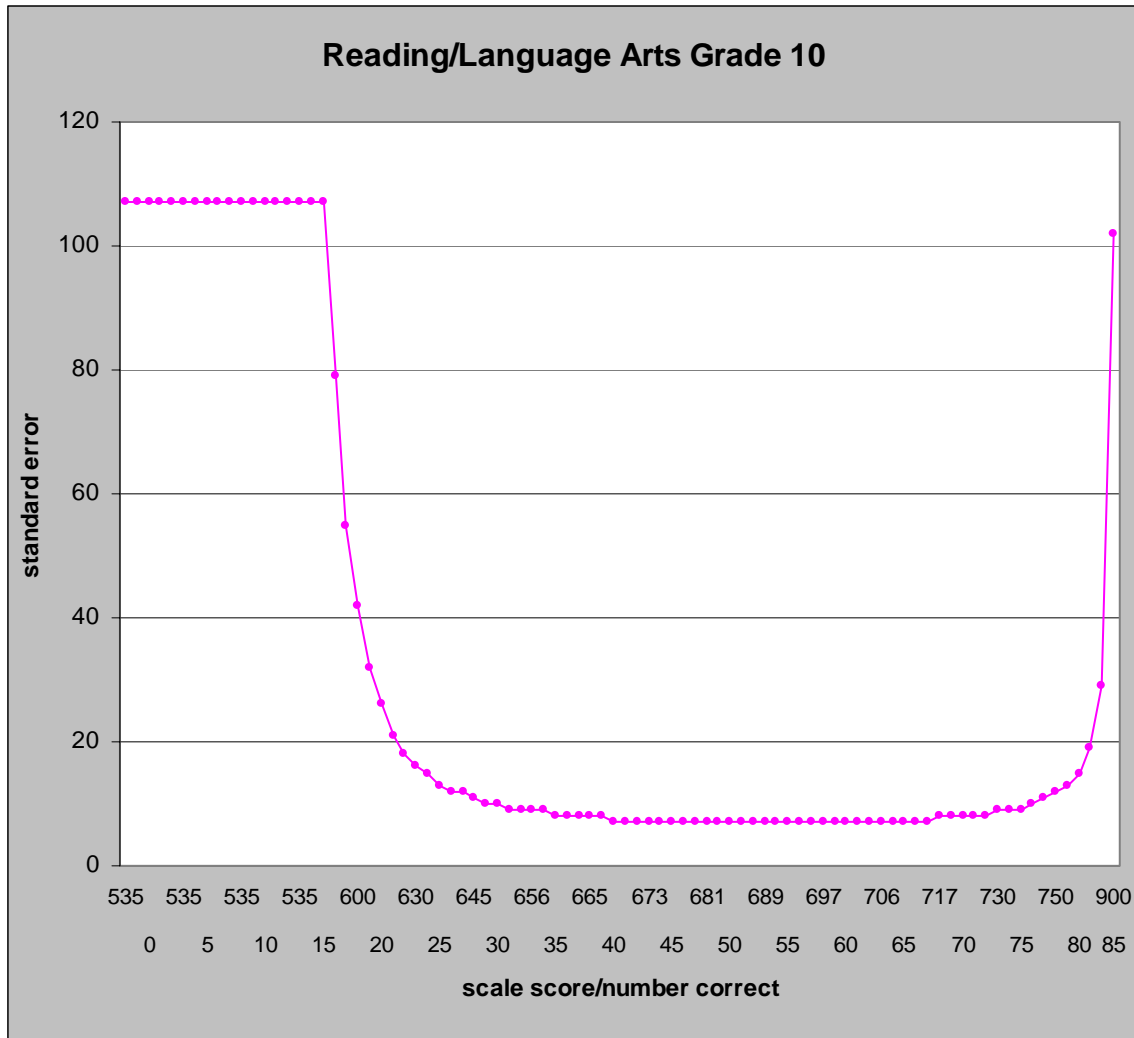






**IRT Standard Error Curves for WESTEST 2004 Operational Tests**

**Reading/Language Arts**

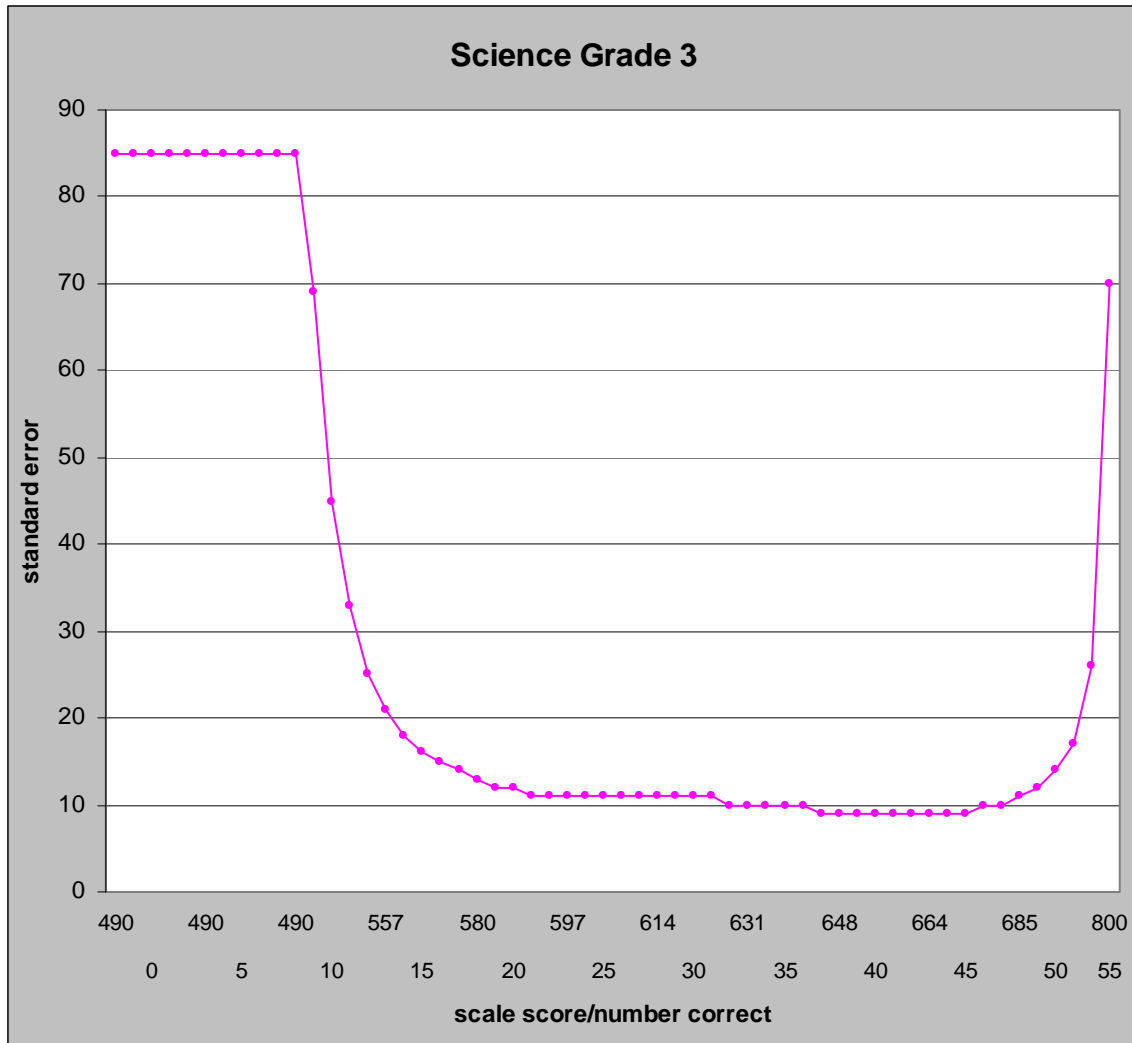


Average SEM Novice	Average SEM Partial to Above Mastery	Average SEM Distinguished
48	8	24

Lowest Obtainable Scale Score (LOSS) is 535. Highest Obtainable Scale Score (HOSS) is 900.

***IRT Standard Error Curves for WESTEST 2004 Operational Tests***

**Science**



Average SEM Novice	Average SEM Partial to Above Mastery	Average SEM Distinguished
36	11	19

Lowest Obtainable Scale Score (LOSS) is 490. Highest Obtainable Scale Score (HOSS) is 800.









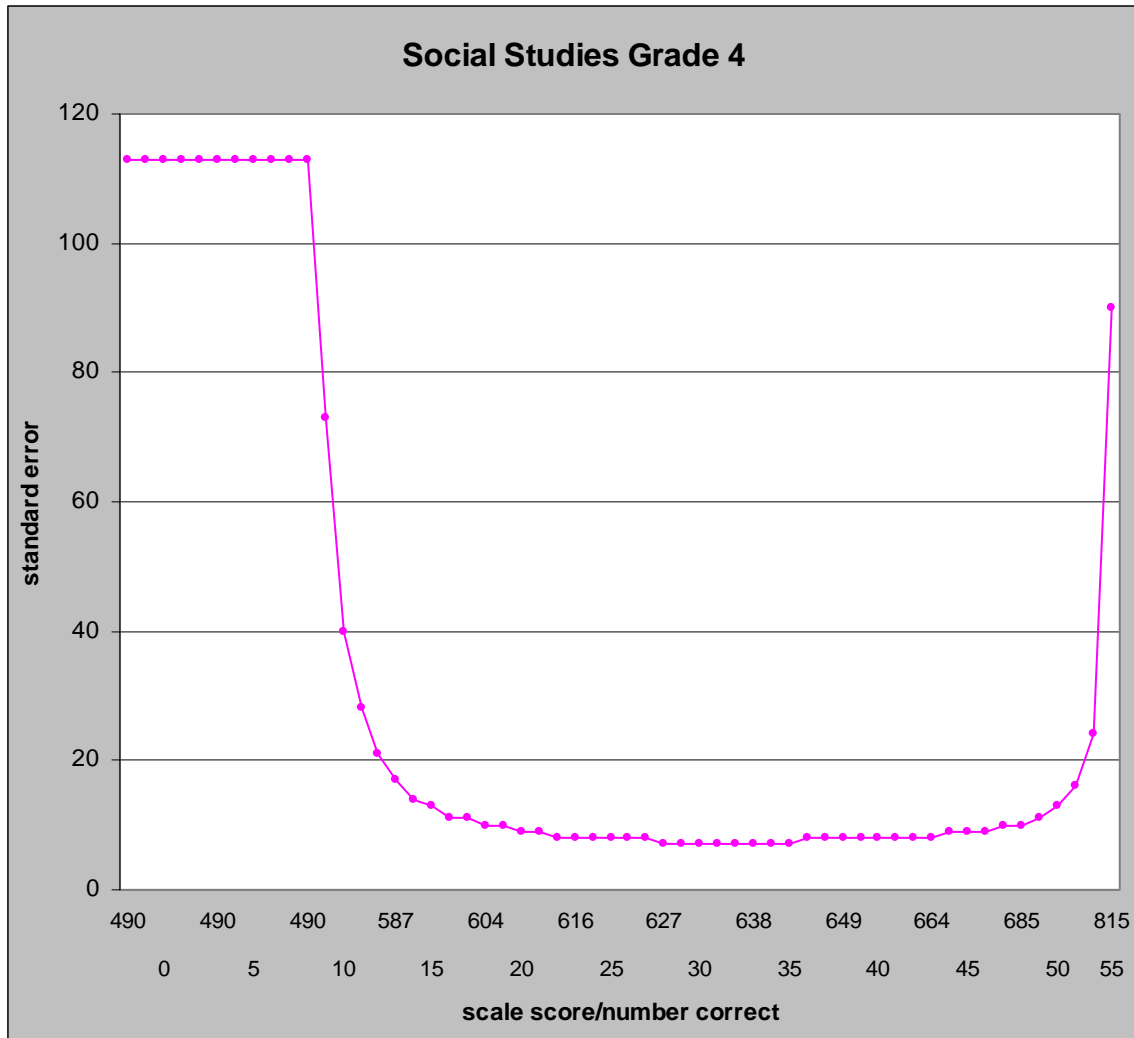






**IRT Standard Error Curves for WESTEST 2004 Operational Tests**

**Social Studies**



Average SEM Novice	Average SEM Partial to Above Mastery	Average SEM Distinguished
55	9	31

Lowest Obtainable Scale Score (LOSS) is 490. Highest Obtainable Scale Score (HOSS) is 815.









### The WESTEST Achievement Levels: Regional Average SEM on the scale

The Standard Setting Workshops resulted in the five Performance Levels comprised of regions on the WESTEST scale. These regions comprise a range of scale scores for each content/grade. The average standard error of measurement (SEM) for each of the five performance levels is given in the table below. Although the average SEM will vary somewhat from form to form the values given for WESTEST 2004 forms are fairly typical as can also be determined by inspecting the graphs of IRT standard error curves presented earlier in the 2003 Field Test Technical Report. Whenever the Standard Error of Measurement is needed for an individual's scale score the precise value should be taken from tables of Standard Errors rather than using these average values.

<b>Mathematics</b>	<b>Average SEM Novice</b>	<b>Average SEM Partial Mastery</b>	<b>Average SEM Mastery</b>	<b>Average SEM Above Mastery</b>	<b>Average SEM Distinguished</b>
Grade 3	36	11	9	11	35
Grade 4	35	11	9	9	25
Grade 5	44	12	8	9	22
Grade 6	43	12	9	10	24
Grade 7	53	15	10	8	20
Grade 8	55	15	11	9	23
Grade 10	52	13	9	10	22
<b>Reading/ Language Arts</b>					
Grade 3	51	9	6	9	25
Grade 4	29	8	7	9	23
Grade 5	42	9	6	8	20
Grade 6	54	10	6	8	17
Grade 7	68	12	7	8	19
Grade 8	69	12	7	8	15
Grade 10	48	10	7	8	24
<b>Science</b>					
Grade 3	36	12	11	9	19
Grade 4	44	17	12	10	18
Grade 5	72	23	13	9	17
Grade 6	74	22	12	9	15
Grade 7	74	19	10	10	19
Grade 8	70	21	10	9	19
Grade 10	91	29	11	8	15
<b>Social Studies</b>					
Grade 3	58	11	8	10	27
Grade 4	55	10	8	9	31
Grade 5	51	10	8	8	27
Grade 6	75	15	9	10	26
Grade 7	42	12	8	8	26
Grade 8	59	11	7	8	33

The reliabilities presented in the above sections, internal consistency and the standard error of measurement curves, reflect repeatability and accuracy of individual scores. As the *Standards* point out...

Average scores of groups, when interpreted as measures of program effectiveness, involve error factors that are not identical to those that operate at the individual level. For large groups, the positive and negative measurement errors of individuals may average out almost completely in group means. However, the sampling errors associated with the random sampling of persons who are tested for purposes of program evaluation are still present. [They] can be a significant source of error in inferences about programs even if there is a high degree of precision in individual test scores. Standard errors appropriate to individual scores are not appropriate measures of the precision of group averages. A more appropriate statistic is the standard error of the observed score means. (p. 30)

According to the U.S. Department of Education, in making AYP determination, states have the flexibility to apply a statistical test, such as a confidence interval, to their AYP calculation. The standard error of the school mean for percent mastery and above rather than the SEM or the Bookmark standard error should be used in this calculation.

### **Classification Consistency**

WESTEST tests are used to place students into one of the five performance levels: Novice, Partial Mastery, Mastery, Above Mastery and Distinguished. Consistency of classification is affected by the closeness of the individual's score to one of the four cut points between these levels. For AYP purposes, the most important classification for the performance levels is mastery-below mastery classification. The mastery-below mastery classification consistency for WESTEST is analyzed using two reliability coefficients recommended for scores that reflect classification of examinees based on underlying continuous trait estimates (Subkoviak, 1988).

### **Reliability Indices for Cut Scores**

Two reliability coefficients recommended for scores that reflect classification of students based on underlying continuous trait estimates are the (a) agreement coefficient and (b) kappa coefficient.

These two coefficients measure the consistency of classifications across two test administrations. The classifications are dichotomous—above and below a single cut score. The two coefficients require somewhat different interpretations, and each is different from traditional reliability coefficients. The agreement coefficient  $P_o$  is simply the proportion of examinees consistently classified on two administrations. Kappa  $K$  reflects the proportion of consistent classifications *beyond* that expected by chance. The upper and lower bounds of kappa are 1.00 and 0, which occur when outcomes on the two test administrations are in perfect agreement or are totally independent, respectively.

Subkoviak (1988) provides tables from which approximate values of the agreement and kappa coefficients can be obtained based on an estimation from a single administration of the test. In order to use Subkoviak's tables, the cut score is expressed as a standard score ( $z$ )

and the reliability of the test *Alpha* is taken as the internal consistency estimate provided in this report. The WESTEST cut scores are based on Standard Setting mastery cut scores for the WESTEST performance levels.

Estimation of agreement and kappa coefficients assumes that the joint distribution of scores on two administrations of the tests can be approximated by (bivariate) normal distribution. The assumption of normality seemed reasonable since the WESTEST scores from both the Field tests and the Operational tests were approximately normally distributed. Peng and Subkoviak (1980) simulated nonnormal data and found the procedure robust.

**Approximate Values of the Agreement and Kappa Coefficients for Operational Forms**

Mathematics	Mastery Cut Score	Z	P <sub>0</sub>	K	Alpha
Grade 3	601	0.53	0.87	0.70	0.91
Grade 4	630	0.43	0.87	0.71	0.90
Grade 5	647	0.46	0.87	0.70	0.91
Grade 6	659	0.25	0.86	0.71	0.92
Grade 7	671	0.28	0.86	0.71	0.90
Grade 8	677	0.40	0.87	0.71	0.92
Grade10	710	0.24	0.86	0.71	0.92
Reading/Language Arts	Mastery Cut Score	Z	P <sub>0</sub>	K	Alpha
Grade 3	611	0.48	0.87	0.70	0.95
Grade 4	629	0.45	0.87	0.71	0.95
Grade 5	640	0.46	0.87	0.70	0.94
Grade 6	644	0.58	0.88	0.70	0.95
Grade 7	651	0.56	0.88	0.70	0.95
Grade 8	658	0.67	0.89	0.70	0.94
Grade10	675	0.48	0.87	0.70	0.95
Science	Mastery Cut Score	Z	P <sub>0</sub>	K	Alpha
Grade 3	606	0.95	0.89	0.62	0.85
Grade 4	616	0.81	0.87	0.61	0.86
Grade 5	633	0.80	0.88	0.63	0.85
Grade 6	648	0.77	0.90	0.69	0.87
Grade 7	663	0.65	0.88	0.70	0.88
Grade 8	669	0.80	0.90	0.69	0.89
Grade10	681	0.82	0.90	0.69	0.89
Social Studies	Mastery Cut Score	Z	P <sub>0</sub>	K	Alpha
Grade 3	612	0.65	0.88	0.70	0.89
Grade 4	633	0.50	0.87	0.70	0.89
Grade 5	642	0.54	0.87	0.70	0.88
Grade 6	651	0.26	0.86	0.71	0.90
Grade 7	671	0.17	0.86	0.71	0.89
Grade 8	680	0.27	0.86	0.71	0.90

Subkoviak (1988) notes that if the test is being used in high-stakes situations it is realistic to expect that a test of sufficient length is used to assure the reliability is near 0.90. Such a test can be expected to have an agreement coefficient of 0.86 or greater, depending on the

proximity of the cut score to the mean. The kappa coefficients should be expected to be in the 0.60-0.70 range. The classification reliability coefficients shown in the tables indicate that the WESTEST 2004 Operational Tests provide the decision consistency in acceptable ranges for mastery-below mastery classifications.

### **Test Content Development**

A key piece of validity evidence for a test is provided by the procedures used to develop the test's content to the blueprint and specifications. By setting forth a description of the events that took place in a test's development we establish credibility for the validity claims made for it.

### **Test Content /Design**

Evidence of validity based on test content includes information about the test and item specifications. Test development involves creating a design framework from the statement of the construct to be measured. This design evolves from the tension between the constraints for the Assessment Program and the benefits sought from the examination of students. Many of the benefits sought are not scientific in nature, nor are many of the constraints—rather, they are policy considerations. The design emerges from specifications which are originally set forth and modified during the process just described above. Design elements include such things as number and types of items/tasks for each of the scores reported. Item maps for WESTEST show the distribution of items/tasks by Content Standards and Objectives that resulted for the forms used in year 2004. Tasks are measured by constructed-response (CR) items in WESTEST tests. The item maps also show the design of test administration.

By providing booklet item numbers test reviewers and Technical Report readers are invited to inspect released (public) items/tasks. These item maps provide an idea of the scope of each WESTEST and also the degree of structural equivalence of the forms.

The other key aspect of WESTEST tests, as far as structural framework of the tests is concerned, has to do with the number of points awarded for each Content Standard and Objective. This design element represented a compromise between many constraints including the target weights for each Content Standard recommended by West Virginia teachers, availability of items from field testing, and results of many reviews by content specialists.

Test content evidence of validity is provided for WESTEST with the specification of each of the Content Standards and Objectives that are influential in acquiring the skills tested in the items/tasks used in each of the WESTEST tests. If teachers teach by the Content Standards and Objectives as intended by the developers of the Curriculum Frameworks, then student performance should improve on those items that were identified as implicitly tapping these habits of mind. The following charts provide the distribution of items and points by Content Standards and Objectives deemed addressable using WESTEST paper-and-pencil items.

## WESTEST 2004 Operational Test Form Item Maps

### Mathematics

<b>Grade 3</b>				
	<b>Content Standard</b>	<b>TN Item #</b>	<b>MC Item #</b>	<b>CR Item #</b>
1	Number & Operations	1,2,3,4,6,7,12,14, 17,20,22,23,31,32	34,35,47	51,52
2	Algebra	15,19,28,29,30	38	42
3	Geometry	5,11,13,16	33,36,39,45,46,48	
4	Measurement	10,24,25,26	37,40,41,43,44	50
5	Data Analysis	8,9,18,21,27		49
<b>Grade 4</b>				
	<b>Content Standard</b>	<b>TN Item #</b>	<b>MC Item #</b>	<b>CR Item #</b>
1	Number & Operations	1,2,3,4,5,7,15, 23,28,32	35,36,37,40,41,43,44,47,48	42
2	Algebra	6,9,10,16	34,38	52
3	Geometry	17,20,21,22,24,26	39,45,45	49
4	Measurement	8,11,18,19,25,29,31		51
5	Data Analysis	12,13,14,27,30	33	50
<b>Grade 5</b>				
	<b>Content Standard</b>	<b>TN Item #</b>	<b>MC Item #</b>	<b>CR Item #</b>
1	Number & Operations	1,2,4,5,13,14,18, 20,21,24,27	33,34,39,43,45	52
2	Algebra	11,17,26,30	37,38,44	49,50
3	Geometry	15,22,29,32	35,46,47,48	42
4	Measurement	3,10,12,19,28,31	36,40,41	
5	Data Analysis	6,7,8,9,16,23,25		51
<b>Grade 6</b>				
	<b>Content Standard</b>	<b>TN Item #</b>	<b>MC Item #</b>	<b>CR Item #</b>
1	Number & Operations	1,2,3,4,6,7,8,9, 13,14,15,25		51
2	Algebra	10,18,26,31	34,39,40,43,44,45,47,48	42
3	Geometry	16,20,21,28,30	33,35,41,46	50
4	Measurement	11,17,19,22,27,29	38	52
5	Data Analysis	5,12,23,24,32	36,37	49

**WESTEST 2004 Operational Test Form Item Maps**

**Mathematics**

<b>Grade 7</b>					
<b>Content Standard</b>		<b>TN Item #</b>	<b>MC Item #</b>	<b>CR Item #</b>	
1	Number & Operations	1,2,3,4,5,6,23,25	48	50	
2	Algebra	8,12,17,20,21, 22,24,28	34,38,39,40,41,43,46	49	
3	Geometry	9,15,27,31,32	33,47	42	
4	Measurement	16,18,19,29,30	36,45	42	
5	Data Analysis	7,10,11,13,14,26	35,37,45	51	
<b>Grade 8</b>					
<b>Content Standard</b>		<b>TN Item #</b>	<b>MC Item #</b>	<b>CR Item #</b>	
1	Number & Operations	1,2,4,5,6,7,10,11,13			
2	Algebra	3,8,19,20,25,32	34,38,39,41,44,47,48	49,52	
3	Geometry	9,17,21,24,30	33,37,40,46	51	
4	Measurement	22,23,28,31	36,45	42	
5	Data Analysis	12,14,15,16, 18,26,27,29	35,43	50	
<b>Grade 10</b>					
<b>Content Standard</b>		<b>TN Item #</b>	<b>MC Item #</b>	<b>CR Item #</b>	
1	Number & Operations	1,2,5,6,11,12,13	27,44		
2	Algebra	3,4,15,17,20,22,25	26,29,31,33,38,41,43,45	46,47	
3	Geometry	14,23	30,32,34,37,40,42	48	
4	Measurement	16,18,19,21	28,35	36	
5	Data Analysis	7,8,9,10,24	39	49	

**WESTEST 2004 Operational Test Form Item Maps**

**Reading/Language Arts**

<b>Grade 3</b>				
<b>Content Standard</b>	<b>TN Item #</b>	<b>MC Item #</b>	<b>CR Item #</b>	
1	Reading	1,2,3,4,5,6,9,10,11, 12,13,14,15,16,17, 18,19,23,24,25,26, 27,28,29,30,31,32, 33,34,38,39,40,41	51,52,53,54,56,57, 58,59,61,62,63	55,60,64,65
2	Writing	7,8,20,21,22,35,36, 37,42,43,44,45,46, 47,48,49,50	66,67,68,69	70
<b>Grade 4</b>				
<b>Content Standard</b>	<b>TN Item #</b>	<b>MC Item #</b>	<b>CR Item #</b>	
1	Reading	1,2,3,4,5,8,13,14,15,16, 17,21,22,23,24, 25,26,28,29,30,31, 32,33,36,37,40,41, 42,43,50,51,52,53, 54,55	56,57,58,60,61,62, 63,65,66,67,68	59,64,69,70
2	Writing	6,7,9,10,11,12,18,19, 20,27,34,35,38,39, 44,45,45,46,47,48,49	71,72,73,74	75
<b>Grade 5</b>				
<b>Content Standard</b>	<b>TN Item #</b>	<b>MC Item #</b>	<b>CR Item #</b>	
1	Reading	1,2,3,4,5,6,7,8,9,10, 11,19,20,21,22,23, 24,25,26,27,34,35, 36,37,50,51,53, 54,55,56	57,58,61,62,63,64, 66,67,68,69,70	59,60,65,71
2	Writing	12,13,14,15,16,17,18, 28,29,30,31,32,33,38, 39,40,41,42,43,44,45, 46,47,48,49,52	72,73,74,75	76
<b>Grade 6</b>				
<b>Content Standard</b>	<b>TN Item #</b>	<b>MC Item #</b>	<b>CR Item #</b>	
1	Reading	1,2,3,4,5,11,12,13, 14,19,20,21,22,23, 24,25,28,31,32,33,34, 35,36,37,43,44,45, 46, 47,48,49,50	56,57,58,59,61,62, 63,64,66,67,68	60,65,69,70
2	Writing	6,7,8,9,10,15,16,17, 18,26,27,29,30, 38,39,40,41,42, 51,52,53, 54,55	72,73,74	75

**WESTEST 2004 Operational Test Form Item Maps**

**Reading/Language Arts**

<b>Grade 7</b>				
<b>Content Standard</b>	<b>TN Item #</b>	<b>MC Item #</b>	<b>CR Item #</b>	
1	Reading	1,2,3,4,7,8,9,10,11, 14,15,16,17,18,19, 20,21,25,26,27,28, 29,30,31,32,33,34, 35,43,44,45,46,47	56,57,58,59,61,62, 63,64,66,67,68	60,65,69,70
2	Writing	5,6,12,13,22,23,24, 36,37,38,39,40,41, 42,48,49,50,51,52, 53,54,55	71,72,73,74	75
<b>Grade 8</b>				
<b>Content Standard</b>	<b>TN Item #</b>	<b>MC Item #</b>	<b>CR Item #</b>	
1	Reading	1,2,3,4,10,11,12,13, 14,15,16,21,22,23, 24,25,26,27,28,33, 34,35,36,37,38,39, 40,41,42,43,46,47, 48,49	56,57,60,61,62,63, 65,66,67,68,69	58,59,64,70
2	Writing	5,6,7,8,9,17,18,19, 20,29,30,31,32,44, 45,50,51,52,53,54,55	71,72,73,74	75
<b>Grade 10</b>				
<b>Content Standard</b>	<b>TN Item #</b>	<b>MC Item #</b>	<b>CR Item #</b>	
1	Reading	1,2,3,4,5,6,14,15,16, 17,18,21,22,23,24, 25,26,27,28,29,30, 31,45,46,47,48,49, 50,52,53,54,55, 56,57	61,62,63,69,70,71,73,74,75,76	64,65,72,77
2	Writing	7,8,9,10,11,12,13, 19,20,32,33,34,35, 36,37,38,39,40,41, 42,43,44,51,58,59,60	66,67,68,78,79	80

**WESTEST 2004 Operational Test Form Item Maps**

**Science**

<b>Grade 3</b>				
<b>Content Standard</b>		<b>TN Item #</b>	<b>MC Item #</b>	<b>CR Item #</b>
1	History of Science		30,32,37,42	
2	Scientific Inquiry	4,7,13,14,18, 19,20,28	31,41,48,50	39,49
3	Unifying Themes	8,15,16,24	46	
4	Subject Matter	1,2,5,6,9,11,21, 22,23,25,27,29	34,35,36,43,44,45,47	38
5	Design	3,10		40
6	Personal	12,17,26		33
<b>Grade 4</b>				
<b>Content Standard</b>		<b>TN Item #</b>	<b>MC Item #</b>	<b>CR Item #</b>
1	History of Science	7,18,26	44	
2	Scientific Inquiry	13,14,15,28,30	40,41,43,45,46,48,49	34,50
3	Unifying Themes	1,22,23	42	
4	Subject Matter	3,4,5,8,10,11,12,16, 20,21,24,25,29	31,33	35,36,39
5	Design	19	32,37,38	
6	Personal	2,6,9,17,27	47	
<b>Grade 5</b>				
<b>Content Standard</b>		<b>TN Item #</b>	<b>MC Item #</b>	<b>CR Item #</b>
1	History of Science	16	47	36
2	Scientific Inquiry	3,8,14,21,22,23,30	32,37,41,46,49	40,48
3	Unifying Themes		34,35	44
4	Subject Matter	2,4,6,7,9,10,12,13, 17,18,20,24,25, 27,28,29	38,42,43,50	33
5	Design	11,15	31,39	
6	Personal	1,5,19,26	45	

**WESTEST 2004 Operational Test Form Item Maps**

**Science**

<b>Grade 6</b>				
<b>Content Standard</b>		<b>TN Item #</b>	<b>MC Item #</b>	<b>CR Item #</b>
1	History of Science	1,6,13	42	
2	Scientific Inquiry	4,9,11,16,19, 21,22,23,25	43,45,47,48,49	35
3	Unifying Themes	20		39,50
4	Subject Matter	2,3,5,7,8,10,12,14 17,18,24,26,29,30	31,33,34,41,44,46	37
5	Design	15	32,36,38	
6	Personal	27,28		40
<b>Grade 7</b>				
<b>Content Standard</b>		<b>TN Item #</b>	<b>MC Item #</b>	<b>CR Item #</b>
1	History of Science	2	29,30,43	
2	Scientific Inquiry	1,3,7,8,9, 13,16,18,21	42,44,46	48,50
3	Unifying Themes		36,41	39
4	Subject Matter	4,5,6,14,15,17, 19,20,23,24,25,26	31,32,33,34,35,37,40,47	38
5	Design	12	28,45	49
6	Personal	10,11,22,27		
<b>Grade 8</b>				
<b>Content Standard</b>		<b>TN Item #</b>	<b>MC Item #</b>	<b>CR Item #</b>
1	History of Science	3	44,45	42
2	Scientific Inquiry	4,8,10,11,17,23,25	33,38,39,40,43,47	41,52
3	Unifying Themes	20	28,31,37,49	
4	Subject Matter	1,2,5,6,7,9,12,13,14,16, 18,19,22,27	30,34,36,46,51	32
5	Design		29,50	35
6	Personal	15,21,24,26	48	
<b>Grade 10</b>				
<b>Content Standard</b>		<b>TN Item #</b>	<b>MC Item #</b>	<b>CR Item #</b>
1	History of Science	2	30,32,34	
2	Scientific Inquiry	1,3,4,19	28,42,45,47,48	39,40
3	Unifying Themes	23	43,46,49,50	
4	Subject Matter	5,6,7,8,9,13,14,16, 17,18,20,21,22,25	26,37,44	35,38,41
5	Design	12	27,29,31	
6	Personal	10,11,15,24	33,36	

**WESTEST 2004 Operational Test Form Item Maps**

**Social Studies**

<b>Grade 3</b>				
	<b>Content Standard</b>	<b>TN Item #</b>	<b>MC Item #</b>	<b>CR Item #</b>
1	Citizenship	23,35,36,38,41,48	8,10	19
2	Civics	24,37	16,17	20
3	Economics	29,30,39,40,46,47	1,2,9	18
4	Geography	21,22,27,32, 33,42,43,44	3,4,13,14	7
5	History	25,26,28,31, 34,45,49,50	5,6,11,12	15
<b>Grade 4</b>				
	<b>Content Standard</b>	<b>TN Item #</b>	<b>MC Item #</b>	<b>CR Item #</b>
1	Citizenship	28,30,31,32,34	6,11	20
2	Civics	33,47,48	3	18
3	Economics	25,26,27,41, 42,43,45,46	4,5,13	16
4	Geography	21,22,23,24,35,36,38	1,2,12,17	15
5	History	29,37,39,40,44,49,50	8,9,10,14,19	7
<b>Grade 5</b>				
	<b>Content Standard</b>	<b>TN Item #</b>	<b>MC Item #</b>	<b>CR Item #</b>
1	Citizenship	30,37,39	5	15
2	Civics	25,26,27,28,31	8,12	19
3	Economics	23,40,41	6,13	14
4	Geography	21,34,35,36, 38,42,43,47	1,2,7,11	20
5	History	22,24,29,32,33, 44,45,46,48,49,50	3,4,9,16,17,18	10
<b>Grade 6</b>				
	<b>Content Standard</b>	<b>TN Item #</b>	<b>MC Item #</b>	<b>CR Item #</b>
1	Citizenship	26,27,29	5	19
2	Civics	30,50	2,12	20
3	Economics	25,37,38,39,40,41,46	3,4,16,17	18
4	Geography	21,22,23,31, 32,33,42,43,44	1,6,8,11	13
5	History	24,28,34,35, 36,45,47,48,49	7,9,14,15	10

**WESTEST 2004 Operational Test Form Item Maps**

**Social Studies**

<b>Grade 7</b>				
	<b>Content Standard</b>	<b>TN Item #</b>	<b>MC Item #</b>	<b>CR Item #</b>
1	Citizenship	25,26,27,39,41	6	19
2	Civics	47	4,7,12	18
3	Economics	35,36,37,38,43,44,48	3,8,15	13
4	Geography	21,22,23,24,40, 42,45,46,49,50	1,2,5,11,16	20
5	History	28,29,30,31,32,33,34	9,14,17	10
<b>Grade 8</b>				
	<b>Content Standard</b>	<b>TN Item #</b>	<b>MC Item #</b>	<b>CR Item #</b>
1	Citizenship	30,31,36,39	1,12	23
2	Civics	32,33,34,50	9,11,22	25
3	Economics	26,27,29,49	3,4,18,24	13
4	Geography	43	2,6,15,16,17	19
5	History	28,35,37,38,40,41, 42,44,45,46,47,48	5,7,8,14,20,21	10

## WESTEST 2004 Content Standard Item/Point Distributions

### Mathematics

<b>Grade 3</b>			
<b>Content Standard</b>	<b>TN Points</b>	<b>Other Points</b>	<b>% of Total</b>
1 Number and Operations	14	9	37%
2 Algebra	5	4	15%
3 Geometry	4	6	16%
4 Measurement	4	8	19%
5 Data Analysis	5	3	13%
Total	32	30	100%
<b>Grade 4</b>			
<b>Content Standard</b>	<b>TN Points</b>	<b>Other Points</b>	<b>% of Total</b>
1 Number and Operations	10	12	35%
2 Algebra	4	5	15%
3 Geometry	6	6	19%
4 Measurement	7	3	16%
5 Data Analysis	5	4	15%
Total	32	30	100%
<b>Grade 5</b>			
<b>Content Standard</b>	<b>TN Points</b>	<b>Other Points</b>	<b>% of Total</b>
1 Number and Operations	11	8	31%
2 Algebra	4	9	21%
3 Geometry	4	7	18%
4 Measurement	6	3	15%
5 Data Analysis	7	3	16%
Total	32	30	100%

**WESTEST 2004 Content Standard Item/Point Distributions**

**Mathematics**

<b>Grade 6</b>			
<b>Content Standard</b>	<b>TN Points</b>	<b>Other Points</b>	<b>% of Total</b>
1 Number and Operations	12	3	24%
2 Algebra	4	11	24%
3 Geometry	5	7	19%
4 Measurement	6	4	16%
5 Data Analysis	5	5	16%
Total	32	30	100%
<b>Grade 7</b>			
<b>Content Standard</b>	<b>TN Points</b>	<b>Other Points</b>	<b>% of Total</b>
1 Number and Operations	8	4	19%
2 Algebra	8	10	29%
3 Geometry	5	5	16%
4 Measurement	5	5	16%
5 Data Analysis	6	6	19%
Total	32	30	100%
<b>Grade 8</b>			
<b>Content Standard</b>	<b>TN Points</b>	<b>Other Points</b>	<b>% of Total</b>
1 Number and Operations	9	0	15%
2 Algebra	6	13	31%
3 Geometry	5	7	19%
4 Measurement	4	5	15%
5 Data Analysis	8	5	21%
Total	32	30	100%
<b>Grade 10</b>			
<b>Content Standard</b>	<b>TN Points</b>	<b>Other Points</b>	<b>% of Total</b>
1 Number and Operations	7	2	14%
2 Algebra	7	16	37%
3 Geometry	2	10	19%
4 Measurement	4	5	14%
5 Data Analysis	5	5	16%
Total	25	38	100%

**WESTEST 2004 Content Standard Item/Point Distributions**

**Reading/Language Arts**

<b>Grade 3</b>			
<b>Content Standard</b>	<b>TN Points</b>	<b>Other Points</b>	<b>% of Total</b>
1 Reading	33	19	69%
2 Writing	17	6	31%
Total	50	25	100%
<b>Grade 4</b>			
<b>Content Standard</b>	<b>TN Points</b>	<b>Other Points</b>	<b>% of Total</b>
1 Reading	35	19	68%
2 Writing	20	6	33%
Total	55	25	100%
<b>Grade 5</b>			
<b>Content Standard</b>	<b>TN Points</b>	<b>Other Points</b>	<b>% of Total</b>
1 Reading	30	19	60%
2 Writing	26	6	40%
Total	56	25	100%
<b>Grade 6</b>			
<b>Content Standard</b>	<b>TN Points</b>	<b>Other Points</b>	<b>% of Total</b>
1 Reading	32	19	64%
2 Writing	23	6	36%
Total	55	25	100%
<b>Grade 7</b>			
<b>Content Standard</b>	<b>TN Points</b>	<b>Other Points</b>	<b>% of Total</b>
1 Reading	33	19	65%
2 Writing	22	6	35%
Total	55	25	100%
<b>Grade 8</b>			
<b>Content Standard</b>	<b>TN Points</b>	<b>Other Points</b>	<b>% of Total</b>
1 Reading	34	19	66%
2 Writing	21	6	34%
Total	55	25	100%

**WESTEST 2004 Content Standard Item/Point Distributions**

**Reading/Language Arts**

<b>Grade 10</b>			
<b>Content Standard</b>	<b>TN Points</b>	<b>Other Points</b>	<b>% of Total</b>
1 Reading	34	18	61%
2 Writing	26	7	39%
Total	60	25	100%

**WESTEST 2004 Content Standard Item/Point Distributions**

**Science**

<b>Grade 3</b>			
<b>Content Standard</b>	<b>TN Points</b>	<b>Other Points</b>	<b>% of Total</b>
1 History and Nature of Science	0	4	7%
2 Science as Inquiry	8	8	29%
3 Unifying Themes	4	1	9%
4 Subject Matter/Concepts	12	9	38%
5 Scientific Design and Application	2	2	7%
6 Personal and Social Perspectives	3	2	9%
Total*	29	26	100%
<b>Grade 4</b>			
<b>Content Standard</b>	<b>TN Points</b>	<b>Other Points</b>	<b>% of Total</b>
1 History and Nature of Science	3	1	7%
2 Science as Inquiry	5	11	29%
3 Unifying Themes	3	1	7%
4 Subject Matter/Concepts	13	8	38%
5 Scientific Design and Application	1	3	7%
6 Personal and Social Perspectives	5	1	11%
Total	30	25	100%
<b>Grade 5</b>			
<b>Content Standard</b>	<b>TN Points</b>	<b>Other Points</b>	<b>% of Total</b>
1 History and Nature of Science	1	3	7%
2 Science as Inquiry	7	9	29%
3 Unifying Themes	0	4	7%
4 Subject Matter/Concepts	16	6	40%
5 Scientific Design and Application	2	2	7%
6 Personal and Social Perspectives	4	1	9%
Total	30	25	100%

**WESTEST 2004 Content Standard Item/Point Distributions**

**Science**

<b>Grade 6</b>			
<b>Content Standard</b>	<b>TN Points</b>	<b>Other Points</b>	<b>% of Total</b>
1 History and Nature of Science	3	1	7%
2 Science as Inquiry	9	7	29%
3 Unifying Themes	1	4	9%
4 Subject Matter/Concepts	14	8	40%
5 Scientific Design and Application	1	3	7%
6 Personal and Social Perspectives	2	2	7%
Total	30	25	100%
<b>Grade 7</b>			
<b>Content Standard</b>	<b>TN Points</b>	<b>Other Points</b>	<b>% of Total</b>
1 History and Nature of Science	1	3	7%
2 Science as Inquiry	9	7	29%
3 Unifying Themes	0	4	7%
4 Subject Matter/Concepts	12	10	40%
5 Scientific Design and Application	1	4	9%
6 Personal and Social Perspectives	4	0	7%
Total	27	28	100%
<b>Grade 8</b>			
<b>Content Standard</b>	<b>TN Points</b>	<b>Other Points</b>	<b>% of Total</b>
1 History and Nature of Science	1	4	9%
2 Science as Inquiry	7	10	30%
3 Unifying Themes	1	4	9%
4 Subject Matter/Concepts	14	7	37%
5 Scientific Design and Application	0	4	7%
6 Personal and Social Perspectives	4	1	9%
Total	27	30	100%

*Science*

<b>Grade 10</b>			
<b>Content Standard</b>	<b>TN Points</b>	<b>Other Points</b>	<b>% of Total</b>
1 History and Nature of Science	1	3	6%
2 Science as Inquiry	4	13	26%
3 Unifying Themes	1	4	8%
4 Subject Matter/Concepts	14	15	45%
5 Scientific Design and Application	1	3	6%
6 Personal and Social Perspectives	4	2	9%
Total	25	40	100%

**WESTEST 2004 Content Standard Item/Point Distributions**

**Social Studies**

<b>Grade 3</b>			
<b>Content Standard</b>	<b>TN Points</b>	<b>Other Points</b>	<b>% of Total</b>
1 Citizenship	6	4	18%
2 Civics	2	4	11%
3 Economics	6	5	20%
4 Geography	8	6	25%
5 History	8	6	25%
Total	30	25	100%
<b>Grade 4</b>			
<b>Content Standard</b>	<b>TN Points</b>	<b>Other Points</b>	<b>% of Total</b>
1 Citizenship	5	4	16%
2 Civics	3	3	11%
3 Economics	8	5	24%
4 Geography	7	6	24%
5 History	7	7	25%
Total	30	25	100%
<b>Grade 5</b>			
<b>Content Standard</b>	<b>TN Points</b>	<b>Other Points</b>	<b>% of Total</b>
1 Citizenship	3	3	11%
2 Civics	5	4	16%
3 Economics	3	4	13%
4 Geography	8	6	25%
5 History	11	8	35%
Total	30	25	100%

**WESTEST 2004 Content Standard Item/Point Distributions**

**Social Studies**

<b>Grade 6</b>			
<b>Content Standard</b>	<b>TN Points</b>	<b>Other Points</b>	<b>% of Total</b>
1 Citizenship	3	3	11%
2 Civics	2	4	11%
3 Economics	7	6	24%
4 Geography	9	6	27%
5 History	9	6	27%
Total	30	25	100%
<b>Grade 7</b>			
<b>Content Standard</b>	<b>TN Points</b>	<b>Other Points</b>	<b>% of Total</b>
1 Citizenship	5	3	15%
2 Civics	1	5	11%
3 Economics	7	5	22%
4 Geography	10	7	31%
5 History	7	5	22%
Total	30	25	100%
<b>Grade 8</b>			
<b>Content Standard</b>	<b>TN Points</b>	<b>Other Points</b>	<b>% of Total</b>
1 Citizenship	4	4	15%
2 Civics	4	5	16%
3 Economics	4	6	18%
4 Geography	1	7	15%
5 History	12	8	36%
Total	25	30	100%

## **Test/Item Characteristics**

Evidence is presented for each grade of each subject area operational WESTEST test on the performance of West Virginia students in terms of scale scores means and standard deviations. Also, corresponding raw score means and standard deviations (SD) are presented, along with average proportion correct scores ( $p$ ) for the multiple-choice and constructed-response items/tasks. These basic statistics are often useful for those who are interested in analyzing skill acquisition in detail. A typical pattern that emerges from this data is that, by and large, multiple-choice items are easier, and less informative, than the more mentally demanding multi-step open-ended tasks. This is consistent with expectations based on experience with the two types of items. At the same time, multiple-choice items require less time to take and offer breadth of coverage of content.

The item-pattern scoring procedure produces maximum-likelihood trait estimates (scale scores) based on patterns of item responses, as described by Lord (1974; 1980, pp. 179-181). Because the likelihood equation can have multiple maxima, a scoring algorithm was developed (Yen, Burket, and Sykes, 1988) that found the scale score at the global maximum in the likelihood function. This item-pattern scoring algorithm was used to obtain scale scores for normative distributions and is used as the default scoring option at CTB. The scale score statistics and raw score statistics are presented in the tables below.

**WESTEST 2004 operational test scale score/raw score means, standard deviations for scale/raw scores, p-values, and item-total correlations**

<b>Grade</b>	<b>Mean Scale Score (SD)</b>	<b>Mean Raw Score (SD)</b>	<b>Mean P-Value</b>	<b>Mean Item-Total Correlation</b>
<b>Mathematics</b>				
3	618.0 (33.1)	40.2 (10.9)	0.65	0.40
4	643.1 (31.6)	38.9 (10.8)	0.63	0.40
5	661.3 (32.2)	36.9 (11.1)	0.60	0.41
6	668.1 (38.6)	33.6 (11.6)	0.54	0.43
7	681.1 (38.3)	31.9 (11.2)	0.51	0.40
8	693.8 (43.0)	33.4 (12.2)	0.54	0.44
10	720.3 (45.5)	33.1 (12.4)	0.52	0.43
<b>Reading/Language Arts</b>				
3	629.3 (38.9)	50.3 (14.7)	0.67	0.46
4	644.71(36.1)	55.6 (14.9)	0.70	0.45
5	656.1 (36.1)	53.7 (15.1)	0.66	0.44
6	664.5 (36.5)	50.1 (15.9)	0.63	0.45
7	673.4 (40.6)	50.4 (16.1)	0.63	0.44
8	681.8 (36.1)	49.6 (14.7)	0.62	0.42
10	694.8 (41.9)	57.4 (16.2)	0.68	0.44
<b>Science</b>				
3	630.7 (26.6)	34.0 (7.4)	0.62	0.34
4	642.4 (33.3)	31.3 (8.4)	0.57	0.35
5	658.6 (32.8)	29.2 (8.4)	0.53	0.34
6	672.9 (32.9)	27.8 (8.7)	0.51	0.36
7	684.7 (34.4)	29.4 (9.3)	0.54	0.38
8	695.3 (33.6)	29.8 (9.9)	0.52	0.38
10	710.7 (36.9)	31.6 (11.1)	0.49	0.37
<b>Social Studies</b>				
3	631.0 (30.1)	37.5 (9.1)	0.68	0.40
4	646.5 (27.9)	36.2 (9.2)	0.66	0.39
5	656.1 (27.2)	33.9 (9.0)	0.62	0.38
6	659.9 (36.2)	31.7 (10.1)	0.58	0.42
7	675.7 (31.4)	32.7 (9.4)	0.59	0.39
8	687.5 (29.5)	33.0 (10.1)	0.60	0.41

**WESTEST 2004 Operational Form Item Characteristics**

*Mathematics*

Grade 3 TN Multiple Choice Items		
Item No.	Points	Item Difficulty
1	1	0.93
2	1	0.74
3	1	0.63
4	1	0.76
5	1	0.99
6	1	0.93
7	1	0.90
8	1	0.91
9	1	0.68
10	1	0.71
11	1	0.90
12	1	0.54
13	1	0.94
14	1	0.91
15	1	0.86
16	1	0.59
17	1	0.64
18	1	0.69
19	1	0.82
20	1	0.74
21	1	0.74
22	1	0.94
23	1	0.69
24	1	0.74
25	1	0.73
26	1	0.58
27	1	0.56
28	1	0.57
29	1	0.55
30	1	0.55
31	1	0.44
32	1	0.57
<b>Average</b>		<b>0.73</b>

Grade 3 Other Multiple Choice Items		
Item No.	Points	Item Difficulty
33	1	0.97
34	1	0.89
35	1	0.93
36	1	0.79
37	1	0.66
38	1	0.51
39	1	0.49
40	1	0.30
41	1	0.28
43	1	0.89
44	1	0.78
45	1	0.66
46	1	0.59
47	1	0.46
48	1	0.45
<b>Average</b>		<b>0.64</b>

Grade 3 Constructed Response Items		
Item No.	Points	Item Difficulty
42	3	0.36
49	3	0.78
50	3	0.57
51	3	0.47
52	3	0.27
<b>Average</b>		<b>0.49</b>

*WESTEST 2004 Operational Form Item Characteristics*

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Grade 4 TN Multiple Choice Items		
Item No.	Points	Item Difficulty
1	1	0.67
2	1	0.79
3	1	0.82
4	1	0.91
5	1	0.76
6	1	0.92
7	1	0.93
8	1	0.81
9	1	0.86
10	1	0.89
11	1	0.79
12	1	0.89
13	1	0.71
14	1	0.68
15	1	0.91
16	1	0.77
17	1	0.62
18	1	0.74
19	1	0.66
20	1	0.72
21	1	0.80
22	1	0.91
23	1	0.91
24	1	0.92
25	1	0.57
26	1	0.70
27	1	0.70
28	1	0.87
29	1	0.78
30	1	0.74
31	1	0.74
32	1	0.60
<b>Average</b>		<b>0.78</b>

Grade 4 Other Multiple Choice Items		
Item No.	Points	Item Difficulty
33	1	0.94
34	1	0.89
35	1	0.63
36	1	0.64
37	1	0.48
38	1	0.41
39	1	0.45
40	1	0.44
41	1	0.30
43	1	0.85
44	1	0.69
45	1	0.52
46	1	0.45
47	1	0.18
48	1	0.42
<b>Average</b>		<b>0.55</b>

Grade 4 Constructed Response Items		
Item No.	Points	Item Difficulty
42	3	0.35
49	3	0.62
50	3	0.47
51	3	0.28
52	3	0.20
<b>Average</b>		<b>0.38</b>

*WESTEST 2004 Operational Form Item Characteristics*

*Mathematics*

Grade 5 TN Multiple Choice Items		
Item No.	Points	Item Difficulty
1	1	0.74
2	1	0.47
3	1	0.86
4	1	0.66
5	1	0.67
6	1	0.94
7	1	0.64
8	1	0.88
9	1	0.78
10	1	0.91
11	1	0.84
12	1	0.74
13	1	0.89
14	1	0.65
15	1	0.76
16	1	0.93
17	1	0.84
18	1	0.71
19	1	0.60
20	1	0.56
21	1	0.54
22	1	0.78
23	1	0.64
24	1	0.65
25	1	0.69
26	1	0.46
27	1	0.49
28	1	0.51
29	1	0.52
30	1	0.51
31	1	0.34
32	1	0.34
<b>Average</b>		<b>0.67</b>

Grade 5 Other Multiple Choice Items		
Item No.	Points	Item Difficulty
33	1	0.96
34	1	0.93
35	1	0.81
36	1	0.70
37	1	0.64
38	1	0.50
39	1	0.31
40	1	0.23
41	1	0.08
43	1	0.70
44	1	0.59
45	1	0.49
46	1	0.50
47	1	0.53
48	1	0.41
<b>Average</b>		<b>0.56</b>

Grade 5 Constructed Response Items		
Item No.	Points	Item Difficulty
42	3	0.35
49	3	0.69
50	3	0.54
51	3	0.52
52	3	0.27
<b>Average</b>		<b>0.48</b>

*WESTEST 2004 Operational Form Item Characteristics*

*Mathematics*

Grade 6 TN Multiple Choice Items		
Item No.	Points	Item Difficulty
1	1	0.93
2	1	0.84
3	1	0.94
4	1	0.75
5	1	0.67
6	1	0.73
7	1	0.77
8	1	0.75
9	1	0.51
10	1	0.71
11	1	0.68
12	1	0.71
13	1	0.69
14	1	0.63
15	1	0.8
16	1	0.60
17	1	0.8
18	1	0.86
19	1	0.45
20	1	0.65
21	1	0.76
22	1	0.54
23	1	0.56
24	1	0.88
25	1	0.57
26	1	0.47
27	1	0.48
28	1	0.49
29	1	0.69
30	1	0.55
31	1	0.24
32	1	0.46
<b>Average</b>		<b>0.66</b>

Grade 6 Other Multiple Choice Items		
Item No.	Points	Item Difficulty
33	1	0.91
34	1	0.85
35	1	0.57
36	1	0.52
37	1	0.57
38	1	0.55
39	1	0.52
40	1	0.37
41	1	0.35
43	1	0.68
44	1	0.61
45	1	0.52
46	1	0.53
47	1	0.46
48	1	0.29
<b>Average</b>		<b>0.55</b>

Grade 6 Constructed Response Items		
Item No.	Points	Item Difficulty
42	3	0.42
49	3	0.33
50	3	0.33
51	3	0.21
52	3	0.17
<b>Average</b>		<b>0.29</b>

*WESTEST 2004 Operational Form Item Characteristics*

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Grade 7 TN Multiple Choice Items		
Item No.	Points	Item Difficulty
1	1	0.63
2	1	0.66
3	1	0.43
4	1	0.42
5	1	0.88
6	1	0.90
7	1	0.90
8	1	0.79
9	1	0.90
10	1	0.71
11	1	0.64
12	1	0.86
13	1	0.89
14	1	0.81
15	1	0.75
16	1	0.51
17	1	0.65
18	1	0.75
19	1	0.63
20	1	0.85
21	1	0.69
22	1	0.64
23	1	0.59
24	1	0.32
25	1	0.61
26	1	0.52
27	1	0.64
28	1	0.30
29	1	0.46
30	1	0.48
31	1	0.39
32	1	0.37
<b>Average</b>		<b>0.64</b>

Grade 7 Other Multiple Choice Items		
Item No.	Points	Item Difficulty
33	1	0.74
34	1	0.63
35	1	0.63
36	1	0.48
37	1	0.44
38	1	0.47
39	1	0.22
40	1	0.23
41	1	0.11
43	1	0.71
44	1	0.56
45	1	0.43
46	1	0.48
47	1	0.28
48	1	0.29
<b>Average</b>		<b>0.45</b>

Grade 7 Constructed Response Items		
Item No.	Points	Item Difficulty
42	3	0.46
49	3	0.46
50	3	0.42
51	3	0.16
52	3	0.09
<b>Average</b>		<b>0.32</b>

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*Mathematics*

Grade 8 TN Multiple Choice Items		
Item No.	Points	Item Difficulty
1	1	0.74
2	1	0.52
3	1	0.90
4	1	0.70
5	1	0.49
6	1	0.59
7	1	0.71
8	1	0.80
9	1	0.84
10	1	0.73
11	1	0.71
12	1	0.76
13	1	0.82
14	1	0.91
15	1	0.84
16	1	0.65
17	1	0.40
18	1	0.89
19	1	0.38
20	1	0.74
21	1	0.47
22	1	0.53
23	1	0.60
24	1	0.55
25	1	0.53
26	1	0.85
27	1	0.57
28	1	0.32
29	1	0.42
30	1	0.58
31	1	0.48
32	1	0.37
<b>Average</b>		<b>0.64</b>

Grade 8 Other Multiple Choice Items		
Item No.	Points	Item Difficulty
33	1	0.64
34	1	0.55
35	1	0.43
36	1	0.37
37	1	0.35
38	1	0.36
39	1	0.35
40	1	0.41
41	1	0.16
43	1	0.73
44	1	0.61
45	1	0.59
46	1	0.58
47	1	0.56
48	1	0.25
<b>Average</b>		<b>0.46</b>

Grade 8 Constructed Response Items		
Item No.	Points	Item Difficulty
42	3	0.14
49	3	0.74
50	3	0.44
51	3	0.47
52	3	0.29
<b>Average</b>		<b>0.42</b>

*WESTEST 2004 Operational Form Item Characteristics*

*Mathematics*

Grade 10 TN Multiple Choice Items		
Item No.	Points	Item Difficulty
1	1	0.45
2	1	0.32
3	1	0.63
4	1	0.83
5	1	0.67
6	1	0.60
7	1	0.73
8	1	0.31
9	1	0.73
10	1	0.91
11	1	0.86
12	1	0.71
13	1	0.84
14	1	0.79
15	1	0.80
16	1	0.82
17	1	0.48
18	1	0.67
19	1	0.66
20	1	0.46
21	1	0.40
22	1	0.45
23	1	0.52
24	1	0.56
25	1	0.47
<b>Average</b>		<b>0.63</b>

Grade 10 Other Multiple Choice Items		
Item No.	Points	Item Difficulty
26	1	0.77
27	1	0.77
28	1	0.79
29	1	0.70
30	1	0.63
31	1	0.62
32	1	0.57
33	1	0.62
34	1	0.38
35	1	0.47
37	1	0.68
38	1	0.64
39	1	0.61
40	1	0.54
41	1	0.50
42	1	0.29
43	1	0.37
44	1	0.40
45	1	0.13
<b>Average</b>		<b>0.55</b>

Grade 10 Constructed Response Items		
Item No.	Points	Item Difficulty
36	3	0.09
46	4	0.56
47	4	0.50
48	4	0.36
49	4	0.27
<b>Average</b>		<b>0.35</b>

*WESTEST 2004 Operational Form Item Characteristics*

**Reading and Language Arts**

Grade 3 TN Multiple Choice Items		
Item No.	Points	Item Difficulty
1	1	0.73
2	1	0.87
3	1	0.89
4	1	0.89
5	1	0.89
6	1	0.67
7	1	0.58
8	1	0.71
9	1	0.79
10	1	0.75
11	1	0.86
12	1	0.63
13	1	0.76
14	1	0.76
15	1	0.65
16	1	0.48
17	1	0.86
18	1	0.81
19	1	0.75
20	1	0.68
21	1	0.68
22	1	0.43
23	1	0.59
24	1	0.80
25	1	0.44
26	1	0.64
27	1	0.68
28	1	0.73
29	1	0.50
30	1	0.72
31	1	0.80
32	1	0.62
33	1	0.22
34	1	0.70
35	1	0.70
36	1	0.85
37	1	0.85
38	1	0.79
39	1	0.86
40	1	0.70
41	1	0.82
42	1	0.81
43	1	0.41
44	1	0.47
45	1	0.75
46	1	0.82
47	1	0.85

Grade 3 TN Multiple Choice Items (cont.)		
Item No.	Points	Item Difficulty
48	1	0.68
49	1	0.55
50	1	0.73
<b>Average</b>		<b>0.70</b>

Grade 3 Other Multiple Choice Items		
Item No.	Points	Item Difficulty
51	1	0.67
52	1	0.64
53	1	0.81
54	1	0.47
56	1	0.75
57	1	0.87
58	1	0.64
59	1	0.68
61	1	0.68
62	1	0.60
63	1	0.58
66	1	0.80
67	1	0.82
68	1	0.69
69	1	0.50
<b>Average</b>		<b>0.68</b>

Grade 3: Constructed Response Items		
Item No.	Points	Item Difficulty
55	2	0.48
60	2	0.67
64	2	0.49
65	2	0.23
70	2	0.75
<b>Average</b>		<b>0.52</b>

*WESTEST 2004 Operational Form Item Characteristics*

*Reading and Language Arts*

Grade 4 TN Multiple Choice Items		
Item No.	Points	Item Difficulty
1	1	0.93
2	1	0.85
3	1	0.88
4	1	0.81
5	1	0.90
6	1	0.72
7	1	0.87
8	1	0.91
9	1	0.80
10	1	0.66
11	1	0.55
12	1	0.88
13	1	0.90
14	1	0.79
15	1	0.91
16	1	0.92
17	1	0.88
18	1	0.76
19	1	0.58
20	1	0.80
21	1	0.91
22	1	0.75
23	1	0.87
24	1	0.92
25	1	0.75
26	1	0.92
27	1	0.64
28	1	0.81
29	1	0.72
30	1	0.92
31	1	0.68
32	1	0.73
33	1	0.75
34	1	0.94
35	1	0.55
36	1	0.76
37	1	0.78
38	1	0.87
39	1	0.91
40	1	0.48
41	1	0.37
42	1	0.58
43	1	0.68
44	1	0.43
45	1	0.51
46	1	0.42
47	1	0.71

Grade 4 TN Multiple Choice Items (cont.)		
Item No.	Points	Item Difficulty
48	1	0.67
49	1	0.55
50	1	0.70
51	1	0.57
52	1	0.70
53	1	0.68
54	1	0.49
55	1	0.54
<b>Average</b>		<b>0.74</b>

Grade 4 Other Multiple Choice Items		
Item No.	Points	Item Difficulty
56	1	0.83
57	1	0.55
58	1	0.76
60	1	0.78
61	1	0.85
62	1	0.73
63	1	0.76
65	1	0.60
66	1	0.83
67	1	0.61
68	1	0.71
71	1	0.59
72	1	0.51
73	1	0.44
74	1	0.65
<b>Average</b>		<b>0.66</b>

Grade 4: Constructed Response Items		
Item No.	Points	Item Difficulty
59	2	0.47
64	2	0.43
69	2	0.67
70	2	0.33
75	2	0.73
<b>Average</b>		<b>0.53</b>

*WESTEST 2004 Operational Form Item Characteristics*

*Reading and Language Arts*

<b>Grade 5 TN Multiple Choice Items</b>		
<b>Item No.</b>	<b>Points</b>	<b>Item Difficulty</b>
1	1	0.93
2	1	0.92
3	1	0.86
4	1	0.77
5	1	0.78
6	1	0.84
7	1	0.52
8	1	0.72
9	1	0.88
10	1	0.62
11	1	0.69
12	1	0.81
13	1	0.90
14	1	0.89
15	1	0.88
16	1	0.66
17	1	0.67
18	1	0.80
19	1	0.80
20	1	0.71
21	1	0.68
22	1	0.87
23	1	0.70
24	1	0.49
25	1	0.90
26	1	0.78
27	1	0.54
28	1	0.58
29	1	0.79
30	1	0.61
31	1	0.66
32	1	0.81
33	1	0.28
34	1	0.64
35	1	0.67
36	1	0.45
37	1	0.78
38	1	0.70
39	1	0.94
40	1	0.87
41	1	0.73
42	1	0.43
43	1	0.83
44	1	0.81
45	1	0.52
46	1	0.85
47	1	0.54

<b>Grade 5 TN Multiple Choice Items (cont.)</b>		
<b>Item No.</b>	<b>Points</b>	<b>Item Difficulty</b>
48	1	0.41
49	1	0.57
50	1	0.51
51	1	0.57
52	1	0.90
53	1	0.48
54	1	0.79
55	1	0.67
56	1	0.62
<b>Average</b>		<b>0.71</b>

<b>Grade 5 Other Multiple Choice Items</b>		
<b>Item No.</b>	<b>Points</b>	<b>Item Difficulty</b>
57	1	0.80
58	1	0.78
61	1	0.64
62	1	0.56
63	1	0.74
64	1	0.42
66	1	0.63
67	1	0.87
68	1	0.73
69	1	0.70
70	1	0.52
72	1	0.76
73	1	0.36
74	1	0.66
75	1	0.46
<b>Average</b>		<b>0.64</b>

<b>Grade 5: Constructed Response Items</b>		
<b>Item No.</b>	<b>Points</b>	<b>Item Difficulty</b>
59	2	0.54
60	2	0.46
65	2	0.43
71	2	0.35
76	2	0.67
<b>Average</b>		<b>0.49</b>

*WESTEST 2004 Operational Form Item Characteristics*

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Grade 6 TN Multiple Choice Items		
Item No.	Points	Item Difficulty
1	1	0.67
2	1	0.72
3	1	0.92
4	1	0.60
5	1	0.82
6	1	0.63
7	1	0.68
8	1	0.69
9	1	0.77
10	1	0.79
11	1	0.75
12	1	0.94
13	1	0.70
14	1	0.65
15	1	0.74
16	1	0.73
17	1	0.56
18	1	0.80
19	1	0.68
20	1	0.78
21	1	0.81
22	1	0.63
23	1	0.54
24	1	0.73
25	1	0.78
26	1	0.69
27	1	0.55
28	1	0.53
29	1	0.62
30	1	0.63
31	1	0.78
32	1	0.76
33	1	0.94
34	1	0.67
35	1	0.73
36	1	0.59
37	1	0.61
38	1	0.60
39	1	0.53
40	1	0.74
41	1	0.28
42	1	0.71
43	1	0.42
44	1	0.47
45	1	0.45
46	1	0.63
47	1	0.77

Grade 6 TN Multiple Choice Items (cont.)		
Item No.	Points	Item Difficulty
48	1	0.61
49	1	0.58
50	1	0.64
51	1	0.74
52	1	0.67
53	1	0.73
54	1	0.77
55	1	0.76
<b>Average</b>		<b>0.68</b>

Grade 6 Other Multiple Choice Items		
Item No.	Points	Item Difficulty
56	1	0.50
57	1	0.64
58	1	0.54
59	1	0.60
61	1	0.74
62	1	0.67
63	1	0.75
64	1	0.57
66	1	0.61
67	1	0.52
68	1	0.79
71	1	0.62
72	1	0.49
73	1	0.67
74	1	0.52
<b>Average</b>		<b>0.61</b>

Grade 6: Constructed Response Items		
Item No.	Points	Item Difficulty
60	2	0.33
65	2	0.34
69	2	0.59
70	2	0.23
75	2	0.45
<b>Average</b>		<b>0.39</b>

*WESTEST 2004 Operational Form Item Characteristics*

*Reading and Language Arts*

Grade 7 TN Multiple Choice Items		
Item No.	Points	Item Difficulty
1	1	0.70
2	1	0.75
3	1	0.62
4	1	0.60
5	1	0.66
6	1	0.69
7	1	0.74
8	1	0.60
9	1	0.83
10	1	0.54
11	1	0.85
12	1	0.58
13	1	0.44
14	1	0.77
15	1	0.54
16	1	0.36
17	1	0.76
18	1	0.70
19	1	0.62
20	1	0.52
21	1	0.66
22	1	0.87
23	1	0.78
24	1	0.83
25	1	0.67
26	1	0.77
27	1	0.84
28	1	0.83
29	1	0.86
30	1	0.81
31	1	0.62
32	1	0.56
33	1	0.41
34	1	0.60
35	1	0.77
36	1	0.71
37	1	0.49
38	1	0.64
39	1	0.54
40	1	0.45
41	1	0.59
42	1	0.51
43	1	0.77
44	1	0.70
45	1	0.66
46	1	0.74
47	1	0.67

Grade 7 TN Multiple Choice Items (cont.)		
Item No.	Points	Item Difficulty
48	1	0.58
49	1	0.74
50	1	0.69
51	1	0.58
52	1	0.62
53	1	0.85
54	1	0.67
55	1	0.66
<b>Average</b>		<b>0.67</b>

Grade 7 Other Multiple Choice Items		
Item No.	Points	Item Difficulty
56	1	0.63
57	1	0.64
58	1	0.79
59	1	0.67
61	1	0.44
62	1	0.39
63	1	0.38
64	1	0.71
66	1	0.49
67	1	0.48
68	1	0.46
71	1	0.81
72	1	0.65
73	1	0.68
74	1	0.48
<b>Average</b>		<b>0.58</b>

Grade 7: Constructed Response Items		
Item No.	Points	Item Difficulty
60	2	0.63
65	2	0.63
69	2	0.56
70	2	0.34
75	2	0.49
<b>Average</b>		<b>0.53</b>

*WESTEST 2004 Operational Form Item Characteristics*

*Reading and Language Arts*

Grade 8 TN Multiple Choice Items		
Item No.	Points	Item Difficulty
1	1	0.49
2	1	0.61
3	1	0.78
4	1	0.80
5	1	0.31
6	1	0.59
7	1	0.70
8	1	0.45
9	1	0.71
10	1	0.85
11	1	0.90
12	1	0.79
13	1	0.66
14	1	0.79
15	1	0.87
16	1	0.79
17	1	0.87
18	1	0.76
19	1	0.69
20	1	0.74
21	1	0.90
22	1	0.85
23	1	0.60
24	1	0.87
25	1	0.91
26	1	0.89
27	1	0.57
28	1	0.85
29	1	0.71
30	1	0.71
31	1	0.78
32	1	0.56
33	1	0.57
34	1	0.71
35	1	0.86
36	1	0.50
37	1	0.57
38	1	0.33
39	1	0.80
40	1	0.32
41	1	0.26
42	1	0.62
43	1	0.48
44	1	0.65
45	1	0.57
46	1	0.32
47	1	0.52

Grade 8 TN Multiple Choice Items (cont.)		
Item No.	Points	Item Difficulty
48	1	0.72
49	1	0.73
50	1	0.64
51	1	0.66
52	1	0.55
53	1	0.68
54	1	0.41
55	1	0.78
<b>Average</b>		<b>0.67</b>

Grade 8 Other Multiple Choice Items		
Item No.	Points	Item Difficulty
56	1	0.47
57	1	0.68
60	1	0.72
61	1	0.56
62	1	0.56
63	1	0.63
65	1	0.55
66	1	0.52
67	1	0.75
68	1	0.61
69	1	0.55
71	1	0.63
72	1	0.73
73	1	0.53
74	1	0.49
<b>Average</b>		<b>0.60</b>

Grade 8: Constructed Response Items		
Item No.	Points	Item Difficulty
58	2	0.40
59	2	0.24
64	2	0.33
70	2	0.39
75	2	0.75
<b>Average</b>		<b>0.42</b>

*WESTEST 2004 Operational Form Item Characteristics*

*Reading and Language Arts*

Grade 10 TN Multiple Choice Items		
Item No.	Points	Item Difficulty
1	1	0.69
2	1	0.63
3	1	0.49
4	1	0.70
5	1	0.87
6	1	0.76
7	1	0.75
8	1	0.65
9	1	0.86
10	1	0.75
11	1	0.85
12	1	0.59
13	1	0.78
14	1	0.67
15	1	0.78
16	1	0.73
17	1	0.72
18	1	0.78
19	1	0.78
20	1	0.61
21	1	0.51
22	1	0.46
23	1	0.85
24	1	0.63
25	1	0.68
26	1	0.72
27	1	0.82
28	1	0.67
29	1	0.72
30	1	0.70
31	1	0.59
32	1	0.76
33	1	0.77
34	1	0.88
35	1	0.46
36	1	0.89
37	1	0.84
38	1	0.46
39	1	0.75
40	1	0.68
41	1	0.57
42	1	0.84
43	1	0.64
44	1	0.44
45	1	0.44
46	1	0.53
47	1	0.44

Grade 10 TN Multiple Choice Items (cont.)		
Item No.	Points	Item Difficulty
48	1	0.47
49	1	0.69
50	1	0.70
51	1	0.38
52	1	0.78
53	1	0.50
54	1	0.73
55	1	0.53
56	1	0.58
57	1	0.82
58	1	0.58
59	1	0.54
60	1	0.70
<b>Average</b>		<b>0.67</b>

Grade 10 Other Multiple Choice Items		
Item No.	Points	Item Difficulty
61	1	0.79
62	1	0.74
63	1	0.71
66	1	0.62
67	1	0.83
68	1	0.75
69	1	0.76
70	1	0.75
71	1	0.66
73	1	0.91
74	1	0.85
75	1	0.78
76	1	0.45
78	1	0.79
79	1	0.77
<b>Average</b>		<b>0.74</b>

Grade 10: Constructed Response Items		
Item No.	Points	Item Difficulty
64	2	0.54
65	2	0.68
72	2	0.65
77	2	0.57
80	2	0.70
<b>Average</b>		<b>0.63</b>

*WESTEST 2004 Operational Form Item Characteristics*

**Science**

Grade 3 TN Multiple Choice Items		
Item No.	Points	Item Difficulty
1	1	0.97
2	1	0.93
3	1	0.81
4	1	0.95
5	1	0.86
6	1	0.67
7	1	0.96
8	1	0.94
9	1	0.86
10	1	0.84
11	1	0.98
12	1	0.96
13	1	0.82
14	1	0.89
15	1	0.87
16	1	0.64
17	1	0.54
18	1	0.86
19	1	0.52
20	1	0.95
21	1	0.50
22	1	0.73
23	1	0.50
24	1	0.29
25	1	0.79
26	1	0.40
27	1	0.56
28	1	0.77
29	1	0.43
<b>Average</b>		<b>0.75</b>

Grade 3 Other Multiple Choice Items		
Item No.	Points	Item Difficulty
30	1	0.97
31	1	0.97
32	1	0.93
34	1	0.52
35	1	0.53
36	1	0.44
37	1	0.45
41	1	0.77
42	1	0.71
43	1	0.61
44	1	0.54
45	1	0.52
46	1	0.39
47	1	0.38
48	1	0.34
50	1	0.25
<b>Average</b>		<b>0.52</b>

Grade 3 Constructed Response Items		
Item No.	Points	Item Difficulty
33	2	0.79
38	2	0.27
39	2	0.16
40	2	0.11
49	2	0.29
<b>Average</b>		<b>0.46</b>

*WESTEST 2004 Operational Form Item Characteristics*

*Science*

Grade 4 TN Multiple Choice Items		
Item No.	Points	Item Difficulty
1	1	0.97
2	1	0.94
3	1	0.89
4	1	0.93
5	1	0.96
6	1	0.96
7	1	0.79
8	1	0.65
9	1	0.93
10	1	0.34
11	1	0.56
12	1	0.73
13	1	0.83
14	1	0.74
15	1	0.79
16	1	0.66
17	1	0.65
18	1	0.63
19	1	0.67
20	1	0.48
21	1	0.77
22	1	0.67
23	1	0.76
24	1	0.54
25	1	0.54
26	1	0.59
27	1	0.54
28	1	0.56
29	1	0.37
30	1	0.49
<b>Average</b>		<b>0.70</b>

Grade 4 Other Multiple Choice Items		
Item No.	Points	Item Difficulty
31	1	0.80
32	1	0.65
33	1	0.45
37	1	0.33
38	1	0.28
40	1	0.22
41	1	0.82
42	1	0.60
43	1	0.66
44	1	0.50
45	1	0.38
46	1	0.35
47	1	0.35
48	1	0.29
49	1	0.18
<b>Average</b>		<b>0.46</b>

Grade 4 Constructed Response Items		
Item No.	Points	Item Difficulty
34	2	0.46
35	2	0.45
36	2	0.42
39	2	0.32
50	2	0.21
<b>Average</b>		<b>0.37</b>

*WESTEST 2004 Operational Form Item Characteristics*

*Science*

Grade 5 TN Multiple Choice Items		
Item No.	Points	Item Difficulty
1	1	0.93
2	1	0.91
3	1	0.92
4	1	0.50
5	1	0.64
6	1	0.67
7	1	0.81
8	1	0.48
9	1	0.79
10	1	0.71
11	1	0.79
12	1	0.85
13	1	0.60
14	1	0.62
15	1	0.65
16	1	0.57
17	1	0.44
18	1	0.57
19	1	0.55
20	1	0.63
21	1	0.49
22	1	0.77
23	1	0.46
24	1	0.60
25	1	0.65
26	1	0.32
27	1	0.35
28	1	0.38
29	1	0.24
30	1	0.51
<b>Average</b>		<b>0.61</b>

Grade 5 Other Multiple Choice Items		
Item No.	Points	Item Difficulty
31	1	0.68
32	1	0.43
34	1	0.46
35	1	0.42
37	1	0.33
38	1	0.47
39	1	0.46
41	1	0.91
42	1	0.91
43	1	0.51
45	1	0.46
46	1	0.37
47	1	0.36
49	1	0.33
50	1	0.33
<b>Average</b>		<b>0.50</b>

Grade 5 Constructed Response Items		
Item No.	Points	Item Difficulty
33	2	0.30
36	2	0.36
40	2	0.21
44	2	0.55
48	2	0.37
<b>Average</b>		<b>0.36</b>

*WESTEST 2004 Operational Form Item Characteristics*

*Science*

Grade 6 TN Multiple Choice Items		
Item No.	Points	Item Difficulty
1	1	0.86
2	1	0.67
3	1	0.80
4	1	0.95
5	1	0.83
6	1	0.34
7	1	0.75
8	1	0.84
9	1	0.60
10	1	0.85
11	1	0.72
12	1	0.68
13	1	0.54
14	1	0.76
15	1	0.45
16	1	0.38
17	1	0.59
18	1	0.60
19	1	0.66
20	1	0.48
21	1	0.59
22	1	0.86
23	1	0.39
24	1	0.43
25	1	0.53
26	1	0.71
27	1	0.55
28	1	0.38
29	1	0.48
30	1	0.28
<b>Average</b>		<b>0.62</b>

Grade 6 Other Multiple Choice Items		
Item No.	Points	Item Difficulty
31	1	0.85
32	1	0.46
33	1	0.40
34	1	0.38
36	1	0.39
38	1	0.27
41	1	0.75
42	1	0.56
43	1	0.36
44	1	0.40
45	1	0.38
46	1	0.37
47	1	0.32
48	1	0.27
49	1	0.26
<b>Average</b>		<b>0.43</b>

Grade 6 Constructed Response Items		
Item No.	Points	Item Difficulty
35	2	0.53
37	2	0.25
39	2	0.26
40	2	0.18
50	2	0.25
<b>Average</b>		<b>0.29</b>

*WESTEST 2004 Operational Form Item Characteristics*

*Science*

Grade 7 TN Multiple Choice Items		
Item No.	Points	Item Difficulty
1	1	0.83
2	1	0.68
3	1	0.82
4	1	0.75
5	1	0.86
6	1	0.84
7	1	0.73
8	1	0.72
9	1	0.80
10	1	0.72
11	1	0.69
12	1	0.74
13	1	0.47
14	1	0.64
15	1	0.52
16	1	0.64
17	1	0.74
18	1	0.59
19	1	0.70
20	1	0.54
21	1	0.57
22	1	0.46
23	1	0.73
24	1	0.44
25	1	0.42
26	1	0.24
27	1	0.40
<b>Average</b>		<b>0.64</b>

Grade 7 Other Multiple Choice Items		
Item No.	Points	Item Difficulty
28	1	0.72
29	1	0.68
30	1	0.68
31	1	0.55
32	1	0.52
33	1	0.59
34	1	0.48
35	1	0.41
36	1	0.27
37	1	0.39
40	1	0.56
41	1	0.78
42	1	0.55
43	1	0.51
44	1	0.43
45	1	0.45
46	1	0.39
47	1	0.30
<b>Average</b>		<b>0.51</b>

Grade 7 Constructed Response Items		
Item No.	Points	Item Difficulty
38	2	0.35
39	2	0.47
48	2	0.25
49	2	0.27
50	2	0.16
<b>Average</b>		<b>0.30</b>

*WESTEST 2004 Operational Form Item Characteristics*

*Science*

Grade 8 TN Multiple Choice Items		
Item No.	Points	Item Difficulty
1	1	0.87
2	1	0.79
3	1	0.71
4	1	0.76
5	1	0.82
6	1	0.56
7	1	0.67
8	1	0.80
9	1	0.70
10	1	0.73
11	1	0.59
12	1	0.69
13	1	0.58
14	1	0.55
15	1	0.68
16	1	0.70
17	1	0.64
18	1	0.41
19	1	0.46
20	1	0.52
21	1	0.38
22	1	0.46
23	1	0.58
24	1	0.29
25	1	0.50
26	1	0.35
27	1	0.59
<b>Average</b>		<b>0.61</b>

Grade 8 Other Multiple Choice Items		
Item No.	Points	Item Difficulty
28	1	0.89
29	1	0.56
30	1	0.78
31	1	0.72
33	1	0.44
34	1	0.47
36	1	0.47
37	1	0.25
38	1	0.28
39	1	0.24
40	1	0.29
43	1	0.67
44	1	0.54
45	1	0.48
46	1	0.52
47	1	0.51
48	1	0.51
49	1	0.42
50	1	0.40
51	1	0.43
<b>Average</b>		<b>0.49</b>

Grade 8 Constructed Response Items		
Item No.	Points	Item Difficulty
32	2	0.53
35	2	0.51
41	2	0.29
42	2	0.27
52	2	0.24
<b>Average</b>		<b>0.37</b>

*WESTEST 2004 Operational Form Item Characteristics*

*Science*

Grade 10 TN Multiple Choice Items		
Item No.	Points	Item Difficulty
1	1	0.77
2	1	0.51
3	1	0.25
4	1	0.82
5	1	0.76
6	1	0.71
7	1	0.61
8	1	0.68
9	1	0.43
10	1	0.70
11	1	0.59
12	1	0.63
13	1	0.70
14	1	0.57
15	1	0.49
16	1	0.62
17	1	0.49
18	1	0.66
19	1	0.36
20	1	0.49
21	1	0.53
22	1	0.56
23	1	0.49
24	1	0.50
25	1	0.28
<b>Average</b>		<b>0.57</b>

Grade 10 Other Multiple Choice Items		
Item No.	Points	Item Difficulty
26	1	0.93
27	1	0.65
28	1	0.66
29	1	0.56
30	1	0.64
31	1	0.59
32	1	0.29
33	1	0.59
34	1	0.58
36	1	0.45
37	1	0.32
42	1	0.60
43	1	0.50
44	1	0.29
45	1	0.64
46	1	0.56
47	1	0.40
48	1	0.45
49	1	0.33
50	1	0.18
<b>Average</b>		<b>0.51</b>

Grade 10 Constructed Response Items		
Item No.	Points	Item Difficulty
35	2	0.37
38	2	0.25
39	2	0.28
40	2	0.19
41	2	0.71
<b>Average</b>		<b>0.36</b>

*WESTEST 2004 Operational Form Item Characteristics*

***Social Studies***

<b>Grade 3 TN Multiple Choice Items</b>		
<b>Item No.</b>	<b>Points</b>	<b>Item Difficulty</b>
21	1	0.89
22	1	0.85
23	1	0.89
24	1	0.93
25	1	0.91
26	1	0.89
27	1	0.45
28	1	0.92
29	1	0.72
30	1	0.81
31	1	0.78
32	1	0.89
33	1	0.86
34	1	0.66
35	1	0.39
36	1	0.59
37	1	0.47
38	1	0.53
39	1	0.89
40	1	0.94
41	1	0.76
42	1	0.95
43	1	0.88
44	1	0.67
45	1	0.78
46	1	0.65
47	1	0.28
48	1	0.61
49	1	0.68
50	1	0.61
<b>Average</b>		<b>0.74</b>

<b>Grade 3 Other Multiple Choice Items</b>		
<b>Item No.</b>	<b>Points</b>	<b>Item Difficulty</b>
1	1	0.78
2	1	0.77
3	1	0.76
4	1	0.52
5	1	0.78
6	1	0.59
8	1	0.70
9	1	0.47
10	1	0.61
11	1	0.82
12	1	0.85
13	1	0.78
14	1	0.48
16	1	0.35
17	1	0.56
<b>Average</b>		<b>0.65</b>

<b>Grade 3 Constructed Response Items</b>		
<b>Item No.</b>	<b>Points</b>	<b>Item Difficulty</b>
7	2	0.55
15	2	0.69
18	2	0.64
19	2	0.47
20	2	0.52
<b>Average</b>		<b>0.57</b>

*WESTEST 2004 Operational Form Item Characteristics*

*Social Studies*

Grade 4 TN Multiple Choice Items		
Item No.	Points	Item Difficulty
21	1	0.75
22	1	0.79
23	1	0.88
24	1	0.88
25	1	0.95
26	1	0.64
27	1	0.67
28	1	0.82
29	1	0.67
30	1	0.61
31	1	0.97
32	1	0.76
33	1	0.87
34	1	0.74
35	1	0.85
36	1	0.90
37	1	0.74
38	1	0.62
39	1	0.94
40	1	0.39
41	1	0.67
42	1	0.80
43	1	0.79
44	1	0.49
45	1	0.72
46	1	0.34
47	1	0.81
48	1	0.63
49	1	0.85
50	1	0.38
<b>Average</b>		<b>0.73</b>

Grade 4 Other Multiple Choice Items		
Item No.	Points	Item Difficulty
1	1	0.83
2	1	0.85
3	1	0.62
4	1	0.56
5	1	0.49
6	1	0.81
8	1	0.56
9	1	0.38
10	1	0.58
11	1	0.57
12	1	0.72
13	1	0.56
14	1	0.44
17	1	0.62
19	1	0.60
<b>Average</b>		<b>0.61</b>

Grade 4 Constructed Response Items		
Item No.	Points	Item Difficulty
7	2	0.40
15	2	0.70
16	2	0.69
18	2	0.32
20	2	0.52
<b>Average</b>		<b>0.52</b>

*WESTEST 2004 Operational Form Item Characteristics*

*Social Studies*

<b>Grade 5 TN Multiple Choice Items</b>		
<b>Item No.</b>	<b>Points</b>	<b>Item Difficulty</b>
21	1	0.92
22	1	0.87
23	1	0.94
24	1	0.71
25	1	0.58
26	1	0.79
27	1	0.82
28	1	0.55
29	1	0.55
30	1	0.90
31	1	0.44
32	1	0.74
33	1	0.52
34	1	0.89
35	1	0.69
36	1	0.91
37	1	0.91
38	1	0.86
39	1	0.42
40	1	0.59
41	1	0.52
42	1	0.80
43	1	0.88
44	1	0.74
45	1	0.58
46	1	0.44
47	1	0.36
48	1	0.50
49	1	0.69
50	1	0.59
<b>Average</b>		<b>0.69</b>

<b>Grade 5 Other Multiple Choice Items</b>		
<b>Item No.</b>	<b>Points</b>	<b>Item Difficulty</b>
1	1	0.75
2	1	0.51
3	1	0.94
4	1	0.53
5	1	0.51
6	1	0.47
7	1	0.46
8	1	0.43
9	1	0.42
11	1	0.64
12	1	0.48
13	1	0.57
16	1	0.50
17	1	0.51
18	1	0.47
<b>Average</b>		<b>0.55</b>

<b>Grade 5 Constructed Response Items</b>		
<b>Item No.</b>	<b>Points</b>	<b>Item Difficulty</b>
10	2	0.52
14	2	0.65
15	2	0.78
19	2	0.33
20	2	0.31
<b>Average</b>		<b>0.52</b>

*WESTEST 2004 Operational Form Item Characteristics*

*Social Studies*

<b>Grade 6 TN Multiple Choice Items</b>		
<b>Item No.</b>	<b>Points</b>	<b>Item Difficulty</b>
21	1	0.86
22	1	0.67
23	1	0.69
24	1	0.71
25	1	0.82
26	1	0.43
27	1	0.82
28	1	0.71
29	1	0.88
30	1	0.59
31	1	0.78
32	1	0.64
33	1	0.56
34	1	0.84
35	1	0.68
36	1	0.75
37	1	0.84
38	1	0.48
39	1	0.42
40	1	0.63
41	1	0.52
42	1	0.70
43	1	0.76
44	1	0.69
45	1	0.69
46	1	0.30
47	1	0.69
48	1	0.71
49	1	0.60
50	1	0.46
<b>Average</b>		<b>0.66</b>

<b>Grade 6 Other Multiple Choice Items</b>		
<b>Item No.</b>	<b>Points</b>	<b>Item Difficulty</b>
1	1	0.87
2	1	0.66
3	1	0.29
4	1	0.48
5	1	0.44
6	1	0.82
7	1	0.45
8	1	0.35
9	1	0.53
11	1	0.73
12	1	0.49
14	1	0.66
15	1	0.38
16	1	0.37
17	1	0.43
<b>Average</b>		<b>0.53</b>

<b>Grade 6 Constructed Response Items</b>		
<b>Item No.</b>	<b>Points</b>	<b>Item Difficulty</b>
10	2	0.30
13	2	0.55
18	2	0.48
19	2	0.42
20	2	0.30
<b>Average</b>		<b>0.41</b>

*WESTEST 2004 Operational Form Item Characteristics*

*Social Studies*

Grade 7 TN Multiple Choice Items		
Item No.	Points	Item Difficulty
21	1	0.98
22	1	0.88
23	1	0.78
24	1	0.93
25	1	0.73
26	1	0.83
27	1	0.85
28	1	0.92
29	1	0.48
30	1	0.77
31	1	0.69
32	1	0.51
33	1	0.76
34	1	0.67
35	1	0.91
36	1	0.59
37	1	0.77
38	1	0.73
39	1	0.48
40	1	0.44
41	1	0.72
42	1	0.88
43	1	0.65
44	1	0.64
45	1	0.64
46	1	0.53
47	1	0.68
48	1	0.41
49	1	0.47
50	1	0.41
<b>Average</b>		<b>0.69</b>

Grade 7 Other Multiple Choice Items		
Item No.	Points	Item Difficulty
1	1	0.89
2	1	0.36
3	1	0.75
4	1	0.52
5	1	0.67
6	1	0.52
7	1	0.47
8	1	0.41
9	1	0.44
11	1	0.81
12	1	0.51
14	1	0.65
15	1	0.50
16	1	0.36
17	1	0.25
<b>Average</b>		<b>0.54</b>

Grade 7 Constructed Response Items		
Item No.	Points	Item Difficulty
10	2	0.43
13	2	0.38
18	2	0.50
19	2	0.36
20	2	0.33
<b>Average</b>		<b>0.40</b>

*WESTEST 2004 Operational Form Item Characteristics*

*Social Studies*

Grade 8 TN Multiple Choice Items		
Item No.	Points	Item Difficulty
26	1	0.58
27	1	0.81
28	1	0.70
29	1	0.59
30	1	0.93
31	1	0.93
32	1	0.60
33	1	0.52
34	1	0.28
35	1	0.87
36	1	0.67
37	1	0.79
38	1	0.65
39	1	0.88
40	1	0.65
41	1	0.86
42	1	0.67
43	1	0.43
44	1	0.20
45	1	0.62
46	1	0.48
47	1	0.58
48	1	0.76
49	1	0.70
50	1	0.66
<b>Average</b>		<b>0.66</b>

Grade 8 Other Multiple Choice Items		
Item No.	Points	Item Difficulty
1	1	0.93
2	1	0.70
3	1	0.44
4	1	0.57
5	1	0.55
6	1	0.52
7	1	0.59
8	1	0.52
9	1	0.70
11	1	0.76
12	1	0.70
14	1	0.62
15	1	0.49
16	1	0.79
17	1	0.65
18	1	0.63
20	1	0.60
21	1	0.56
22	1	0.82
24	1	0.79
<b>Average</b>		<b>0.65</b>

Grade 8 Constructed Response Items		
Item No.	Points	Item Difficulty
10	2	0.34
13	2	0.39
19	2	0.53
23	2	0.37
25	2	0.24
<b>Average</b>		<b>0.37</b>

### WESTEST 2004 Impact Data Analysis by Gender and Ethnicity

Summary impact data on subgroups of the West Virginia student population is presented in this section. It is well known that minorities under- or out-perform the majority white population on school achievement tests. There are also some often observed gender differences on achievement tests. Fairness is at issue, it is believed by some, whenever the measured ability differences between subgroups is overly large. However, a criterion for large is lacking. We note that subgroups differ from the majority subgroup mean within 1 standard deviation on the scale. Female group mean is consistently higher across grades in Reading/Language Art.

#### Mathematics

Grade	Sub Group	N	Mean	SD	1 SD below the majority mean
3	Black	1024	607.4	31.8	585.4
	White	18919	618.4	33.0	
3	Female	9894	617.8	31.2	583.3
	Male	10352	618.2	34.9	
4	Black	992	630.6	30.4	612.2
	White	19130	643.8	31.5	
4	Female	9780	643.6	30.1	609.8
	Male	10606	642.8	33.0	
5	Black	991	650.9	29.4	629.7
	White	19388	661.7	32.0	
5	Female	9960	661.4	29.7	627.0
	Male	10716	661.3	34.3	
6	Black	1034	653.2	36.8	630.4
	White	20134	668.8	38.4	
6	Female	10429	668.8	37.1	627.4
	Male	11052	667.5	40.1	
7	Black	993	666.2	37.3	643.5
	White	20879	681.6	38.1	
7	Female	10688	682.3	35.8	639.6
	Male	11514	680.1	40.4	
8	Black	892	674.1	43.1	652.1
	White	20278	694.6	42.6	
8	Female	10535	694.8	41.1	648.4
	Male	10944	693.1	44.7	
10	Black	773	697.0	46.6	676.1
	White	17761	721.0	44.9	
10	Female	9265	721.6	41.7	670.2
	Male	9572	719.1	48.9	

WESTEST 2004 Impact Analysis

Reading/Language Arts

Grade	Sub Group	N	Mean	SD	1 SD below the majority mean
3	Black	1026	619.3	38.8	590.8
	White	18918	629.7	38.9	
3	Female	9896	635.0	34.0	581.3
	Male	10351	623.8	42.4	
4	Black	990	630.7	35.2	608.9
	White	19124	644.9	36.0	
4	Female	9771	649.0	33.3	601.7
	Male	10607	639.7	38.0	
5	Black	990	645.2	35.2	620.6
	White	19390	656.6	36.0	
5	Female	9963	661.7	32.5	612.5
	Male	10713	650.8	38.3	
6	Black	1039	653.0	35.3	628.7
	White	20151	665.0	36.4	
6	Female	10438	670.9	32.7	619.6
	Male	11057	658.4	38.8	
7	Black	992	660.9	39.8	633.3
	White	20884	673.9	40.6	
7	Female	10684	680.8	34.5	622.2
	Male	11519	666.6	44.4	
8	Black	894	669.9	36.5	646.4
	White	20276	682.3	35.9	
8	Female	10544	689.7	31.1	635.5
	Male	10935	674.3	38.7	
10	Black	771	676.0	43.9	653.9
	White	17751	695.5	41.6	
10	Female	9254	702.5	35.5	641.3
	Male	9570	687.4	46.1	

*WESTEST 2004 Impact Analysis*

**Science**

<b>Grade</b>	<b>Sub Group</b>	<b>N</b>	<b>Mean</b>	<b>SD</b>	<b>1 SD below the majority mean</b>
3	Black	1022	618.9	25.3	604.8
	White	18879	631.3	26.5	
3	Female	9876	629.9	24.8	603.3
	Male	10326	631.4	28.1	
4	Black	988	624.4	31.8	610.3
	White	19077	643.4	33.1	
4	Female	9756	640.7	31.8	609.4
	Male	10571	644.0	34.6	
5	Black	987	642.0	33.4	627.0
	White	19328	659.4	32.4	
5	Female	9927	656.9	31.8	626.6
	Male	10685	660.2	33.6	
6	Black	1024	658.4	32.1	640.9
	White	20069	673.6	32.6	
6	Female	10400	672.6	31.4	638.8
	Male	10994	673.1	34.3	
7	Black	984	669.4	33.7	651.0
	White	20785	685.3	34.3	
7	Female	10640	684.6	30.6	647.1
	Male	11456	684.7	37.6	
8	Black	882	679.0	34.5	662.6
	White	20169	695.9	33.3	
8	Female	10471	694.8	30.5	659.4
	Male	10886	695.7	36.3	
10	Black	761	688.4	40.6	675.0
	White	17635	711.4	36.4	
10	Female	9192	709.4	31.9	670.7
	Male	9501	711.8	41.2	

WESTEST 2004 Impact Analysis

Social Studies

Grade	Sub Group	N	Mean	SD	1 SD below the majority mean
3	Black	1023	620.6	29.2	601.5
	White	18892	631.4	30.0	
3	Female	9883	632.0	28.7	598.8
	Male	10333	630.0	31.2	
4	Black	990	634.5	27.1	619.4
	White	19096	647.2	27.8	
4	Female	9763	647.1	25.6	616.1
	Male	10586	646.0	29.9	
5	Black	987	645.6	25.7	629.5
	White	19349	656.6	27.1	
5	Female	9938	656.0	24.8	626.9
	Male	10695	656.2	29.3	
6	Black	1029	646.8	35.2	624.6
	White	20077	660.5	35.9	
6	Female	10411	660.6	33.3	620.5
	Male	11007	659.2	38.7	
7	Black	988	663.6	30.0	644.9
	White	20796	676.2	31.2	
7	Female	10649	677.3	27.5	639.8
	Male	11462	674.2	34.4	
8	Black	887	675.9	26.6	658.6
	White	20188	688.0	29.4	
8	Female	10487	688.1	27.0	655.4
	Male	10894	687.1	31.7	

Hand Scoring Reliability

The WESTEST constructed response questions require a response composed by the examinee, usually in the form of one or more sentences, where the ideas expressed are scored as correct or incorrect. Since it is the ideas rather than the specific written expressions that are scored, the response cannot be scored by applying a clerical key. Scorers use judgment to determine whether the ideas expressed match those described in a scoring guide. In other words, scorers interpret what the student has written. In order to minimize the difference in interpretations that scorers make, scorers are required to have certain hiring qualifications and on-site training using examples of responses that match and don't match the desired answers. Even so, the match between an examinee's response and the scoring guide description of correct responses is a matter of degree. As a result, perfect agreement between different raters of the same examinee response is not expected in order for the test to be valid. High perfect agreement between raters, for example, 80%, can be obtained when the ideas being expressed and scored are rather narrowly defined instances of principles or algorithms within a subject area composed of discrete knowledge. This rate of perfect agreement drops rapidly; however, for subject areas such as reading and writing

where the ideas being expressed are not highly constrained by content; instead, the form and coherence of the expression of the ideas is the target of the testing and scoring.

Nevertheless, relatively high adjacent agreement (scores only one point different) can be obtained. This adjacent agreement still varies with known characteristics of the question and scoring guides. Adjacent agreement of 95% or more is desirable when analytic rubrics are used. When holistic rubrics are used and scoring is deliberately impressionistic, adjacent agreement may drop below 90%. What reliability of scoring is telling us, in this case, is how well experts can agree, or perhaps, how much experts can find to disagree about.

The inter-rater reliability for WESTEST 2004 Operational tests is reported in the tables below as the absolute value of the difference between the first and second score assigned to a student response on each constructed response item. Inter-rater reliability assesses the consistency of how the rating system is implemented. The inter-rater reliability analyses show that the WESTEST hand-scoring results have an acceptable perfect agreement rate and a high adjacent agreement rate across grades and subject areas.

**WESTEST 2004 Inter-Rater Reliability for Constructed Response Items**

<b>Mathematics</b>				
<b>Grade</b>	<b>Item No.</b>	<b>Score Pts</b>	<b>% of Agreement</b>	
			<b>Perfect</b>	<b>Adjacent</b>
3	42	3	84	99
	49	3	96	100
	50	3	88	97
	51	3	90	99
	52	3	96	100
4	42	3	93	99
	49	3	96	100
	50	3	91	97
	51	3	90	99
	52	3	92	99
5	42	3	89	99
	49	3	90	99
	50	3	89	99
	51	3	93	100
	52	3	91	100
6	42	3	88	99
	49	3	76	99
	50	3	82	98
	51	3	95	100
	52	3	96	100
7	42	3	82	98
	49	3	92	100
	50	3	86	98
	51	3	84	97
	52	3	92	99
8	42	3	86	99
	49	3	88	100
	50	3	82	99
	51	3	87	99
	52	3	83	100
10	36	3	96	99
	46	4	73	96
	47	4	81	98
	48	4	82	94
	49	4	89	99

*WESTEST 2004 Inter-rater Comparison for Constructed Response Items*

Reading/Language Arts				
Grade	Item No.	Score Pts	% of Agreement	
			Perfect	Adjacent
3	55	2	74	100
	60	2	83	100
	64	2	82	99
	65	2	75	100
	70	2	96	100
4	59	2	79	100
	64	2	82	100
	69	2	88	100
	70	2	71	98
	75	2	96	100
5	59	2	71	99
	60	2	77	100
	65	2	75	100
	71	2	76	100
	76	2	99	100
6	60	2	75	99
	65	2	66	99
	69	2	83	100
	70	2	76	99
	75	2	97	100
7	60	2	87	100
	65	2	89	100
	69	2	85	100
	70	2	84	99
	75	2	93	100
8	58	2	81	99
	59	2	80	99
	64	2	81	99
	70	2	60	96
	75	2	87	100
10	64	2	91	100
	65	2	68	100
	72	2	77	100
	77	2	80	99
	80	2	91	100

*WESTEST 2004 Inter-rater Comparison for Constructed Response Items*

Science				
Grade	Item No.	Score Pts	% of Agreement	
			Perfect	Adjacent
3	33	2	82	99
	38	2	92	100
	39	2	86	100
	40	2	80	99
	49	2	95	100
4	34	2	93	100
	35	2	95	100
	36	2	90	99
	39	2	76	99
	50	2	91	100
5	33	2	89	100
	36	2	84	99
	40	2	95	100
	44	2	94	100
	48	2	92	100
6	35	2	74	99
	37	2	84	99
	39	2	85	100
	40	2	88	99
	50	2	89	100
7	38	2	80	99
	39	2	81	100
	48	2	96	100
	49	2	80	99
	50	2	96	100
8	32	2	96	100
	35	2	87	100
	41	2	97	100
	42	2	93	100
	52	2	94	100
10	35	4	65	95
	38	4	84	99
	39	4	78	98
	40	4	80	98
	41	4	81	99

*WESTEST 2004 Inter-rater Comparison for Constructed Response Items*

<b>Social Studies</b>				
<b>Grade</b>	<b>Item No.</b>	<b>Score Pts</b>	<b>% of Agreement</b>	
			<b>Perfect</b>	<b>Adjacent</b>
3	7	2	87	100
	15	2	95	100
	18	2	76	99
	19	2	72	99
	20	2	79	99
4	7	2	70	98
	15	2	75	99
	16	2	81	99
	18	2	73	98
	20	2	74	99
5	10	2	81	99
	14	2	82	99
	15	2	99	100
	19	2	79	99
	20	2	69	97
6	10	2	78	99
	13	2	87	100
	18	2	79	100
	19	2	81	100
	20	2	77	99
7	10	2	90	100
	13	2	67	98
	18	2	70	99
	19	2	85	100
	20	2	83	99
8	10	2	81	99
	13	2	78	99
	19	2	96	100
	23	2	93	100
	25	2	84	99

## **WESTEST 2004 Operational Tests Content Standard Mastery-Below Mastery Cut Points**

The content standard mastery Mastery-Below Mastery cut points for each grade/content area are determined by using the IRT method to reflect the Standards set by the Standard Setting judges for each of the grade/subject areas. The following procedure was used to determine the cut point for Grade Level Content Standard mastery. Once the items in the 2004 Operational Forms had been calibrated, the number-correct-to-scale-score conversion tables were produced based on the IRT scaling results (Yen, 1984). This procedure was carried out for each content standard of each grade and subject area. The mastery cut point was found by applying the performance level mastery cut score on the WESTEST scales to each of the content standard number-correct-to-scale-score table by grade by subject area. Then the percent correct needed to achieve the mastery for the content was determined. The Standards are measured in terms of percent of points earned. Score points are used rather than items because the constructed response items have multiple score points possible. This procedure is repeated each year for the new operational form, due to item differences for most content standards in different forms.

### ***The Use of the Standard Subscores***

The purpose of reporting Standard subscores on WESTEST is to show that students who exhibit the overall ability being measured have skills in each of the areas delimited by the Standards. The Standard subscores provide some measure of the extent to which the overall ability has the desired breadth of the West Virginia Content Standards and Objectives. The diagnostic value of these subscores is limited because some of the subscores are necessarily limited in numbers of items. Teachers may use these subscores for individual students as indicators of strengths and weaknesses, but they are best corroborated by other evidence such as homework, class participation, class test scores, or observation—if the scores are to be used to make decisions about the need, or lack of need, for remediation. Comparison of students with each other on the basis of these subscores is not supported. Profiles of Standard subscores for students are not supported.

### ***Reading and Language Standard scores***

Exceptions to the general comments about Standard scores are the Reading and Language subscores of the WESTEST Reading/Language Arts test. These test scores are composed of large subsets of items. These Standard scores comprise a substantial test of reading and language arts abilities.

**WESTEST 2004 Operational Form Content Standard Mastery Cut Points**

<b>Grade 3 Mathematics</b>					
Performance Level	Percent Correct Range				
	1. Number and Operations	2. Algebra	3. Geometry	4. Measurement	5. Data Analysis and Probability
2 – At or Above Mastery Level	56 – 100	44 – 100	70 – 100	50 – 100	75 – 100
1- Below Mastery Level	0 – 55	0 – 43	0 – 69	0 – 49	0 – 74
<b>Grade 4 Mathematics</b>					
Performance Level	Percent Correct Range				
	1. Number and Operations	2. Algebra	3. Geometry	4. Measurement	5. Data Analysis and Probability
2 – At or Above Mastery Level	54 – 100	55 – 100	66 – 100	50 – 100	55 – 100
1- Below Mastery Level	0 – 53	0 – 54	0 – 65	0 – 49	0 – 54
<b>Grade 5 Mathematics</b>					
Performance Level	Percent Correct Range				
	1. Number and Operations	2. Algebra	3. Geometry	4. Measurement	5. Data Analysis and Probability
2 – At or Above Mastery Level	52 – 100	53 – 100	45 – 100	55 – 100	70 – 100
1- Below Mastery Level	0 – 51	0 – 52	0 – 44	0 – 54	0 – 69
<b>Grade 6 Mathematics</b>					
Performance Level	Percent Correct Range				
	1. Number and Operations	2. Algebra	3. Geometry	4. Measurement	5. Data Analysis and Probability
2 – At or Above Mastery Level	60 – 100	46 – 100	50 – 100	40 – 100	50 – 100
1- Below Mastery Level	0 – 59	0 – 45	0 – 49	0 – 39	0 – 49
<b>Grade 7 Mathematics</b>					
Performance Level	Percent Correct Range				
	1. Number and Operations	2. Algebra	3. Geometry	4. Measurement	5. Data Analysis and Probability
2 – At or Above Mastery Level	50 – 100	44 – 100	50 – 100	40 – 100	50 – 100
1- Below Mastery Level	0 – 49	0 – 43	0 – 49	0 – 39	0 – 49
<b>Grade 8 Mathematics</b>					
Performance Level	Percent Correct Range				
	1. Number and Operations	2. Algebra	3. Geometry	4. Measurement	5. Data Analysis and Probability
2 – At or Above Mastery Level	55 – 100	42 – 100	41 – 100	33 – 100	61 – 100
1- Below Mastery Level	0 – 54	0 – 41	0 – 40	0 – 32	0 – 60
<b>Grade 10 Mathematics</b>					
Performance Level	Percent Correct Range				
	1. Number and Operations	2. Algebra	3. Geometry	4. Measurement	5. Data Analysis and Probability
2 – At or Above Mastery Level	55 – 100	47 – 100	41 – 100	44 – 100	50 – 100
1- Below Mastery Level	0 – 54	0 – 46	0 – 40	0 – 43	0 – 49

*WESTEST 2004 Operational Form Content Standard Mastery Cut Points*

<b>Grade 3 Reading/Language Arts</b>		
Performance Level	Percent Correct Range	
	1. Reading	2. Writing
2 – At or Above Mastery Level	55 – 100	56 – 100
1- Below Mastery Level	0 – 54	0 – 55
<b>Grade 4 Reading/Language Arts</b>		
Performance Level	Percent Correct Range	
	1. Reading	2. Writing
2 – At or Above Mastery Level	62 – 100	61 – 100
1- Below Mastery Level	0 – 61	0 – 60
<b>Grade 5 Reading/Language Arts</b>		
Performance Level	Percent Correct Range	
	1. Reading	2. Writing
2 – At or Above Mastery Level	51 – 100	56 – 100
1- Below Mastery Level	0 – 50	0 – 55
<b>Grade 6 Reading/Language Arts</b>		
Performance Level	Percent Correct Range	
	1. Reading	2. Writing
2 – At or Above Mastery Level	47 – 100	48 – 100
1- Below Mastery Level	0 – 46	0 – 47
<b>Grade 7 Reading/Language Arts</b>		
Performance Level	Percent Correct Range	
	1. Reading	2. Writing
2 – At or Above Mastery Level	46 – 100	50 – 100
1- Below Mastery Level	0 – 45	0 – 49
<b>Grade 8 Reading/Language Arts</b>		
Performance Level	Percent Correct Range	
	1. Reading	2. Writing
2 – At or Above Mastery Level	45 – 100	51 – 100
1- Below Mastery Level	0 – 44	0 – 50
<b>Grade 10 Reading/Language Arts</b>		
Performance Level	Percent Correct Range	
	1. Reading	2. Writing
2 – At or Above Mastery Level	53 – 100	60 – 100
1- Below Mastery Level	0 – 52	0 – 59

*WESTEST 2004 Operational Form Content Standard Mastery Cut Points*

<b>Grade 3 Science</b>						
Performance Level	Percent Correct Range					
	1. History and Nature of Science	2. Science as Inquiry	3. Unifying Themes	4. Science Subject Matter/ Concepts	5. Scientific Design and Application	6. Science in Personal and Social Perspectives
2 – At or Above Mastery Level	75 – 100	50 – 100	60 – 100	47 – 100	50 – 100	60 – 100
1- Below Mastery Level	0 – 74	0 – 49	0 – 59	0 – 46	0 – 49	0 – 59
<b>Grade 4 Science</b>						
Performance Level	Percent Correct Range					
	1. History and Nature of Science	2. Science as Inquiry	3. Unifying Themes	4. Science Subject Matter/ Concepts	5. Scientific Design and Application	6. Science in Personal and Social Perspectives
2 – At or Above Mastery Level	50 – 100	37 – 100	75 – 100	47 - 100	50 – 100	66 – 100
1- Below Mastery Level	0 – 49	0 – 36	0 – 74	0 – 46	0 – 49	0 – 65
<b>Grade 5 Science</b>						
Performance Level	Percent Correct Range					
	1. History and Nature of Science	2. Science as Inquiry	3. Unifying Themes	4. Science Subject Matter/ Concepts	5. Scientific Design and Application	6. Science in Personal and Social Perspectives
2 – At or Above Mastery Level	50 – 100	37 – 100	50 – 100	45 – 100	50 – 100	60 – 100
1- Below Mastery Level	0 – 49	0 – 36	0 – 49	0 – 44	0 – 49	0 – 59
<b>Grade 6 Science</b>						
Performance Level	Percent Correct Range					
	1. History and Nature of Science	2. Science as Inquiry	3. Unifying Themes	4. Science Subject Matter/ Concepts	5. Scientific Design and Application	6. Science in Personal and Social Perspectives
2 – At or Above Mastery Level	50 – 100	37 – 100	20 – 100	50 – 100	50 – 100	25 – 100
1- Below Mastery Level	0 – 49	0 – 36	0 – 19	0 – 49	0 – 49	0 – 24
<b>Grade 7 Science</b>						
Performance Level	Percent Correct Range					
	1. History and Nature of Science	2. Science as Inquiry	3. Unifying Themes	4. Science Subject Matter/ Concepts	5. Scientific Design and Application	6. Science in Personal and Social Perspectives
2 – At or Above Mastery Level	50 – 100	37 – 100	50 – 100	45 – 100	40 – 100	50 – 100
1- Below Mastery Level	0 – 49	0 – 36	0 – 49	0 – 44	0 – 39	0 – 49

*WESTEST 2004 Operational Form Content Standard Mastery Cut Points*

<b>Grade 3 Social Studies</b>					
Performance Level	Percent Correct Range				
	1. Citizenship	2. Civics / Government	3. Economics	4. Geography	5. History
2 – At or Above Mastery Level	50 – 100	50 – 100	63 – 100	64 – 100	64 – 100
1- Below Mastery Level	0 – 49	0 – 49	0 – 62	0 – 63	0 – 63
<b>Grade 4 Social Studies</b>					
Performance Level	Percent Correct Range				
	1. Citizenship	2. Civics / Government	3. Economics	4. Geography	5. History
2 – At or Above Mastery Level	66 – 100	50 – 100	61 – 100	76 – 100	50 – 100
1- Below Mastery Level	0 – 65	0 – 49	0 – 60	0 – 75	0 – 49
<b>Grade 5 Social Studies</b>					
Performance Level	Percent Correct Range				
	1. Citizenship	2. Civics / Government	3. Economics	4. Geography	5. History
2 – At or Above Mastery Level	66 – 100	44 – 100	57 – 100	57 – 100	47 – 100
1- Below Mastery Level	0 – 65	0 – 43	0 – 56	0 – 56	0 – 46
<b>Grade 6 Social Studies</b>					
Performance Level	Percent Correct Range				
	1. Citizenship	2. Civics / Government	3. Economics	4. Geography	5. History
2 – At or Above Mastery Level	50 – 100	50 – 100	46 – 100	66 – 100	53 – 100
1- Below Mastery Level	0 – 49	0 – 49	0 – 45	0 – 65	0 – 52
<b>Grade 7 Social Studies</b>					
Performance Level	Percent Correct Range				
	1. Citizenship	2. Civics / Government	3. Economics	4. Geography	5. History
2 – At or Above Mastery Level	62 – 100	50 – 100	58 – 100	58 – 100	58 – 100
1- Below Mastery Level	0 – 61	0 – 49	0 – 57	0 – 57	0 – 57
<b>Grade 8 Social Studies</b>					
Performance Level	Percent Correct Range				
	1. Citizenship	2. Civics / Government	3. Economics	4. Geography	5. History
2 – At or Above Mastery Level	75 – 100	55 – 100	60 – 100	62 – 100	55 – 100
1- Below Mastery Level	0 – 74	0 – 54	0 – 59	0 – 61	0 – 54