

# West Virginia

# Education Standards Test

## Technical Report

## 2007 Supplement

November 15, 2007



**CTB/McGraw-Hill**  
**20 Ryan Ranch Road**  
**Monterey, CA 93940**

Developed and published under contract with the West Virginia Department of Education by CTB/McGraw-Hill LLC, a subsidiary of The McGraw-Hill Companies, Inc., 20 Ryan Ranch Road, Monterey, California 93940-5703. Copyright © 2007 by West Virginia Department of Education. All rights reserved. Only State of West Virginia educators and citizens may copy, download and/or print the document, located online at <http://WESTEST.k12.wv.us>, for educational purposes only. Any other use or reproduction of this document, in whole or in part, requires written permission of the West Virginia Department of Education and the publisher.

## Table of Contents

Evidence for Validity .....	4
Construct, Purpose, and Interpretation-of-scores .....	4
Reliability/Internal Test .....	4
Internal Consistency Reliability Coefficients for WESTEST Operational Test 2007.....	5
Standard Error of Measurement.....	6
IRT Standard Error Curves for WESTEST 2007 Operational Tests.....	7
Mathematics .....	7
Reading/Language Arts .....	14
Science.....	21
Social Studies.....	28
The WESTEST Achievement Levels: Regional Average SEM on the scale.....	34
Classification Consistency.....	35
Reliability Indices for Cut Scores.....	35
Approximate Values of the Agreement and Kappa Coefficients for 2007 Operational Forms .....	36
Test Content Development.....	37
Test Content /Design.....	37
WESTEST 2007 Operational Test Form Item Maps .....	38
Mathematics .....	38
Reading/Language Arts .....	40
Science.....	42
Social Studies.....	44
WESTEST 2007 Content Standard Item/Point Distributions .....	46
Mathematics .....	46
Reading/Language Arts .....	48
Science.....	50
Social Studies.....	53
Test/Item Characteristics .....	55
WESTEST 2007 Operational test scale score/raw score means, standard deviations for scale/raw scores, p-values, and item-total correlations .....	56
WESTEST 2007 Operational Form Item Characteristics .....	57
Mathematics .....	57
Reading and Language Arts.....	64
Science.....	71
Social Studies.....	78
WESTEST 2007 Impact Data Analysis by Gender and Ethnicity.....	84
Mathematics .....	85
Reading/Language Arts .....	86
Science.....	87
Social Studies.....	88
Hand Scoring Reliability.....	89
WESTEST 2007 Operational Inter-Rater Reliability for Constructed Response Items .....	90
WESTEST 2007 Operational Tests Content Standard Mastery-Below Mastery Performance Level Score Range.....	94
The Use of the Standard Subscores .....	94
Reading and Language Standard scores.....	94
WESTEST 2007 Operational Form Content Standard Mastery Cut Points.....	95

## 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 have higher scores 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 are 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 2007 operational form ranged from around 18,000-22,000 from each grade/content and is used for most of the subsequent analyses.

**Internal Consistency Reliability Coefficients for WESTEST Operational Test 2007**

Math (N)	Number of Items	Alpha	Stratified Alpha	Feldt-Raju
<b>Grade 3</b> (19798)	52	0.89	0.90	0.91
<b>Grade 4</b> (19579)	52	0.89	0.90	0.90
<b>Grade 5</b> (19715)	52	0.90	0.91	0.91
<b>Grade 6</b> (20474)	52	0.91	0.92	0.92
<b>Grade 7</b> (20831)	52	0.90	0.90	0.91
<b>Grade 8</b> (20836)	52	0.91	0.92	0.92
<b>Grade 10</b> (19654)	49	0.91	0.91	0.92
Reading/ Language Arts (N)	Number of Items	Alpha	Stratified Alpha	Feldt-Raju
<b>Grade 3</b> (19781)	70	0.94	0.94	0.94
<b>Grade 4</b> (19561)	75	0.93	0.94	0.94
<b>Grade 5</b> (20337)	76	0.93	0.93	0.94
<b>Grade 6</b> (19694)	75	0.94	0.94	0.94
<b>Grade 7</b> (20442)	75	0.94	0.94	0.94
<b>Grade 8</b> (20776)	75	0.93	0.94	0.94
<b>Grade 10</b> (19589)	80	0.94	0.94	0.94
Science (N)	Number of Items	Alpha	Stratified Alpha	Feldt-Raju
<b>Grade 3</b> (19775)	50	0.84	0.85	0.85
<b>Grade 4</b> (19558)	50	0.85	0.86	0.86
<b>Grade 5</b> (19659)	50	0.84	0.84	0.84
<b>Grade 6</b> (20383)	50	0.87	0.87	0.87
<b>Grade 7</b> (20694)	50	0.88	0.88	0.88
<b>Grade 8</b> (20698)	52	0.87	0.88	0.88
<b>Grade 10</b> (19473)	50	0.87	0.89	0.88
Social Studies (N)	Number of Items	Alpha	Stratified Alpha	Feldt-Raju
<b>Grade 3</b> (19786)	50	0.87	0.88	0.88
<b>Grade 4</b> (19542)	50	0.88	0.88	0.88
<b>Grade 5</b> (19659)	50	0.86	0.86	0.86
<b>Grade 6</b> (20420)	50	0.90	0.90	0.90
<b>Grade 7</b> (20731)	50	0.89	0.89	0.89
<b>Grade 8</b> (20688)	50	0.90	0.90	0.90

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***

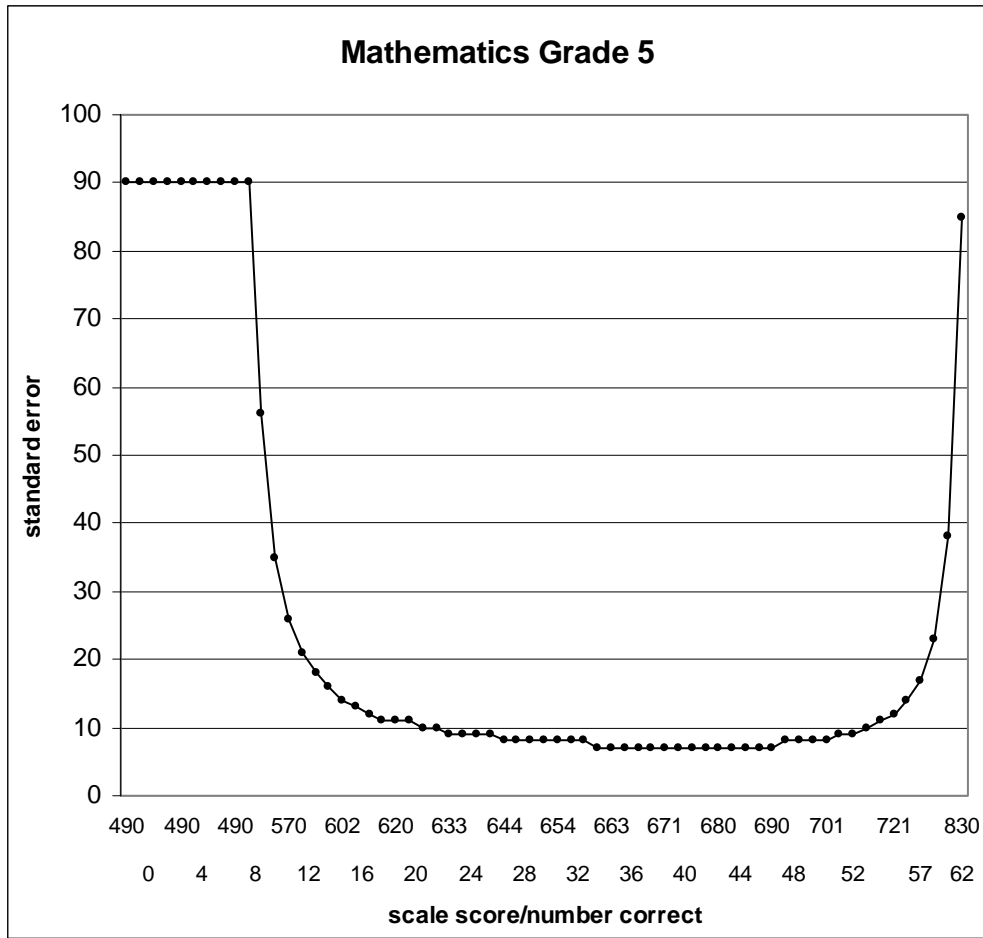
In addition to the classic internal consistency coefficients that describe the test characteristics, the Standard Error of Measurement (SEM) based on Item Response Theory (IRT) is also provided as reliability evidence of WESTEST. The IRT SEM provides the most complete and definitive description of reliability 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 2007 Operational Tests*

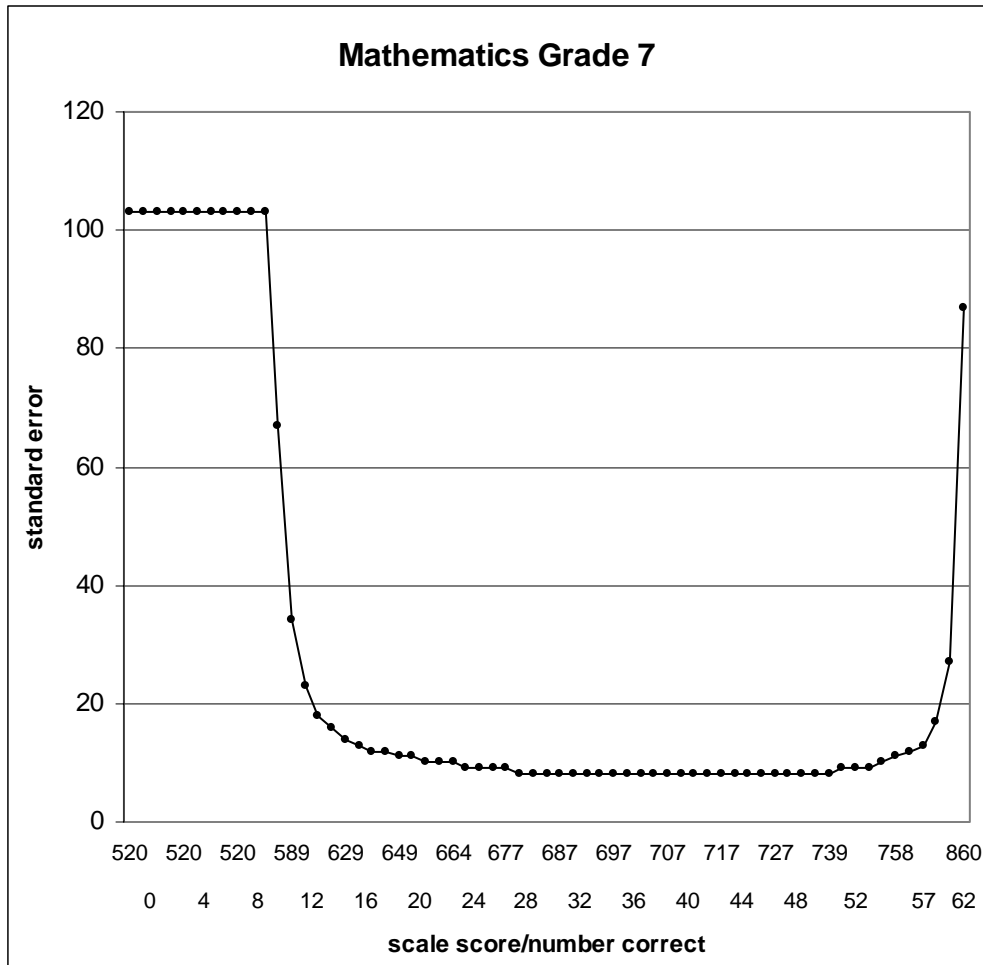
*Mathematics*





*IRT Standard Error Curves for WESTEST 2007 Operational Tests*

*Mathematics*



Average SEM Novice	Average SEM Partial to Above Mastery	Average SEM Distinguished
39	9	20

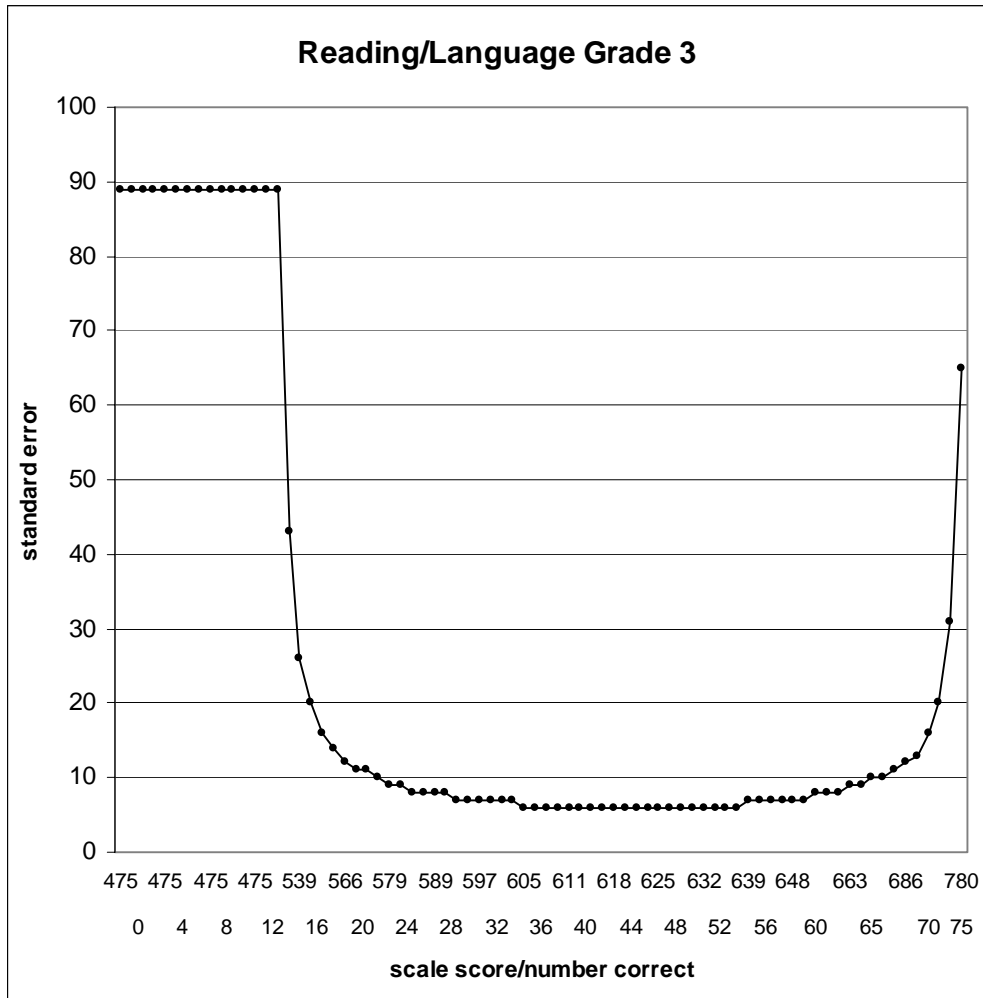
Lowest Obtainable Scale Score (LOSS) is 520. Highest Obtainable Scale Score (HOSS) is 860.





*IRT Standard Error Curves for WESTEST 2007 Operational Tests*

**Reading/Language Arts**

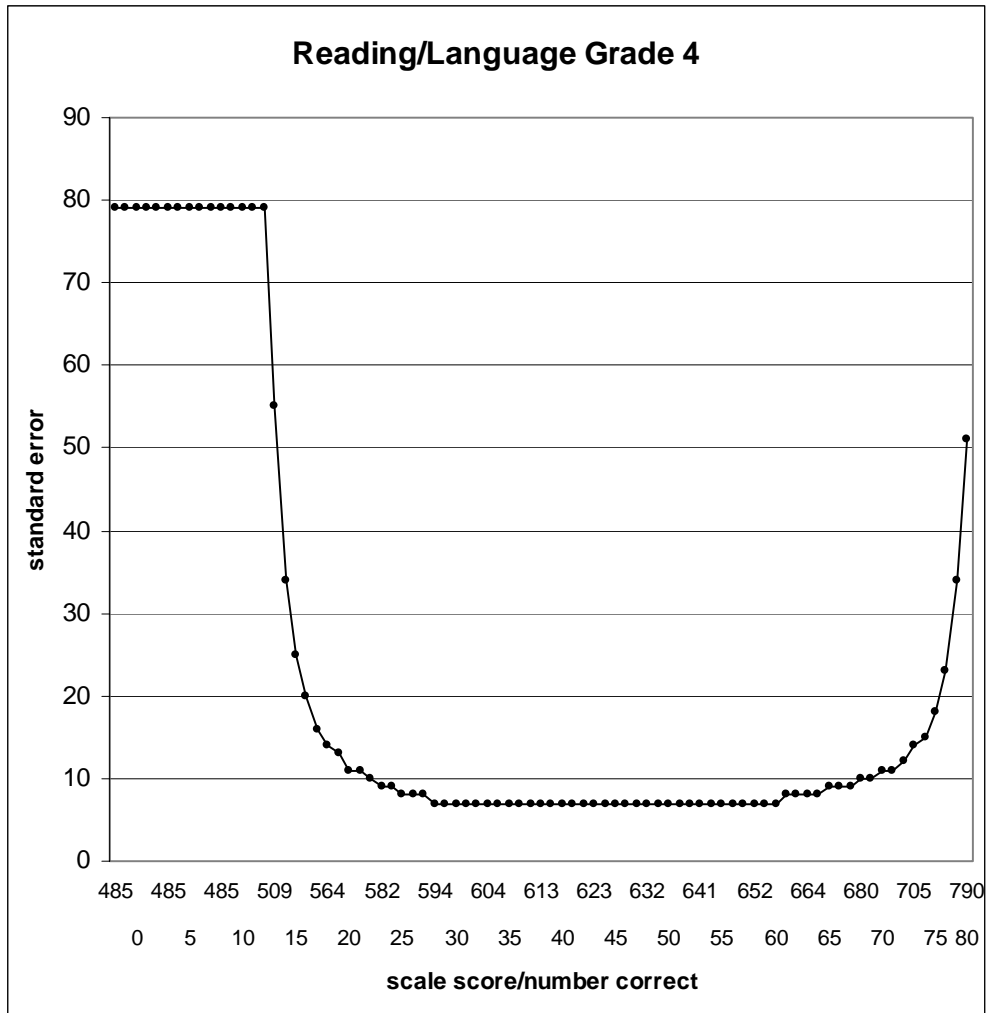


Average SEM Novice	Average SEM Partial to Above Mastery	Average SEM Distinguished
31	7	24

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

***IRT Standard Error Curves for WESTEST 2007 Operational Tests***

***Reading/Language Arts***

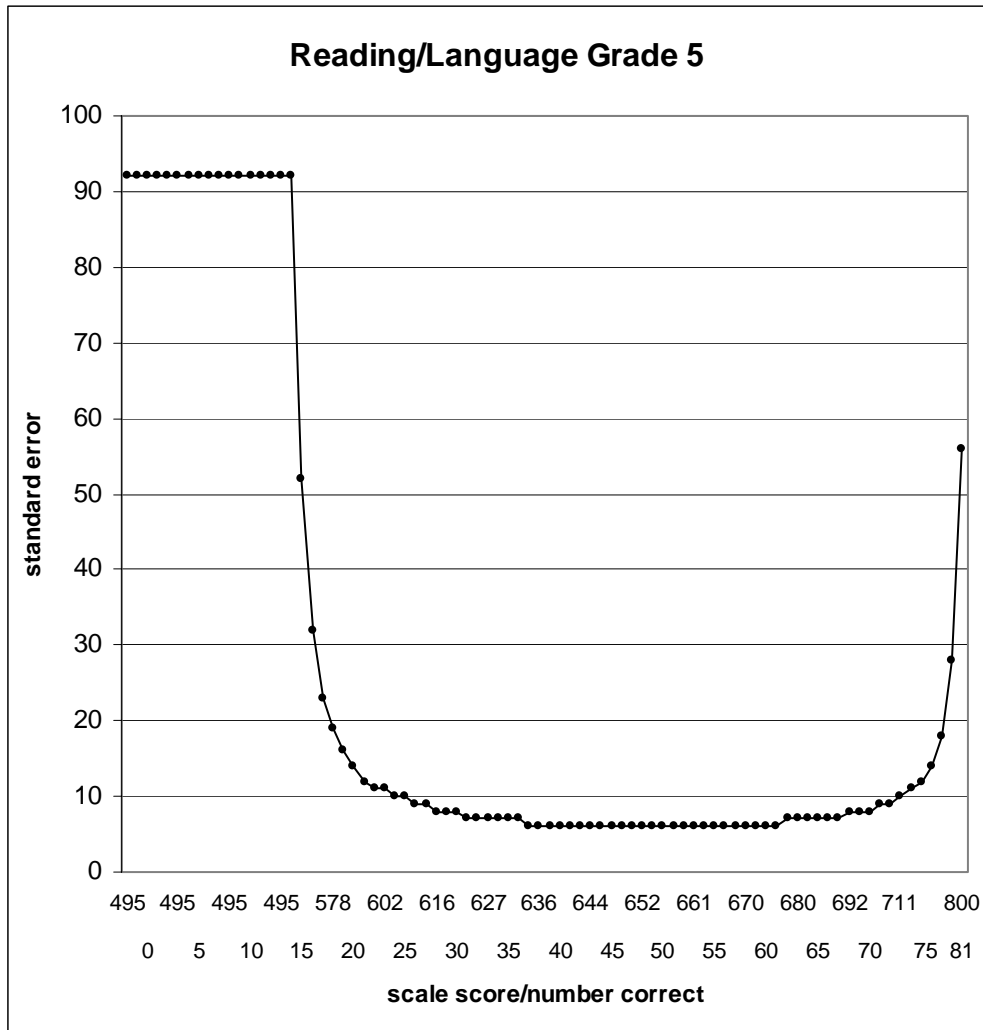


Average SEM Novice	Average SEM Partial to Above Mastery	Average SEM Distinguished
24	8	22

Lowest Obtainable Scale Score (LOSS) is 485. Highest Obtainable Scale Score (HOSS) is 790.

***IRT Standard Error Curves for WESTEST 2007 Operational Tests***

***Reading/Language Arts***

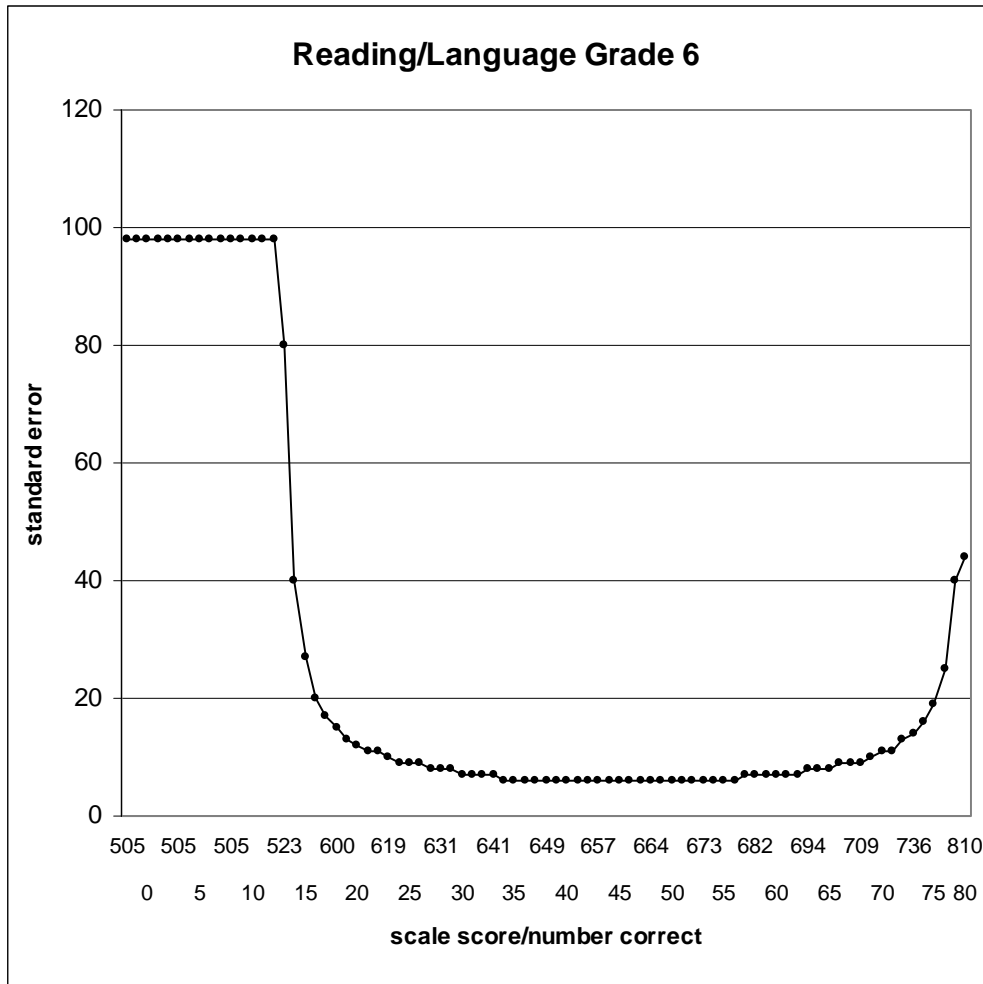


Average SEM Novice	Average SEM Partial to Above Mastery	Average SEM Distinguished
30	7	19

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

*IRT Standard Error Curves for WESTEST 2007 Operational Tests*

*Reading/Language Arts*



Average SEM Novice	Average SEM Partial to Above Mastery	Average SEM Distinguished
39	7	18

Lowest Obtainable Scale Score (LOSS) is 505. Highest Obtainable Scale Score (HOSS) is 810.

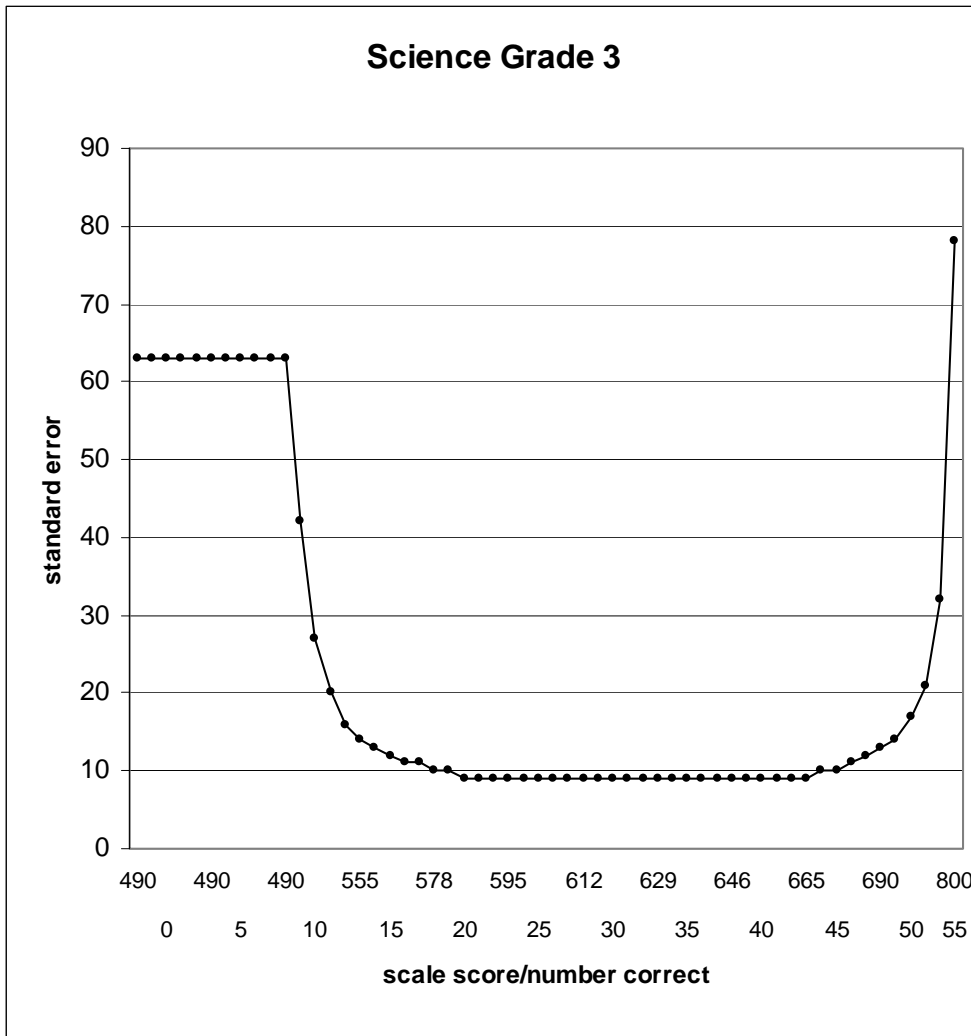






*IRT Standard Error Curves for WESTEST 2007 Operational Tests*

Science

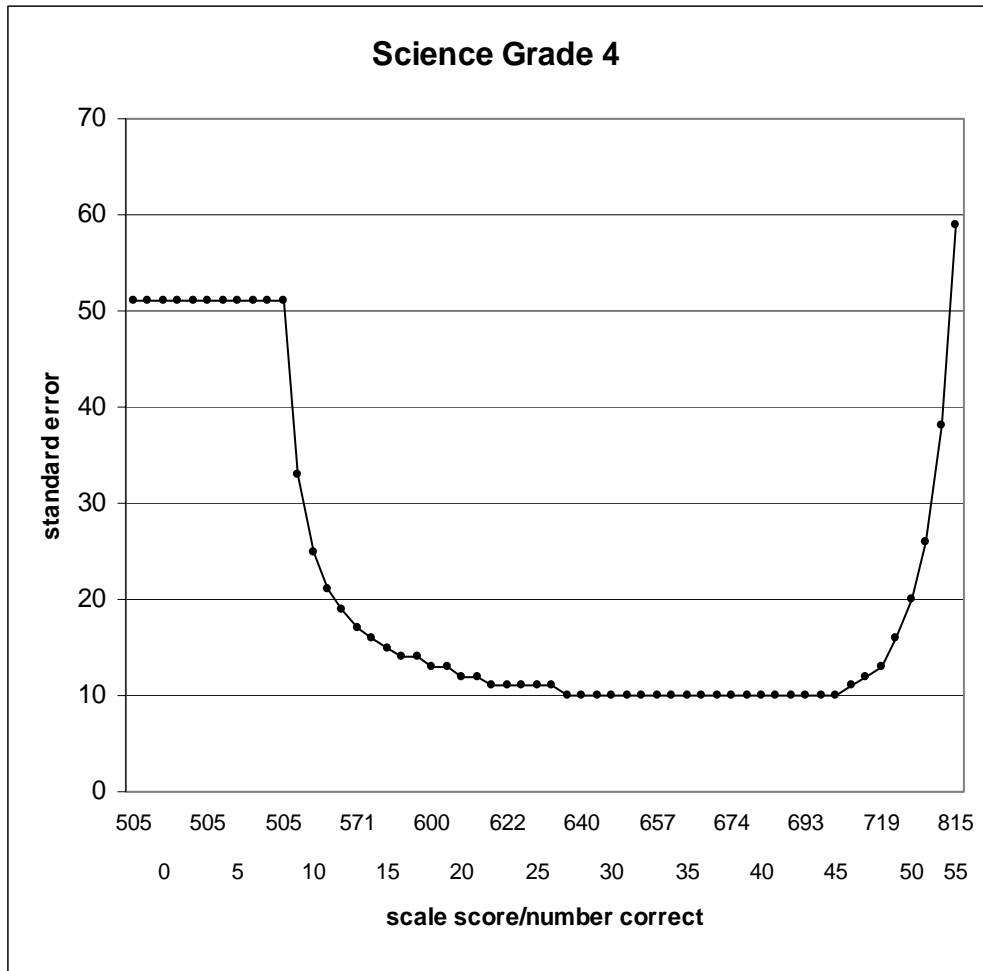


Average SEM Novice	Average SEM Partial to Above Mastery	Average SEM Distinguished
23	9	22

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

**IRT Standard Error Curves for WESTEST 2007 Operational Tests**

**Science**

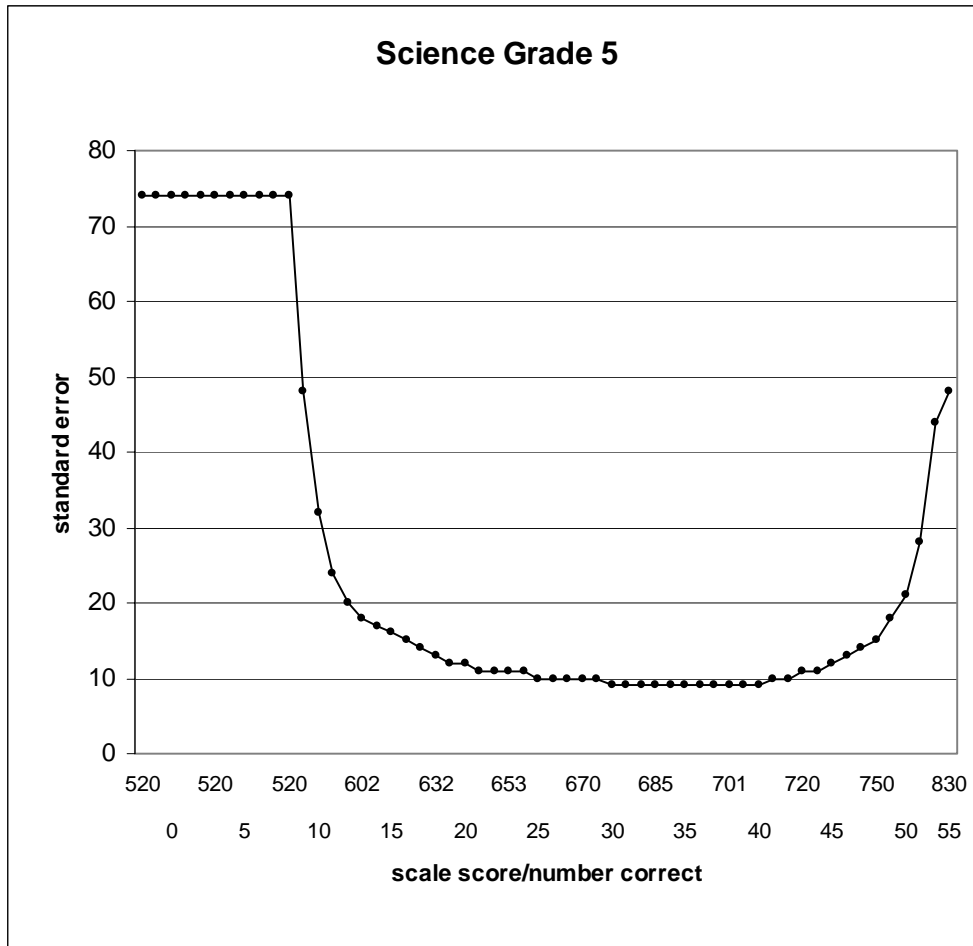


Average SEM Novice	Average SEM Partial to Above Mastery	Average SEM Distinguished
26	11	19

Lowest Obtainable Scale Score (LOSS) is 505. Highest Obtainable Scale Score (HOSS) is 815.

*IRT Standard Error Curves for WESTEST 2007 Operational Tests*

*Science*



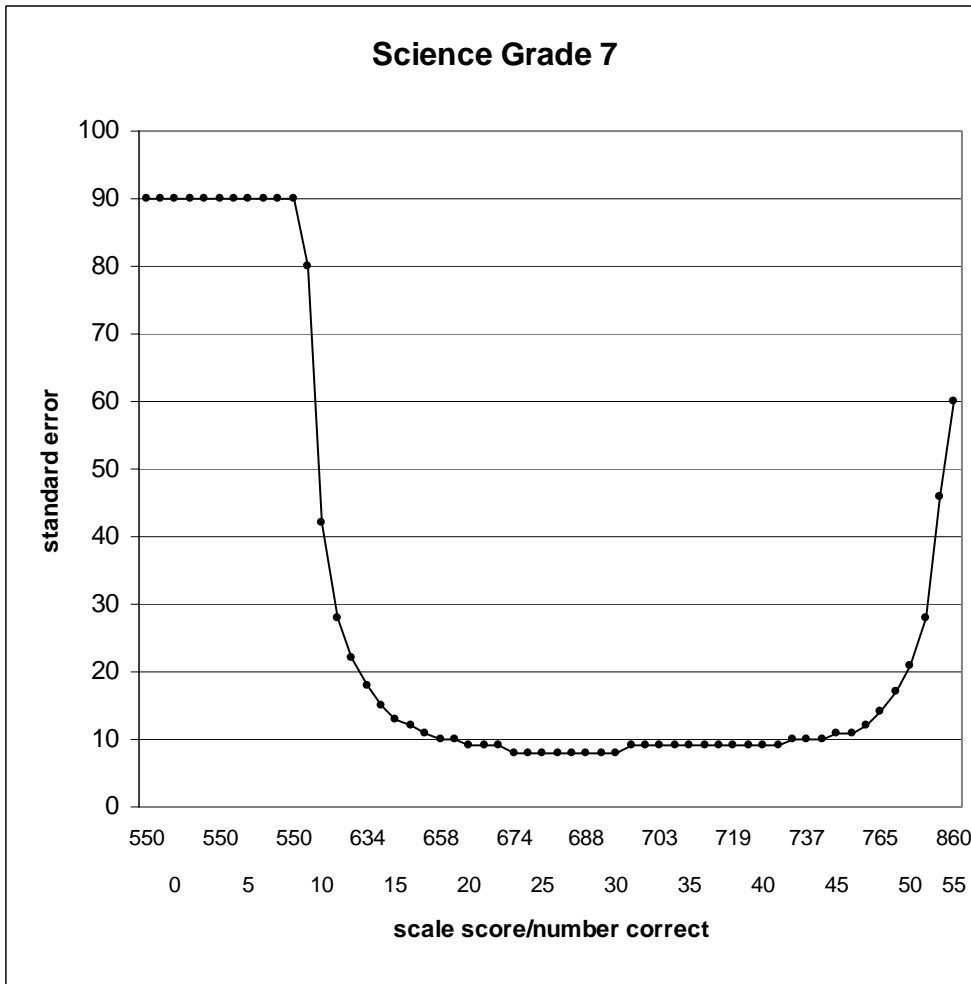
Average SEM Novice	Average SEM Partial to Above Mastery	Average SEM Distinguished
45	12	18

Lowest Obtainable Scale Score (LOSS) is 520. Highest Obtainable Scale Score (HOSS) is 830.



*IRT Standard Error Curves for WESTEST 2007 Operational Tests*

*Science*



Average SEM Novice	Average SEM Partial to Above Mastery	Average SEM Distinguished
71	11	21

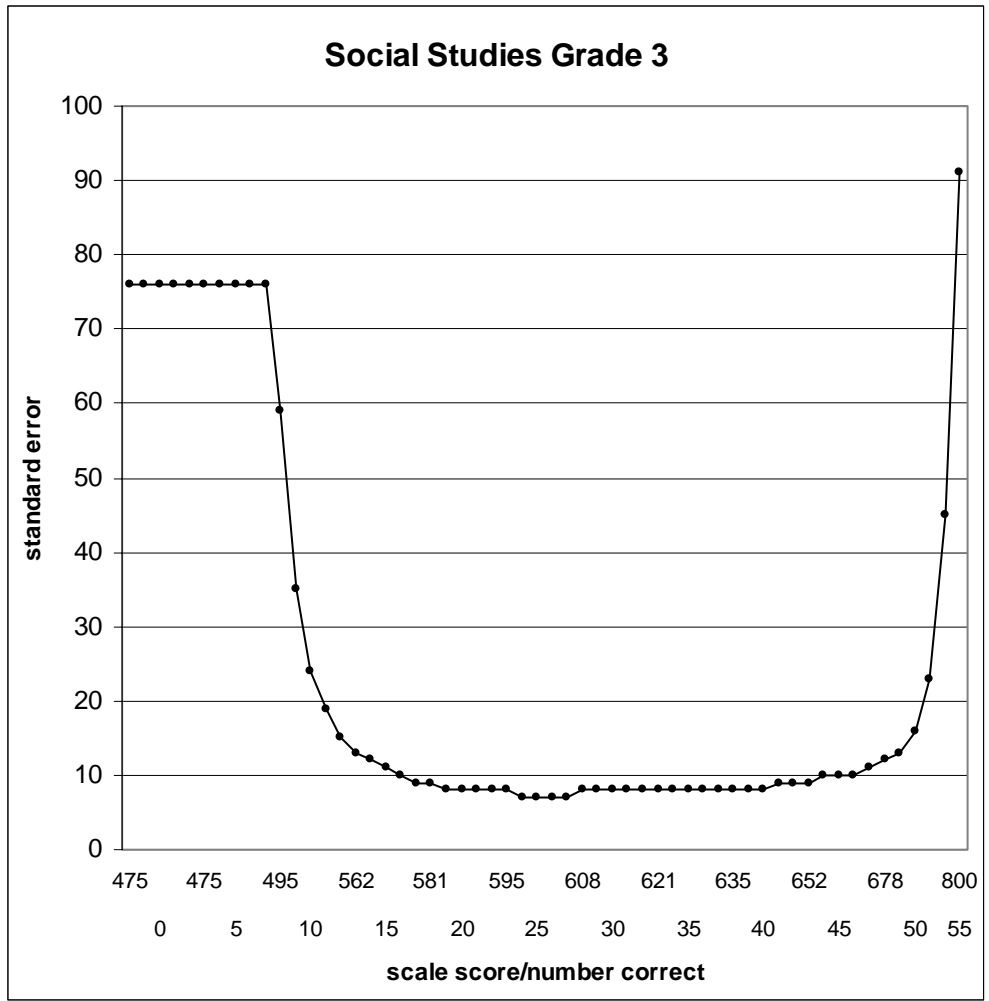
Lowest Obtainable Scale Score (LOSS) is 550. Highest Obtainable Scale Score (HOSS) is 860.





*IRT Standard Error Curves for WESTEST 2007 Operational Tests*

**Social Studies**

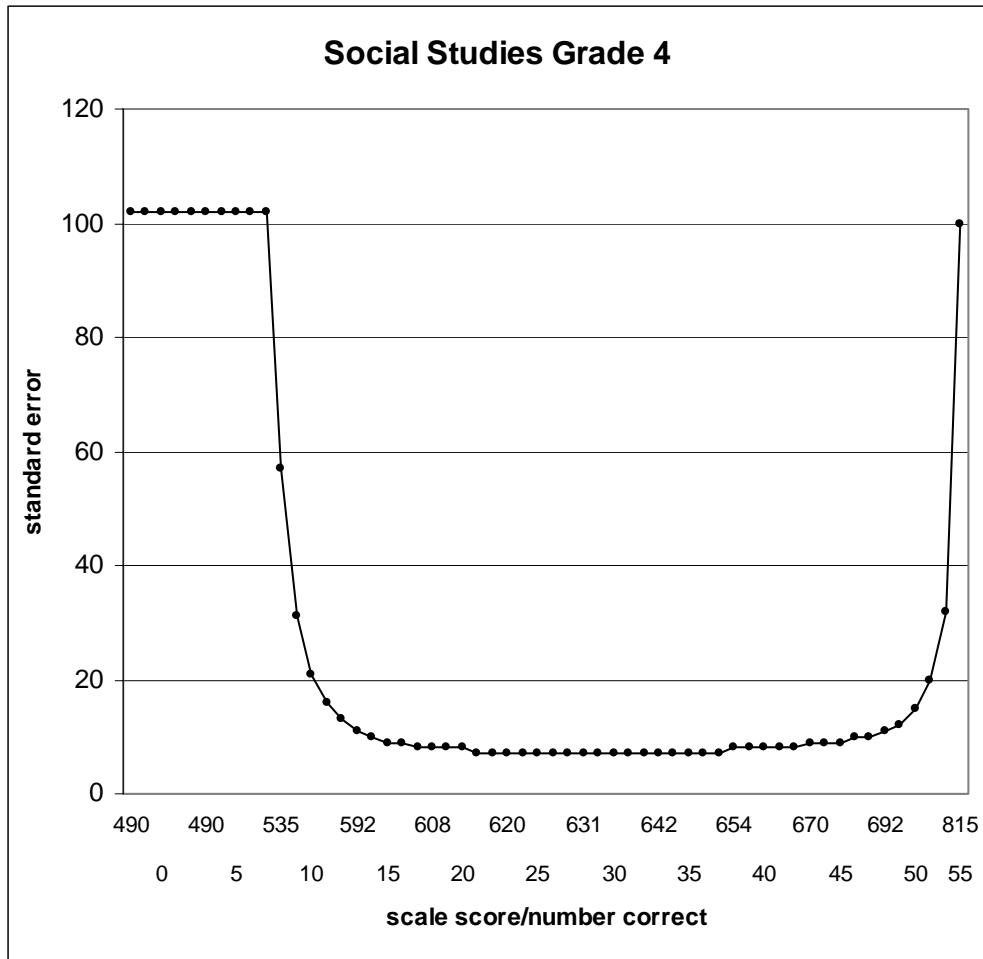


Average SEM Novice	Average SEM Partial to Above Mastery	Average SEM Distinguished
43	9	30

Lowest Obtainable Scale Score (LOSS) is 475. Highest Obtainable Scale Score (HOSS) is 800.

***IRT Standard Error Curves for WESTEST 2007 Operational Tests***

***Social Studies***

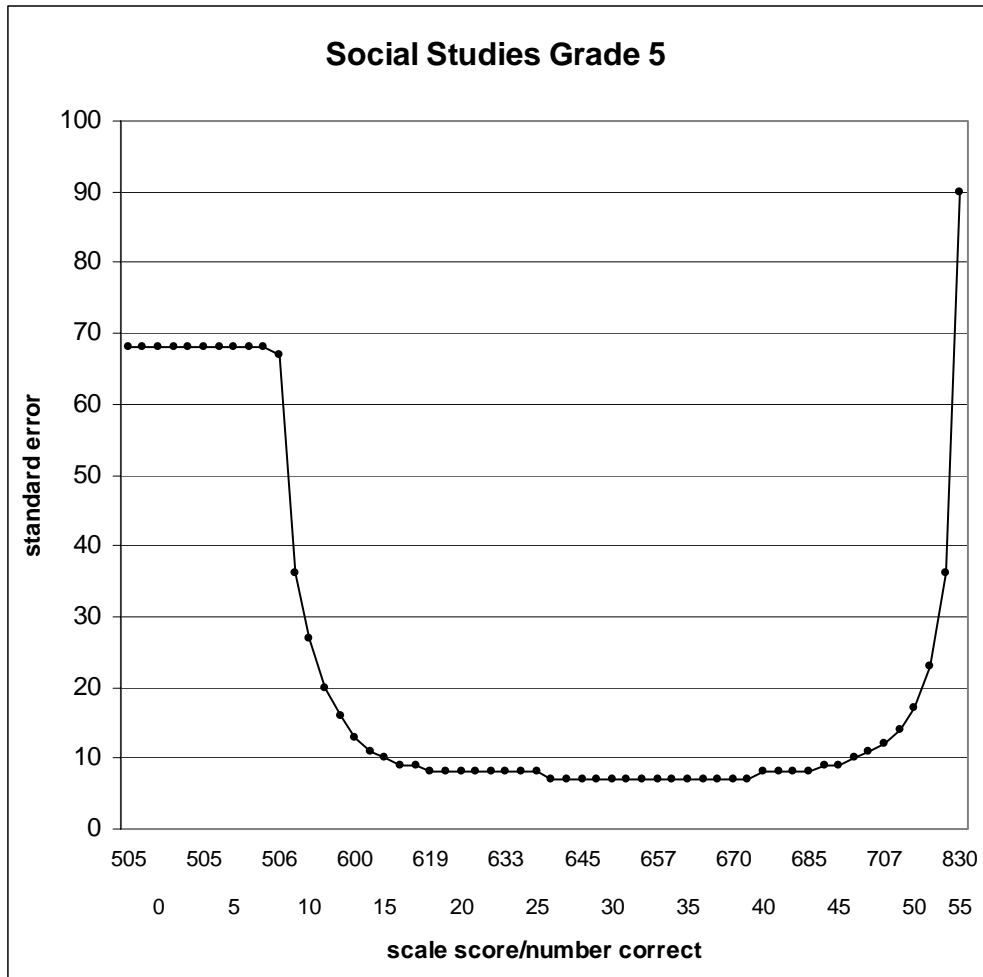


Average SEM Novice	Average SEM Partial to Above Mastery	Average SEM Distinguished
45	8	32

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

*IRT Standard Error Curves for WESTEST 2007 Operational Tests*

*Social Studies*



Average SEM Novice	Average SEM Partial to Above Mastery	Average SEM Distinguished
39	8	29

Lowest Obtainable Scale Score (LOSS) is 505. Highest Obtainable Scale Score (HOSS) is 830.







### 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 2007 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 and the 2004 Technical Report Supplement.. 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	23	10	8	11	33
Grade 4	27	9	8	8	23
Grade 5	32	10	7	8	26
Grade 6	42	11	9	9	23
Grade 7	39	11	8	8	20
Grade 8	33	11	9	9	24
Grade 10	35	12	9	9	23
<b>Reading/ Language Arts</b>					
Grade 3	31	8	6	8	24
Grade 4	24	7	7	9	22
Grade 5	30	8	6	7	19
Grade 6	39	9	6	8	18
Grade 7	47	9	6	8	21
Grade 8	43	9	6	8	17
Grade 10	33	9	7	8	25
<b>Science</b>					
Grade 3	23	9	9	9	22
Grade 4	26	13	10	10	19
Grade 5	45	16	11	9	18
Grade 6	41	16	10	8	17
Grade 7	71	15	8	9	21
Grade 8	46	16	9	10	20
Grade 10	66	19	10	8	16
<b>Social Studies</b>					
Grade 3	43	9	8	9	30
Grade 4	45	8	7	9	32
Grade 5	39	9	7	8	29
Grade 6	38	11	8	9	27
Grade 7	38	10	7	8	28
Grade 8	49	9	7	8	28

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. WESTEST mastery cut scores for Reading and Language Arts grade 4, Mathematics grades 6, 7, 10, Science grade 7, and Social Studies grades 3, 6, 7, 8 have been reviewed and adjusted by the West Virginia Department of Education for the 2007 WESTEST administration. The mastery cut scores for these contents and grades are different from that of the 2004 administration.

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 2007 Operational Forms

Mathematics	Mastery Cut Score	Z	P <sub>0</sub>	K	Alpha
Grade 3	601	0.71	0.89	0.70	0.90
Grade 4	630	0.73	0.89	0.70	0.90
Grade 5	647	0.78	0.90	0.69	0.91
Grade 6	654	0.66	0.89	0.70	0.92
Grade 7	666	0.60	0.88	0.70	0.90
Grade 8	677	0.50	0.87	0.70	0.92
Grade 10	705	0.37	0.87	0.71	0.91
Reading/Language Arts	Mastery Cut Score	Z	P <sub>0</sub>	K	Alpha
Grade 3	611	0.60	0.88	0.70	0.94
Grade 4	624	0.77	0.90	0.69	0.94
Grade 5	640	0.60	0.88	0.70	0.93
Grade 6	644	0.73	0.89	0.70	0.94
Grade 7	651	0.72	0.89	0.70	0.94
Grade 8	658	0.70	0.89	0.70	0.94
Grade 10	675	0.44	0.87	0.71	0.94
Science	Mastery Cut Score	Z	P <sub>0</sub>	K	Alpha
Grade 3	606	1.14	0.91	0.59	0.85
Grade 4	616	0.99	0.90	0.62	0.86
Grade 5	633	0.96	0.90	0.60	0.84
Grade 6	648	0.95	0.90	0.64	0.87
Grade 7	662	0.78	0.89	0.67	0.88
Grade 8	669	0.88	0.89	0.65	0.88
Grade 10	681	0.89	0.90	0.67	0.89
Social Studies	Mastery Cut Score	Z	P <sub>0</sub>	K	Alpha
Grade 3	615	0.72	0.88	0.67	0.88
Grade 4	633	0.71	0.88	0.67	0.88
Grade 5	642	0.66	0.87	0.65	0.86
Grade 6	648	0.49	0.87	0.70	0.90
Grade 7	664	0.47	0.87	0.69	0.89
Grade 8	676	0.45	0.87	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 2007 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 2007. Part of the multiple choice items are TerraNova (CTB) items. These items allows the reporting of the norm statistics (such as national percentile ranking) in additional to scale scores and proficiency levels. 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 2007 Operational Test Form Item Maps

#### Mathematics

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

<sup>1</sup> TN items throughout item maps referred to TerraNova second edition items.

**WESTEST 2007 Operational Test Form Item Maps**

**Mathematics**

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

**WESTEST 2007 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	1,2,3,4,5,6,7,8,9,10, 11,14,15,16,17,18,19 20,21,22,23,24,28,29 30,31,34,35,36,37,38 39,40	51,52,53,54,56,57 58,59,66,67,68	55,60,69,70
2	Writing	12,13,25,26,27,32,33 41,42,43,44,45,46,47 48,49,50	61,62,63,64	65
<b>Grade 4</b>				
<b>Content Standard</b>	<b>TN Item #</b>	<b>MC Item #</b>	<b>CR Item #</b>	
1	Reading	3,4,5,6,7,10,13,14,15 16,17,18,19,23,24,25 26,27,28,30,31,34,35 36,37,40,41,42,43,44 45,46,47,48,49	56,57,58,59,61 62,63,70,71,72,73	60,64,74,75
2	Writing	1,2,8,9,11,12,20,21 22,29,32,33,38,39,50 51,52,53,54,55	65,66,67,68	69
<b>Grade 5</b>				
<b>Content Standard</b>	<b>TN Item #</b>	<b>MC Item #</b>	<b>CR Item #</b>	
1	Reading	1,2,3,4,5,9,10,11,12, 13,14,15,16,17,18,19 20,21,22,23,38,39,40 41,43,44,46,47,48,49	62,63,66,67,68,69,71,72,73,74	64,65,70 75,76
2	Writing	6,7,8,24,25,26,27,28, 29,30,31,32,33,34,35 36,37,42,45,50,51,52 53,54,55,56	57,58,59,60,61	
<b>Grade 6</b>				
<b>Content Standard</b>	<b>TN Item #</b>	<b>MC Item #</b>	<b>CR Item #</b>	
1	Reading	5,6,7,8,9,15,16,17,18 19,22,23,24,25,26,27 28,31,32,33,34,35,36 37,38,39,40,41,51,52 53,54	56,57,58,59,61 62,63,64,71,72,73	60,65,74,75
2	Writing	1,2,3,4,10,11,12,13 14,20,21,29,30,42,43 44,45,46,47,48,49,50 55	66,67,68,69	70

**WESTEST 2007 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	1,2,5,6,7,8,11,12,13, 17,18,19,20,21,22,23 24,32,33,34,35,36,37 38,39,40,41,42,46,47 48,49,50	56,57,58,59,61 62,63,64,71,72,73	60,65,74,75
2	Writing	3,4,9,10,14,15,16,25, 26,27,28,29,30,31,43 44,45,51,52,53,54,55	66,67,68,69	70
<b>Grade 8</b>				
<b>Content Standard</b>	<b>TN Item #</b>	<b>MC Item #</b>	<b>CR Item #</b>	
1	Reading	1,2,3,4,5,6,7,8,9,10 11,17,18,19,20,25,26 27,28,29,30,31,36,37 38,39,40,41,48,49,50 51,52,53	56,57,58,59,61 62,70,71,72,73,74	60,63,64,75
2	Writing	1,2,3,4,5,6,7,8,9,10 11,17,18,19,20,25,26 27,28,29,30,31,36,37 38,39,40,41,48,49,50 51,52,53	56,57,58,59,61 62,70,71,72,73,74	60,63,64,75
<b>Grade 10</b>				
<b>Content Standard</b>	<b>TN Item #</b>	<b>MC Item #</b>	<b>CR Item #</b>	
1	Reading	7,8,9,10,11,12,14,15, 16,17,18,19,20,21,22 23,32,33,34,35,36,37 45,46,47,48,49,50,54 55,56,57,58,59	61,62,63,64,66,67,68,71,72,73	65,69,70,74
2	Writing	1,2,3,4,5,6,13,24,25, 26,27,28,29,30,31,38 39,40,41,42,43,44,51 52,53,60	75,76,78,79,80	77

**WESTEST 2007 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		30,33,38,46	
2	Scientific Inquiry	8,11,16,18 19,23,24,25	34,41,45,47	37,42
3	Unifying Themes	12,20,21,29	48	
4	Subject Matter	1,3,5,6,9,10,13,15,17 26,27,28	32,35,36,43,44,49,50	39
5	Design	2,7		40
6	Personal	4,14,22		31
<b>Grade 4</b>				
	<b>Content Standard</b>	<b>TN Item #</b>	<b>MC Item #</b>	<b>CR Item #</b>
1	History of Science	3,13,30	42	
2	Scientific Inquiry	6,19,20,22,24	40,43,44,45,46,48,50	33,49
3	Unifying Themes	7,26,27	41	
4	Subject Matter	1,5,9,10,11,14,16,17, 18,23,25,28,29	32,35	34,36,39
5	Design	4	31,37,38	
6	Personal	2,8,12,15,21	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	6	46	38
2	Scientific Inquiry	3,4,11,27,28,29,30	32,39,41,43,44,47,48	35
3	Unifying Themes		36,37,45,49	
4	Subject Matter	2,7,9,10,12,13,14,16, 18,19,20,21,23,24,25 26	40	33,50
5	Design	5,17	31,34	
6	Personal	1,8,15,22		42

**WESTEST 2007 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	2,7,12	45	
2	Scientific Inquiry	4,6,10,15,20 22,23,24,30	43,44,47,48,49	37
3	Unifying Themes	21		40,50
4	Subject Matter	1,3,5,8,9,11,13,14,16 18,19,25,27,28	31,33,36,41,42,46	35
5	Design	29	32,34,39	
6	Personal	17,26		38
<b>Grade 7</b>				
	<b>Content Standard</b>	<b>TN Item #</b>	<b>MC Item #</b>	<b>CR Item #</b>
1	History of Science	8	28,34,44	
2	Scientific Inquiry	1,5,7,9,13 14,21,23,26	41,47,49	43,50
3	Unifying Themes		39,45	37
4	Subject Matter	6,10,11,12,15,16,17, 18,20,22,24,25	29,30,31,32,35,38,40,46	36
5	Design	4	33,42	48
6	Personal	2,3,19,27		
<b>Grade 8</b>				
	<b>Content Standard</b>	<b>TN Item #</b>	<b>MC Item #</b>	<b>CR Item #</b>
1	History of Science	5	45,51	38
2	Scientific Inquiry	2,6,14,16,17,18,20	29,35,36,42,43,44	37,52
3	Unifying Themes	25	31,34,41,48	
4	Subject Matter	1,3,4,7,8,9,11,12,13, 15,22,23,24,27	30,33,40,46,47	28
5	Design		32,50	39
6	Personal	10,19,21,26	49	
<b>Grade 10</b>				
	<b>Content Standard</b>	<b>TN Item #</b>	<b>MC Item #</b>	<b>CR Item #</b>
1	History of Science	6	29,31,35	
2	Scientific Inquiry	5,7,8,24	33,44,45,46,47	39,40
3	Unifying Themes	18	41,42,43,48	
4	Subject Matter	2,3,9,10,11,12,13,16, 17,20,21,22,23,25	26,38,49	32,36,50
5	Design	1	27,28,34	
6	Personal	4,14,15,19	30,37	

**WESTEST 2007 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	24,32,41,42,44,47	5,6	20
2	Civics	23,43	17,18	11
3	Economics	39,40,45,46,49,50	1,3,4	19
4	Geography	21,22,25,29 30,35,36,37	9,10,14,15	7
5	History	26,27,28,31 33,34,38,48	2,8,12,13	16
<b>Grade 4</b>				
	<b>Content Standard</b>	<b>TN Item #</b>	<b>MC Item #</b>	<b>CR Item #</b>
1	Citizenship	21,22,30,32,36	2,11	14
2	Civics	35,40,41	8	12
3	Economics	27,28,29,38 39,47,48,49	1,7,16	19
4	Geography	23,24,25,26,37,42,44	3,4,15,20	18
5	History	31,33,34,43,45,46,50	5,6,10,13,17	9
<b>Grade 5</b>				
	<b>Content Standard</b>	<b>TN Item #</b>	<b>MC Item #</b>	<b>CR Item #</b>
1	Citizenship	43,46,48	10	20
2	Civics	38,39,40,41,44	6,11	16
3	Economics	30,49,50	7,18	19
4	Geography	26,27,28,32 33,37,45,47	1,2,3,12	17
5	History	21,22,23,24,25,29,31 ,34,35,36,42	5,8,9,13,14,15	4
<b>Grade 6</b>				
	<b>Content Standard</b>	<b>TN Item #</b>	<b>MC Item #</b>	<b>CR Item #</b>
1	Citizenship	32,33,37	2	12
2	Civics	23,39	1,14	13
3	Economics	31,40,41,42 43,44,50	3,4,18,19	20
4	Geography	27,28,29,34,35 36,45,46,47	5,6,8,11	15
5	History	21,22,24,25,26 30,38,48,49	7,9,16,17	10

**WESTEST 2007 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	27,28,29,45,47	8	12
2	Civics	41	2,15	11
3	Economics	21,22,37 38,42,49,50	9,18	16
4	Geography	23,24,25,26,39 40,43,44,46,48	4,5,6,7,17,19	13
5	History	30,31,32,33 34,35,36	1,10,17,20	3
<b>Grade 8</b>				
	<b>Content Standard</b>	<b>TN Item #</b>	<b>MC Item #</b>	<b>CR Item #</b>
1	Citizenship	26,34,35,40	8,14	25
2	Civics	36,37,38,45	6,11,24	13
3	Economics	30,31,33,44	7,9,12,20	15
4	Geography	46	1,3,17,18,19	21
5	History	27,28,29,32,39,41,42 ,43,47,48,49,50	2,4,5,16,22,23	10

**WESTEST 2007 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 2007 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 2007 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	20	62%
2 Writing	26	5	38%
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 2007 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 2007 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	10	31%
3 Unifying Themes	0	4	7%
4 Subject Matter/Concepts	16	5	38%
5 Scientific Design and Application	2	2	7%
6 Personal and Social Perspectives	4	1	9%
Total	30	25	100%

**WESTEST 2007 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%

**WESTEST 2007 Content Standard Item/Point Distributions**

**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 2007 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 2007 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	4	9%
3 Economics	7	4	20%
4 Geography	10	8	33%
5 History	7	6	24%
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, & 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 2007 Operational test scale score/raw score means, standard deviations for scale/raw scores, p-values, and item-total correlations**

Grade	Mean Scale Score (SD)	Mean Raw Score (SD)	Mean P-Value	Mean Item-Total Correlation
<b>Mathematics</b>				
3	624.4 (33.5)	42.7 (10.3)	0.64	0.36
4	653.8 (33.1)	43.7 (10.8)	0.65	0.37
5	671.8 (32.5)	40.4 (11.0)	0.60	0.38
6	678.3 (37.4)	36.2 (11.8)	0.54	0.40
7	687.4 (36.7)	33.8 (11.2)	0.50	0.37
8	697.5 (41.9)	34.8 (11.9)	0.52	0.39
10	721.2 (44.9)	32.5 (12.8)	0.48	0.40
<b>Reading/Language Arts</b>				
3	631.6 (35.4)	50.1 (14.2)	0.63	0.42
4	649.6 (34.1)	57.1 (13.5)	0.67	0.40
5	659.1 (32.8)	54.0 (13.8)	0.63	0.39
6	667.5 (33.1)	51.8 (14.9)	0.61	0.41
7	676.5 (36.0)	50.9 (15.5)	0.60	0.42
8	681.6 (34.2)	48.8 (14.5)	0.57	0.39
10	692.9 (41.4)	54.6 (16.0)	0.61	0.41
<b>Science</b>				
3	635.1 (26.0)	36.4 (7.2)	0.61	0.29
4	647.6 (32.3)	32.7 (8.3)	0.54	0.30
5	662.9 (31.6)	28.7 (8.0)	0.48	0.29
6	677.8 (31.8)	29.7 (8.7)	0.49	0.32
7	687.9 (33.7)	30.8 (9.4)	0.51	0.34
8	697.4 (32.7)	31.3 (9.5)	0.50	0.32
10	711.3 (34.5)	30.1 (11.0)	0.43	0.32
<b>Social Studies</b>				
3	635.6 (29.2)	39.2 (8.3)	0.65	0.34
4	651.1 (26.2)	37.9 (8.8)	0.63	0.34
5	658.0 (25.0)	34.3 (8.4)	0.57	0.32
6	664.6 (35.1)	33.0 (10.0)	0.55	0.38
7	677.4 (29.4)	33.6 (9.5)	0.56	0.36
8	688.7 (29.4)	34.3 (10.0)	0.61	0.38

**WESTEST 2007 Operational Form Item Characteristics**

**Mathematics**

Grade 3 TN Multiple Choice Items		
Item No.	Points	Item Difficulty
1	1	0.78
2	1	0.59
3	1	0.93
4	1	0.74
5	1	0.71
6	1	0.88
7	1	0.99
8	1	0.95
9	1	0.91
10	1	0.92
11	1	0.70
12	1	0.74
13	1	0.92
14	1	0.57
15	1	0.96
16	1	0.91
17	1	0.87
18	1	0.65
19	1	0.65
20	1	0.61
21	1	0.57
22	1	0.61
23	1	0.76
24	1	0.72
25	1	0.95
26	1	0.74
27	1	0.75
28	1	0.74
29	1	0.54
30	1	0.59
31	1	0.56
32	1	0.45
<b>Average</b>		<b>0.75</b>

Grade 3 Other Multiple Choice Items		
Item No.	Points	Item Difficulty
33	1	0.98
34	1	0.95
35	1	0.87
36	1	0.60
37	1	0.83
38	1	0.63
40	1	0.50
41	1	0.49
42	1	0.19
43	1	0.76
44	1	0.90
45	1	0.49
46	1	0.53
47	1	0.73
48	1	0.63
<b>Average</b>		<b>0.67</b>

Grade 3 Constructed Response Items		
Item No.	Points	Item Difficulty
39	3	0.48
49	3	0.60
50	3	0.44
51	3	0.38
52	3	0.26
<b>Average</b>		<b>0.43</b>

*WESTEST 2007 Operational Form Item Characteristics*

*Mathematics*

Grade 4 TN Multiple Choice Items		
Item No.	Points	Item Difficulty
1	1	0.81
2	1	0.93
3	1	0.76
4	1	0.69
5	1	0.80
6	1	0.91
7	1	0.73
8	1	0.70
9	1	0.93
10	1	0.95
11	1	0.82
12	1	0.89
13	1	0.90
14	1	0.82
15	1	0.84
16	1	0.81
17	1	0.93
18	1	0.81
19	1	0.71
20	1	0.72
21	1	0.67
22	1	0.83
23	1	0.83
24	1	0.92
25	1	0.94
26	1	0.75
27	1	0.88
28	1	0.77
29	1	0.62
30	1	0.96
31	1	0.78
32	1	0.61
<b>Average</b>		<b>0.81</b>

Grade 4 Other Multiple Choice Items		
Item No.	Points	Item Difficulty
33	1	0.88
34	1	0.79
35	1	0.80
36	1	0.77
37	1	0.73
39	1	0.67
40	1	0.66
41	1	0.50
42	1	0.36
43	1	0.87
44	1	0.64
45	1	0.82
46	1	0.47
48	1	0.51
49	1	0.26
<b>Average</b>		<b>0.65</b>

Grade 4 Constructed Response Items		
Item No.	Points	Item Difficulty
38	3	0.48
47	3	0.53
50	3	0.41
51	3	0.30
52	3	0.26
<b>Average</b>		<b>0.40</b>

*WESTEST 2007 Operational Form Item Characteristics*

*Mathematics*

Grade 5 TN Multiple Choice Items		
Item No.	Points	Item Difficulty
1	1	0.89
2	1	0.78
3	1	0.48
4	1	0.70
5	1	0.69
6	1	0.80
7	1	0.93
8	1	0.95
9	1	0.68
10	1	0.89
11	1	0.81
12	1	0.91
13	1	0.84
14	1	0.77
15	1	0.91
16	1	0.71
17	1	0.69
18	1	0.63
19	1	0.85
20	1	0.77
21	1	0.66
22	1	0.58
23	1	0.69
24	1	0.83
25	1	0.72
26	1	0.66
27	1	0.75
28	1	0.54
29	1	0.59
30	1	0.58
31	1	0.42
32	1	0.37
<b>Average</b>		<b>0.72</b>

Grade 5 Other Multiple Choice Items		
Item No.	Points	Item Difficulty
33	1	0.92
34	1	0.92
35	1	0.77
36	1	0.57
37	1	0.55
38	1	0.55
39	1	0.46
40	1	0.39
41	1	0.38
43	1	0.57
44	1	0.74
45	1	0.63
46	1	0.47
47	1	0.56
48	1	0.59
<b>Average</b>		<b>0.60</b>

Grade 5 Constructed Response Items		
Item No.	Points	Item Difficulty
42	3	0.42
49	3	0.52
50	3	0.47
51	3	0.42
52	3	0.25
<b>Average</b>		<b>0.42</b>

*WESTEST 2007 Operational Form Item Characteristics*

*Mathematics*

Grade 6 TN Multiple Choice Items		
Item No.	Points	Item Difficulty
1	1	0.78
2	1	0.93
3	1	0.92
4	1	0.77
5	1	0.76
6	1	0.73
7	1	0.68
8	1	0.84
9	1	0.68
10	1	0.81
11	1	0.76
12	1	0.54
13	1	0.75
14	1	0.71
15	1	0.75
16	1	0.74
17	1	0.70
18	1	0.64
19	1	0.84
20	1	0.88
21	1	0.47
22	1	0.75
23	1	0.75
24	1	0.64
25	1	0.55
26	1	0.91
27	1	0.58
28	1	0.48
29	1	0.52
30	1	0.61
31	1	0.39
32	1	0.27
<b>Average</b>		<b>0.69</b>

Grade 6 Other Multiple Choice Items		
Item No.	Points	Item Difficulty
33	1	0.92
34	1	0.91
35	1	0.51
36	1	0.51
37	1	0.51
38	1	0.52
40	1	0.40
41	1	0.45
42	1	0.50
43	1	0.68
44	1	0.68
45	1	0.76
46	1	0.48
47	1	0.32
48	1	0.63
<b>Average</b>		<b>0.59</b>

Grade 6 Constructed Response Items		
Item No.	Points	Item Difficulty
39	3	0.33
49	3	0.31
50	3	0.31
51	3	0.20
52	3	0.18
<b>Average</b>		<b>0.26</b>

*WESTEST 2007 Operational Form Item Characteristics*

*Mathematics*

Grade 7 TN Multiple Choice Items		
Item No.	Points	Item Difficulty
1	1	0.89
2	1	0.48
3	1	0.65
4	1	0.69
5	1	0.44
6	1	0.92
7	1	0.93
8	1	0.90
9	1	0.74
10	1	0.66
11	1	0.81
12	1	0.90
13	1	0.68
14	1	0.82
15	1	0.63
16	1	0.67
17	1	0.71
18	1	0.86
19	1	0.91
20	1	0.79
21	1	0.75
22	1	0.48
23	1	0.37
24	1	0.61
25	1	0.31
26	1	0.63
27	1	0.53
28	1	0.71
29	1	0.32
30	1	0.46
31	1	0.47
32	1	0.39
<b>Average</b>		<b>0.66</b>

Grade 7 Other Multiple Choice Items		
Item No.	Points	Item Difficulty
33	1	0.65
34	1	0.46
35	1	0.44
36	1	0.33
37	1	0.36
38	1	0.61
39	1	0.41
40	1	0.23
41	1	0.26
43	1	0.60
44	1	0.75
45	1	0.36
46	1	0.36
47	1	0.49
48	1	0.54
<b>Average</b>		<b>0.46</b>

Grade 7 Constructed Response Items		
Item No.	Points	Item Difficulty
42	3	0.53
49	3	0.36
50	3	0.30
51	3	0.13
52	3	0.12
<b>Average</b>		<b>0.29</b>

*WESTEST 2007 Operational Form Item Characteristics*

*Mathematics*

Grade 8 TN Multiple Choice Items		
Item No.	Points	Item Difficulty
1	1	0.92
2	1	0.69
3	1	0.45
4	1	0.75
5	1	0.39
6	1	0.93
7	1	0.85
8	1	0.68
9	1	0.60
10	1	0.72
11	1	0.80
12	1	0.87
13	1	0.75
14	1	0.75
15	1	0.72
16	1	0.84
17	1	0.59
18	1	0.56
19	1	0.43
20	1	0.90
21	1	0.44
22	1	0.77
23	1	0.52
24	1	0.52
25	1	0.58
26	1	0.57
27	1	0.56
28	1	0.85
29	1	0.58
30	1	0.36
31	1	0.32
32	1	0.42
<b>Average</b>		<b>0.65</b>

Grade 8 Other Multiple Choice Items		
Item No.	Points	Item Difficulty
33	1	0.79
34	1	0.58
35	1	0.58
36	1	0.47
37	1	0.49
38	1	0.40
39	1	0.42
40	1	0.32
41	1	0.28
43	1	0.70
44	1	0.72
45	1	0.56
46	1	0.27
47	1	0.60
48	1	0.60
<b>Average</b>		<b>0.52</b>

Grade 8 Constructed Response Items		
Item No.	Points	Item Difficulty
42	3	0.14
49	3	0.56
50	3	0.35
51	3	0.27
52	3	0.26
<b>Average</b>		<b>0.32</b>

*WESTEST 2007 Operational Form Item Characteristics*

*Mathematics*

Grade 10 TN Multiple Choice Items		
Item No.	Points	Item Difficulty
1	1	0.84
2	1	0.60
3	1	0.32
4	1	0.43
5	1	0.60
6	1	0.66
7	1	0.85
8	1	0.69
9	1	0.82
10	1	0.82
11	1	0.80
12	1	0.74
13	1	0.31
14	1	0.71
15	1	0.91
16	1	0.58
17	1	0.40
18	1	0.78
19	1	0.51
20	1	0.67
21	1	0.64
22	1	0.44
23	1	0.45
24	1	0.54
25	1	0.38
<b>Average</b>		<b>0.62</b>

Grade 10 Other Multiple Choice Items		
Item No.	Points	Item Difficulty
26	1	0.50
27	1	0.76
28	1	0.64
29	1	0.57
30	1	0.49
31	1	0.69
32	1	0.47
33	1	0.36
34	1	0.34
35	1	0.34
37	1	0.64
38	1	0.69
39	1	0.37
40	1	0.40
41	1	0.61
42	1	0.54
43	1	0.13
45	1	0.52
46	1	0.31
<b>Average</b>		<b>0.49</b>

Grade 10 Constructed Response Items		
Item No.	Points	Item Difficulty
36	3	0.21
44	4	0.44
47	4	0.40
48	4	0.30
49	4	0.22
<b>Average</b>		<b>0.31</b>

*WESTEST 2007 Operational Form Item Characteristics*

Reading and Language Arts

Grade 3 TN Multiple Choice Items		
Item No.	Points	Item Difficulty
1	1	0.83
2	1	0.66
3	1	0.48
4	1	0.72
5	1	0.76
6	1	0.69
7	1	0.87
8	1	0.89
9	1	0.87
10	1	0.88
11	1	0.66
12	1	0.55
13	1	0.69
14	1	0.78
15	1	0.72
16	1	0.86
17	1	0.61
18	1	0.74
19	1	0.74
20	1	0.66
21	1	0.53
22	1	0.85
23	1	0.82
24	1	0.75
25	1	0.69
26	1	0.71
27	1	0.40
28	1	0.81
29	1	0.88
30	1	0.74
31	1	0.85
32	1	0.84
33	1	0.41
34	1	0.71
35	1	0.52
36	1	0.71
37	1	0.78
38	1	0.61
39	1	0.19
40	1	0.70
41	1	0.71
42	1	0.86
43	1	0.86
44	1	0.65
45	1	0.49
46	1	0.77
47	1	0.83

Grade 3 TN Multiple Choice Items (cont.)		
Item No.	Points	Item Difficulty
48	1	0.86
49	1	0.52
50	1	0.75
<b>Average</b>		<b>0.71</b>

Grade 3 Other Multiple Choice Items		
Item No.	Points	Item Difficulty
51	1	0.81
52	1	0.67
53	1	0.76
56	1	0.68
57	1	0.64
58	1	0.82
59	1	0.46
61	1	0.82
62	1	0.85
63	1	0.73
64	1	0.56
65	1	0.58
66	1	0.72
67	1	0.48
68	1	0.60
<b>Average</b>		<b>0.68</b>

Grade 3: Constructed Response Items		
Item No.	Points	Item Difficulty
54	2	0.38
55	2	0.38
60	2	0.31
69	2	0.26
70	2	0.16
<b>Average</b>		<b>0.30</b>

*WESTEST 2007 Operational Form Item Characteristics*

*Reading and Language Arts*

Grade 4 TN Multiple Choice Items		
Item No.	Points	Item Difficulty
1	1	0.91
2	1	0.68
3	1	0.94
4	1	0.86
5	1	0.88
6	1	0.82
7	1	0.90
8	1	0.75
9	1	0.87
10	1	0.90
11	1	0.79
12	1	0.65
13	1	0.84
14	1	0.79
15	1	0.80
16	1	0.91
17	1	0.92
18	1	0.91
19	1	0.89
20	1	0.82
21	1	0.60
22	1	0.80
23	1	0.92
24	1	0.77
25	1	0.88
26	1	0.94
27	1	0.78
28	1	0.91
29	1	0.66
30	1	0.78
31	1	0.82
32	1	0.90
33	1	0.94
34	1	0.92
35	1	0.72
36	1	0.77
37	1	0.76
38	1	0.96
39	1	0.53
40	1	0.77
41	1	0.60
42	1	0.74
43	1	0.73
44	1	0.56
45	1	0.55
46	1	0.46
47	1	0.37

Grade 4 TN Multiple Choice Items (cont.)		
Item No.	Points	Item Difficulty
48	1	0.57
49	1	0.69
50	1	0.41
51	1	0.47
52	1	0.47
53	1	0.69
54	1	0.65
55	1	0.54
<b>Average</b>		<b>0.75</b>

Grade 4 Other Multiple Choice Items		
Item No.	Points	Item Difficulty
56	1	0.82
57	1	0.87
58	1	0.74
59	1	0.77
61	1	0.83
62	1	0.56
63	1	0.77
65	1	0.73
66	1	0.70
67	1	0.59
68	1	0.58
71	1	0.84
72	1	0.70
73	1	0.59
74	1	0.73
<b>Average</b>		<b>0.72</b>

Grade 4: Constructed Response Items		
Item No.	Points	Item Difficulty
60	2	0.31
64	2	0.34
69	2	0.33
70	2	0.27
75	2	0.36
<b>Average</b>		<b>0.32</b>

*WESTEST 2007 Operational Form Item Characteristics*

*Reading and Language Arts*

Grade 5 TN Multiple Choice Items		
Item No.	Points	Item Difficulty
1	1	0.81
2	1	0.93
3	1	0.50
4	1	0.67
5	1	0.74
6	1	0.83
7	1	0.92
8	1	0.91
9	1	0.91
10	1	0.88
11	1	0.85
12	1	0.76
13	1	0.75
14	1	0.83
15	1	0.81
16	1	0.73
17	1	0.71
18	1	0.88
19	1	0.73
20	1	0.48
21	1	0.90
22	1	0.80
23	1	0.58
24	1	0.60
25	1	0.80
26	1	0.61
27	1	0.83
28	1	0.61
29	1	0.64
30	1	0.78
31	1	0.95
32	1	0.91
33	1	0.78
34	1	0.44
35	1	0.68
36	1	0.83
37	1	0.33
38	1	0.65
39	1	0.68
40	1	0.44
41	1	0.79
42	1	0.69
43	1	0.52
44	1	0.60
45	1	0.91
46	1	0.51
47	1	0.80

Grade 5 TN Multiple Choice Items (cont.)		
Item No.	Points	Item Difficulty
48	1	0.70
49	1	0.67
50	1	0.83
51	1	0.82
52	1	0.51
53	1	0.85
54	1	0.51
55	1	0.41
56	1	0.55
<b>Average</b>		<b>0.69</b>

Grade 5 Other Multiple Choice Items		
Item No.	Points	Item Difficulty
57	1	0.17
58	1	0.17
59	1	0.65
60	1	0.71
61	1	0.60
62	1	0.81
63	1	0.78
66	1	0.66
67	1	0.58
68	1	0.74
69	1	0.42
71	1	0.65
72	1	0.84
73	1	0.72
74	1	0.55
<b>Average</b>		<b>0.60</b>

Grade 5: Constructed Response Items		
Item No.	Points	Item Difficulty
64	2	0.32
65	2	0.33
70	2	0.34
75	2	0.29
76	2	0.34
<b>Average</b>		<b>0.32</b>

*WESTEST 2007 Operational Form Item Characteristics*

*Reading and Language Arts*

Grade 6 TN Multiple Choice Items		
Item No.	Points	Item Difficulty
1	1	0.79
2	1	0.76
3	1	0.58
4	1	0.81
5	1	0.67
6	1	0.73
7	1	0.91
8	1	0.59
9	1	0.83
10	1	0.63
11	1	0.71
12	1	0.70
13	1	0.79
14	1	0.76
15	1	0.72
16	1	0.94
17	1	0.72
18	1	0.67
19	1	0.57
20	1	0.66
21	1	0.62
22	1	0.70
23	1	0.81
24	1	0.82
25	1	0.64
26	1	0.56
27	1	0.75
28	1	0.79
29	1	0.66
30	1	0.57
31	1	0.44
32	1	0.52
33	1	0.44
34	1	0.67
35	1	0.78
36	1	0.75
37	1	0.94
38	1	0.68
39	1	0.73
40	1	0.59
41	1	0.63
42	1	0.59
43	1	0.55
44	1	0.73
45	1	0.27
46	1	0.72
47	1	0.70

Grade 6 TN Multiple Choice Items (cont.)		
Item No.	Points	Item Difficulty
48	1	0.77
49	1	0.80
50	1	0.79
51	1	0.80
52	1	0.64
53	1	0.59
54	1	0.64
55	1	0.72
<b>Average</b>		<b>0.69</b>

Grade 6 Other Multiple Choice Items		
Item No.	Points	Item Difficulty
56	1	0.63
57	1	0.61
58	1	0.62
59	1	0.73
61	1	0.79
62	1	0.78
63	1	0.60
64	1	0.72
66	1	0.65
67	1	0.53
68	1	0.34
69	1	0.55
71	1	0.58
72	1	0.50
73	1	0.77
<b>Average</b>		<b>0.62</b>

Grade 6: Constructed Response Items		
Item No.	Points	Item Difficulty
60	2	0.31
65	2	0.30
70	2	0.31
74	2	0.38
75	2	0.18
<b>Average</b>		<b>0.30</b>

*WESTEST 2007 Operational Form Item Characteristics*

*Reading and Language Arts*

Grade 7 TN Multiple Choice Items		
Item No.	Points	Item Difficulty
1	1	0.89
2	1	0.47
3	1	0.63
4	1	0.47
5	1	0.67
6	1	0.73
7	1	0.60
8	1	0.56
9	1	0.68
10	1	0.71
11	1	0.71
12	1	0.59
13	1	0.81
14	1	0.90
15	1	0.82
16	1	0.86
17	1	0.77
18	1	0.52
19	1	0.36
20	1	0.79
21	1	0.69
22	1	0.62
23	1	0.53
24	1	0.68
25	1	0.73
26	1	0.53
27	1	0.47
28	1	0.60
29	1	0.68
30	1	0.77
31	1	0.84
32	1	0.82
33	1	0.86
34	1	0.82
35	1	0.63
36	1	0.58
37	1	0.41
38	1	0.60
39	1	0.78
40	1	0.89
41	1	0.70
42	1	0.80
43	1	0.69
44	1	0.68
45	1	0.76
46	1	0.69
47	1	0.59

Grade 7 TN Multiple Choice Items (cont.)		
Item No.	Points	Item Difficulty
48	1	0.73
49	1	0.71
50	1	0.57
51	1	0.63
52	1	0.65
53	1	0.60
54	1	0.42
55	1	0.53
<b>Average</b>		<b>0.67</b>

Grade 7 Other Multiple Choice Items		
Item No.	Points	Item Difficulty
56	1	0.74
57	1	0.73
58	1	0.62
59	1	0.69
61	1	0.78
62	1	0.78
63	1	0.70
64	1	0.51
66	1	0.84
67	1	0.68
68	1	0.70
69	1	0.70
71	1	0.47
72	1	0.47
73	1	0.48
<b>Average</b>		<b>0.66</b>

Grade 7: Constructed Response Items		
Item No.	Points	Item Difficulty
60	2	0.26
65	2	0.23
70	2	0.30
74	2	0.37
75	2	0.26
<b>Average</b>		<b>0.28</b>

*WESTEST 2007 Operational Form Item Characteristics*

*Reading and Language Arts*

Grade 8 TN Multiple Choice Items		
Item No.	Points	Item Difficulty
1	1	0.87
2	1	0.93
3	1	0.83
4	1	0.70
5	1	0.81
6	1	0.90
7	1	0.80
8	1	0.42
9	1	0.54
10	1	0.76
11	1	0.76
12	1	0.29
13	1	0.56
14	1	0.68
15	1	0.46
16	1	0.63
17	1	0.91
18	1	0.86
19	1	0.61
20	1	0.89
21	1	0.84
22	1	0.74
23	1	0.65
24	1	0.71
25	1	0.89
26	1	0.50
27	1	0.58
28	1	0.91
29	1	0.89
30	1	0.54
31	1	0.83
32	1	0.68
33	1	0.69
34	1	0.75
35	1	0.58
36	1	0.56
37	1	0.69
38	1	0.38
39	1	0.57
40	1	0.74
41	1	0.74
42	1	0.64
43	1	0.68
44	1	0.63
45	1	0.71
46	1	0.43
47	1	0.80

Grade 8 TN Multiple Choice Items (cont.)		
Item No.	Points	Item Difficulty
48	1	0.33
49	1	0.78
50	1	0.32
51	1	0.26
52	1	0.58
53	1	0.46
54	1	0.67
55	1	0.58
<b>Average</b>		<b>0.66</b>

Grade 8 Other Multiple Choice Items		
Item No.	Points	Item Difficulty
56	1	0.79
57	1	0.59
58	1	0.55
59	1	0.65
61	1	0.51
62	1	0.70
65	1	0.65
66	1	0.37
67	1	0.75
68	1	0.55
71	1	0.71
72	1	0.50
73	1	0.54
74	1	0.60
75	1	0.42
<b>Average</b>		<b>0.59</b>

Grade 8: Constructed Response Items		
Item No.	Points	Item Difficulty
60	2	0.20
63	2	0.25
64	2	0.16
69	2	0.25
70	2	0.28
<b>Average</b>		<b>0.23</b>

*WESTEST 2007 Operational Form Item Characteristics*

*Reading and Language Arts*

Grade 10 TN Multiple Choice Items		
Item No.	Points	Item Difficulty
1	1	0.65
2	1	0.86
3	1	0.75
4	1	0.84
5	1	0.61
6	1	0.79
7	1	0.62
8	1	0.60
9	1	0.47
10	1	0.68
11	1	0.85
12	1	0.74
13	1	0.72
14	1	0.54
15	1	0.49
16	1	0.88
17	1	0.63
18	1	0.68
19	1	0.62
20	1	0.74
21	1	0.68
22	1	0.70
23	1	0.77
24	1	0.78
25	1	0.65
26	1	0.77
27	1	0.68
28	1	0.63
29	1	0.88
30	1	0.62
31	1	0.49
32	1	0.70
33	1	0.79
34	1	0.62
35	1	0.68
36	1	0.68
37	1	0.58
38	1	0.74
39	1	0.73
40	1	0.89
41	1	0.44
42	1	0.87
43	1	0.79
44	1	0.44
45	1	0.81
46	1	0.50
47	1	0.73

Grade 10 TN Multiple Choice Items (cont.)		
Item No.	Points	Item Difficulty
48	1	0.54
49	1	0.58
50	1	0.83
51	1	0.59
52	1	0.53
53	1	0.71
54	1	0.40
55	1	0.54
56	1	0.40
57	1	0.44
58	1	0.68
59	1	0.68
60	1	0.37
<b>Average</b>		<b>0.66</b>

Grade 10 Other Multiple Choice Items		
Item No.	Points	Item Difficulty
61	1	0.62
62	1	0.85
63	1	0.86
64	1	0.54
66	1	0.18
67	1	0.59
69	1	0.80
70	1	0.74
71	1	0.69
74	1	0.58
75	1	0.83
76	1	0.72
77	1	0.88
78	1	0.59
79	1	0.67
<b>Average</b>		<b>0.68</b>

Grade 10: Constructed Response Items		
Item No.	Points	Item Difficulty
65	2	0.36
68	2	0.12
72	2	0.30
73	2	0.45
80	2	0.37
<b>Average</b>		<b>0.32</b>

*WESTEST 2007 Operational Form Item Characteristics*

Science

Grade 3 TN Multiple Choice Items		
Item No.	Points	Item Difficulty
1	1	0.88
2	1	0.82
3	1	0.98
4	1	0.96
5	1	0.97
6	1	0.94
7	1	0.81
8	1	0.95
9	1	0.85
10	1	0.71
11	1	0.96
12	1	0.94
13	1	0.82
14	1	0.45
15	1	0.58
16	1	0.80
17	1	0.50
18	1	0.82
19	1	0.89
20	1	0.87
21	1	0.68
22	1	0.59
23	1	0.80
24	1	0.53
25	1	0.93
26	1	0.48
27	1	0.66
28	1	0.56
29	1	0.31
<b>Average</b>		<b>0.76</b>

Grade 3 Other Multiple Choice Items		
Item No.	Points	Item Difficulty
30	1	0.91
32	1	0.53
33	1	0.97
34	1	0.97
35	1	0.48
36	1	0.58
38	1	0.49
41	1	0.93
42	1	0.79
43	1	0.78
44	1	0.89
45	1	0.32
46	1	0.49
47	1	0.66
48	1	0.58
49	1	0.58
<b>Average</b>		<b>0.68</b>

Grade 3 Constructed Response Items		
Item No.	Points	Item Difficulty
31	2	0.53
37	2	0.14
39	2	0.23
40	2	0.15
50	2	0.09
<b>Average</b>		<b>0.23</b>

*WESTEST 2007 Operational Form Item Characteristics*

*Science*

Grade 4 TN Multiple Choice Items		
Item No.	Points	Item Difficulty
1	1	0.74
2	1	0.72
3	1	0.66
4	1	0.72
5	1	0.52
6	1	0.83
7	1	0.97
8	1	0.94
9	1	0.88
10	1	0.92
11	1	0.92
12	1	0.95
13	1	0.79
14	1	0.68
15	1	0.93
16	1	0.36
17	1	0.56
18	1	0.74
19	1	0.84
20	1	0.74
21	1	0.57
22	1	0.59
23	1	0.46
24	1	0.50
25	1	0.79
26	1	0.69
27	1	0.75
28	1	0.54
29	1	0.59
30	1	0.63
<b>Average</b>		<b>0.72</b>

Grade 4 Other Multiple Choice Items		
Item No.	Points	Item Difficulty
31	1	0.67
32	1	0.84
35	1	0.48
37	1	0.32
38	1	0.35
40	1	0.22
41	1	0.78
42	1	0.52
43	1	0.40
44	1	0.61
45	1	0.58
46	1	0.55
47	1	0.27
48	1	0.36
49	1	0.36
<b>Average</b>		<b>0.49</b>

Grade 4 Constructed Response Items		
Item No.	Points	Item Difficulty
33	2	0.34
34	2	0.30
36	2	0.32
39	2	0.21
50	2	0.13
<b>Average</b>		<b>0.26</b>

*WESTEST 2007 Operational Form Item Characteristics*

*Science*

Grade 5 TN Multiple Choice Items		
Item No.	Points	Item Difficulty
1	1	0.95
2	1	0.94
3	1	0.92
4	1	0.66
5	1	0.70
6	1	0.65
7	1	0.48
8	1	0.69
9	1	0.69
10	1	0.80
11	1	0.49
12	1	0.81
13	1	0.58
14	1	0.67
15	1	0.44
16	1	0.71
17	1	0.78
18	1	0.86
19	1	0.64
20	1	0.57
21	1	0.58
22	1	0.60
23	1	0.65
24	1	0.36
25	1	0.39
26	1	0.29
27	1	0.55
28	1	0.56
29	1	0.81
30	1	0.45
<b>Average</b>		<b>0.64</b>

Grade 5 Other Multiple Choice Items		
Item No.	Points	Item Difficulty
31	1	0.72
32	1	0.45
34	1	0.47
36	1	0.47
37	1	0.42
39	1	0.35
40	1	0.48
41	1	0.50
42	1	0.50
43	1	0.82
44	1	0.77
45	1	0.36
46	1	0.21
47	1	0.50
48	1	0.31
<b>Average</b>		<b>0.49</b>

Grade 5 Constructed Response Items		
Item No.	Points	Item Difficulty
33	2	0.08
35	2	0.15
38	2	0.23
49	2	0.16
50	2	0.07
<b>Average</b>		<b>0.14</b>

*WESTEST 2007 Operational Form Item Characteristics*

*Science*

Grade 6 TN Multiple Choice Items		
Item No.	Points	Item Difficulty
1	1	0.68
2	1	0.55
3	1	0.80
4	1	0.63
5	1	0.87
6	1	0.75
7	1	0.83
8	1	0.66
9	1	0.80
10	1	0.95
11	1	0.83
12	1	0.38
13	1	0.78
14	1	0.82
15	1	0.61
16	1	0.79
17	1	0.75
18	1	0.61
19	1	0.65
20	1	0.68
21	1	0.52
22	1	0.64
23	1	0.88
24	1	0.50
25	1	0.47
26	1	0.41
27	1	0.48
28	1	0.26
29	1	0.42
30	1	0.41
<b>Average</b>		<b>0.65</b>

Grade 6 Other Multiple Choice Items		
Item No.	Points	Item Difficulty
31	1	0.87
32	1	0.48
33	1	0.45
34	1	0.41
36	1	0.41
39	1	0.27
41	1	0.29
42	1	0.79
43	1	0.68
44	1	0.59
45	1	0.68
46	1	0.43
47	1	0.43
49	1	0.37
50	1	0.36
<b>Average</b>		<b>0.50</b>

Grade 6 Constructed Response Items		
Item No.	Points	Item Difficulty
35	2	0.18
37	2	0.29
38	2	0.11
40	2	0.19
48	2	0.14
<b>Average</b>		<b>0.18</b>

*WESTEST 2007 Operational Form Item Characteristics*

*Science*

Grade 7 TN Multiple Choice Items		
Item No.	Points	Item Difficulty
1	1	0.86
2	1	0.80
3	1	0.71
4	1	0.74
5	1	0.47
6	1	0.68
7	1	0.86
8	1	0.68
9	1	0.84
10	1	0.76
11	1	0.87
12	1	0.84
13	1	0.75
14	1	0.74
15	1	0.82
16	1	0.48
17	1	0.41
18	1	0.27
19	1	0.38
20	1	0.53
21	1	0.65
22	1	0.79
23	1	0.55
24	1	0.71
25	1	0.55
26	1	0.60
27	1	0.50
<b>Average</b>		<b>0.66</b>

Grade 7 Other Multiple Choice Items		
Item No.	Points	Item Difficulty
28	1	0.75
29	1	0.61
30	1	0.57
31	1	0.63
32	1	0.49
33	1	0.73
34	1	0.67
35	1	0.42
38	1	0.44
39	1	0.31
40	1	0.56
41	1	0.42
42	1	0.33
43	1	0.29
45	1	0.70
46	1	0.57
47	1	0.53
48	1	0.42
<b>Average</b>		<b>0.52</b>

Grade 7 Constructed Response Items		
Item No.	Points	Item Difficulty
36	2	0.30
37	2	0.27
44	2	0.14
49	2	0.22
50	2	0.24
<b>Average</b>		<b>0.23</b>

*WESTEST 2007 Operational Form Item Characteristics*

*Science*

Grade 8 TN Multiple Choice Items		
Item No.	Points	Item Difficulty
1	1	0.74
2	1	0.69
3	1	0.86
4	1	0.81
5	1	0.69
6	1	0.74
7	1	0.72
8	1	0.55
9	1	0.57
10	1	0.67
11	1	0.83
12	1	0.54
13	1	0.67
14	1	0.79
15	1	0.69
16	1	0.71
17	1	0.57
18	1	0.58
19	1	0.26
20	1	0.51
21	1	0.30
22	1	0.61
23	1	0.36
24	1	0.40
25	1	0.51
26	1	0.44
27	1	0.47
<b>Average</b>		<b>0.60</b>

Grade 8 Other Multiple Choice Items		
Item No.	Points	Item Difficulty
29	1	0.44
30	1	0.46
31	1	0.90
32	1	0.61
33	1	0.78
34	1	0.70
35	1	0.25
36	1	0.30
40	1	0.44
41	1	0.27
42	1	0.32
43	1	0.62
44	1	0.55
45	1	0.50
46	1	0.77
47	1	0.82
48	1	0.57
49	1	0.36
50	1	0.40
51	1	0.46
<b>Average</b>		<b>0.53</b>

Grade 8 Constructed Response Items		
Item No.	Points	Item Difficulty
28	2	0.35
37	2	0.30
38	2	0.17
39	2	0.35
52	2	0.32
<b>Average</b>		<b>0.30</b>

*WESTEST 2007 Operational Form Item Characteristics*

*Science*

Grade 10 TN Multiple Choice Items		
Item No.	Points	Item Difficulty
1	1	0.63
2	1	0.70
3	1	0.59
4	1	0.49
5	1	0.77
6	1	0.48
7	1	0.24
8	1	0.80
9	1	0.73
10	1	0.69
11	1	0.59
12	1	0.67
13	1	0.39
14	1	0.73
15	1	0.58
16	1	0.53
17	1	0.53
18	1	0.45
19	1	0.45
20	1	0.27
21	1	0.61
22	1	0.45
23	1	0.68
24	1	0.32
25	1	0.51
<b>Average</b>		<b>0.56</b>

Grade 10 Other Multiple Choice Items		
Item No.	Points	Item Difficulty
26	1	0.93
27	1	0.64
28	1	0.57
29	1	0.28
30	1	0.58
31	1	0.61
33	1	0.63
34	1	0.55
35	1	0.65
37	1	0.54
38	1	0.32
41	1	0.77
42	1	0.70
43	1	0.58
44	1	0.45
46	1	0.38
47	1	0.35
48	1	0.29
49	1	0.32
50	1	0.21
<b>Average</b>		<b>0.52</b>

Grade 10 Constructed Response Items		
Item No.	Points	Item Difficulty
32	4	0.28
36	4	0.26
39	4	0.21
40	4	0.15
45	4	0.28
<b>Average</b>		<b>0.23</b>

*WESTEST 2007 Operational Form Item Characteristics*

**Social Studies**

Grade 3 TN Multiple Choice Items		
Item No.	Points	Item Difficulty
21	1	0.88
22	1	0.87
23	1	0.94
24	1	0.89
25	1	0.49
26	1	0.91
27	1	0.91
28	1	0.82
29	1	0.90
30	1	0.88
31	1	0.68
32	1	0.67
33	1	0.73
34	1	0.62
35	1	0.94
36	1	0.89
37	1	0.71
38	1	0.80
39	1	0.70
40	1	0.32
41	1	0.42
42	1	0.63
43	1	0.49
44	1	0.54
45	1	0.88
46	1	0.94
47	1	0.76
48	1	0.94
49	1	0.70
50	1	0.79
<b>Average</b>		<b>0.75</b>

Grade 3 Other Multiple Choice Items		
Item No.	Points	Item Difficulty
1	1	0.73
2	1	0.92
3	1	0.94
4	1	0.88
5	1	0.91
6	1	0.46
7	1	0.79
9	1	0.63
10	1	0.39
12	1	0.85
13	1	0.84
14	1	0.76
15	1	0.49
17	1	0.38
18	1	0.57
<b>Average</b>		<b>0.70</b>

Grade 3 Constructed Response Items		
Item No.	Points	Item Difficulty
8	2	0.42
11	2	0.37
16	2	0.49
19	2	0.42
20	2	0.31
<b>Average</b>		<b>0.40</b>

***WESTEST 2007 Operational Form Item Characteristics***

***Social Studies***

Grade 4 TN Multiple Choice Items		
Item No.	Points	Item Difficulty
21	1	0.98
22	1	0.80
23	1	0.74
24	1	0.83
25	1	0.90
26	1	0.89
27	1	0.97
28	1	0.66
29	1	0.71
30	1	0.85
31	1	0.68
32	1	0.64
33	1	0.90
34	1	0.40
35	1	0.89
36	1	0.76
37	1	0.88
38	1	0.75
39	1	0.34
40	1	0.84
41	1	0.66
42	1	0.90
43	1	0.76
44	1	0.60
45	1	0.95
46	1	0.42
47	1	0.72
48	1	0.80
49	1	0.79
50	1	0.42
<b>Average</b>		<b>0.75</b>

Grade 4 Other Multiple Choice Items		
Item No.	Points	Item Difficulty
1	1	0.90
2	1	0.58
3	1	0.75
4	1	0.86
5	1	0.67
6	1	0.66
7	1	0.53
8	1	0.52
10	1	0.44
11	1	0.67
13	1	0.68
15	1	0.75
16	1	0.60
17	1	0.46
20	1	0.64
<b>Average</b>		<b>0.65</b>

Grade 4 Constructed Response Items		
Item No.	Points	Item Difficulty
9	2	0.27
12	2	0.34
14	2	0.40
18	2	0.45
19	2	0.45
<b>Average</b>		<b>0.38</b>

*WESTEST 2007 Operational Form Item Characteristics*

*Social Studies*

Grade 5 TN Multiple Choice Items		
Item No.	Points	Item Difficulty
21	1	0.78
22	1	0.66
23	1	0.54
24	1	0.75
25	1	0.48
26	1	0.91
27	1	0.73
28	1	0.93
29	1	0.89
30	1	0.94
31	1	0.75
32	1	0.85
33	1	0.92
34	1	0.68
35	1	0.59
36	1	0.39
37	1	0.35
38	1	0.60
39	1	0.78
40	1	0.84
41	1	0.55
42	1	0.55
43	1	0.89
44	1	0.40
45	1	0.91
46	1	0.91
47	1	0.87
48	1	0.38
49	1	0.61
50	1	0.57
<b>Average</b>		<b>0.70</b>

Grade 5 Other Multiple Choice Items		
Item No.	Points	Item Difficulty
1	1	0.73
2	1	0.69
3	1	0.88
4	1	0.44
5	1	0.57
6	1	0.61
7	1	0.40
8	1	0.24
9	1	0.62
11	1	0.49
12	1	0.64
13	1	0.47
14	1	0.57
15	1	0.50
18	1	0.62
<b>Average</b>		<b>0.60</b>

Grade 5 Constructed Response Items		
Item No.	Points	Item Difficulty
10	2	0.30
16	2	0.20
17	2	0.14
19	2	0.42
20	2	0.53
<b>Average</b>		<b>0.50</b>

*WESTEST 2007 Operational Form Item Characteristics*

*Social Studies*

Grade 6 TN Multiple Choice Items		
Item No.	Points	Item Difficulty
21	1	0.78
22	1	0.67
23	1	0.41
24	1	0.88
25	1	0.70
26	1	0.77
27	1	0.85
28	1	0.71
29	1	0.61
30	1	0.74
31	1	0.83
32	1	0.43
33	1	0.82
34	1	0.68
35	1	0.75
36	1	0.58
37	1	0.88
38	1	0.74
39	1	0.61
40	1	0.83
41	1	0.50
42	1	0.45
43	1	0.69
44	1	0.53
45	1	0.71
46	1	0.76
47	1	0.65
48	1	0.68
49	1	0.75
50	1	0.34
<b>Average</b>		<b>0.68</b>

Grade 6 Other Multiple Choice Items		
Item No.	Points	Item Difficulty
1	1	0.77
2	1	0.33
3	1	0.55
4	1	0.65
5	1	0.57
6	1	0.50
7	1	0.45
8	1	0.64
9	1	0.60
11	1	0.75
14	1	0.53
16	1	0.68
17	1	0.43
18	1	0.43
19	1	0.45
<b>Average</b>		<b>0.55</b>

Grade 6 Constructed Response Items		
Item No.	Points	Item Difficulty
10	2	0.24
12	2	0.31
13	2	0.21
15	2	0.35
20	2	0.36
<b>Average</b>		<b>0.29</b>

**WESTEST 2007 Operational Form Item Characteristics**

**Social Studies**

Grade 7 TN Multiple Choice Items		
Item No.	Points	Item Difficulty
21	1	0.77
22	1	0.72
23	1	0.97
24	1	0.89
25	1	0.78
26	1	0.93
27	1	0.75
28	1	0.82
29	1	0.88
30	1	0.93
31	1	0.48
32	1	0.77
33	1	0.70
34	1	0.52
35	1	0.77
36	1	0.61
37	1	0.92
38	1	0.60
39	1	0.64
40	1	0.53
41	1	0.68
42	1	0.38
43	1	0.48
44	1	0.43
45	1	0.48
46	1	0.44
47	1	0.75
48	1	0.86
49	1	0.63
50	1	0.65
<b>Average</b>		<b>0.69</b>

Grade 7 Other Multiple Choice Items		
Item No.	Points	Item Difficulty
1	1	0.80
2	1	0.91
3	1	0.44
4	1	0.71
5	1	0.77
6	1	0.63
7	1	0.83
8	1	0.55
9	1	0.47
14	1	0.83
15	1	0.57
17	1	0.68
18	1	0.54
19	1	0.32
20	1	0.32
<b>Average</b>		<b>0.62</b>

Grade 7 Constructed Response Items		
Item No.	Points	Item Difficulty
10	2	0.22
11	2	0.24
12	2	0.20
13	2	0.20
16	2	0.28
<b>Average</b>		<b>0.23</b>

*WESTEST 2007 Operational Form Item Characteristics*

*Social Studies*

Grade 8 TN Multiple Choice Items		
Item No.	Points	Item Difficulty
26	1	0.90
27	1	0.67
28	1	0.88
29	1	0.66
30	1	0.57
31	1	0.78
32	1	0.66
33	1	0.58
34	1	0.92
35	1	0.92
36	1	0.51
37	1	0.53
38	1	0.26
39	1	0.86
40	1	0.71
41	1	0.78
42	1	0.53
43	1	0.73
44	1	0.72
45	1	0.68
46	1	0.42
47	1	0.21
48	1	0.59
49	1	0.47
50	1	0.65
<b>Average</b>		<b>0.65</b>

Grade 8 Other Multiple Choice Items		
Item No.	Points	Item Difficulty
1	1	0.90
2	1	0.66
3	1	0.78
4	1	0.46
5	1	0.80
6	1	0.83
7	1	0.61
8	1	0.62
9	1	0.61
11	1	0.77
12	1	0.84
14	1	0.69
16	1	0.62
17	1	0.50
18	1	0.80
19	1	0.65
20	1	0.62
22	1	0.62
23	1	0.57
24	1	0.79
<b>Average</b>		<b>0.69</b>

Grade 8 Constructed Response Items		
Item No.	Points	Item Difficulty
10	2	0.28
13	2	0.18
15	2	0.35
21	2	0.37
25	2	0.27
<b>Average</b>		<b>0.29</b>

### **WESTEST 2007 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.

**WESTEST 2007 Impact Analysis**

**Mathematics**

Grade	Sub Group	N	Mean	SD	1 SD below the majority mean
3	Black	1088	613.0	31.0	591.6
	White	18365	625.0	33.4	
3	Female	9710	624.7	32.7	589.9
	Male	10094	624.1	34.2	
4	Black	1042	645.3	30.3	621.2
	White	18199	654.1	32.9	
4	Female	9577	653.8	32.5	620.3
	Male	10011	653.8	33.5	
5	Black	1030	662.1	30.9	639.8
	White	18366	672.2	32.4	
5	Female	9638	671.4	30.9	638.3
	Male	10079	672.2	33.9	
6	Black	1125	666.4	36.4	641.5
	White	19066	678.8	37.2	
6	Female	10000	678.8	35.4	638.5
	Male	10514	677.7	39.2	
7	Black	1054	672.8	34.5	651.6
	White	19469	688.0	36.5	
7	Female	9995	687.0	34.9	649.4
	Male	10849	687.7	38.3	
8	Black	1049	680.2	38.4	656.5
	White	19479	698.2	41.7	
8	Female	10118	696.8	39.9	654.3
	Male	10729	698.1	43.8	
10	Black	880	702.7	44.0	677.2
	White	18514	721.8	44.6	
10	Female	9752	722.4	41.4	671.9
	Male	9952	720.0	48.1	

**WESTEST 2007 Impact Analysis**

**Reading/Language Arts**

Grade	Sub Group	N	Mean	SD	1 SD below the majority mean
3	Black	1087	623.5	33.1	596.4
	White	18362	632.0	35.6	
3	Female	9709	637.1	32.0	588.7
	Male	10091	626.4	37.7	
4	Black	1042	640.7	33.1	616.0
	White	18196	650.1	34.1	
4	Female	9579	653.6	32.3	610.3
	Male	10006	645.8	35.4	
5	Black	1030	651.5	31.7	626.6
	White	18369	659.5	32.8	
5	Female	9636	664.2	29.2	618.8
	Male	10083	654.1	35.3	
6	Black	1125	658.3	33.8	634.9
	White	19057	667.9	33.0	
6	Female	10000	672.8	29.2	626.6
	Male	10504	662.4	35.7	
7	Black	1056	665.0	35.8	640.8
	White	19473	676.9	36.1	
7	Female	9999	682.1	31.4	631.9
	Male	10850	671.1	39.3	
8	Black	1048	673.1	32.2	647.7
	White	19490	682.0	34.3	
8	Female	10114	688.7	30.0	638.4
	Male	10743	675.0	36.7	
10	Black	880	677.4	44.6	652.3
	White	18504	693.5	41.1	
10	Female	9740	700.5	34.7	639.5
	Male	9953	685.3	45.8	

**WESTEST 2007 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	1084	625.0	25.2	609.7
	White	18342	635.6	25.9	
3	Female	9703	634.7	24.8	608.3
	Male	10074	635.4	27.1	
4	Black	1039	633.3	30.7	616.4
	White	18173	648.4	32.1	
4	Female	9567	645.9	31.6	616.5
	Male	9991	649.3	32.8	
5	Black	1022	648.6	33.3	632.4
	White	18318	663.7	31.2	
5	Female	9612	660.8	30.7	632.6
	Male	10048	664.9	32.3	
6	Black	1101	664.6	33.6	646.9
	White	18971	678.4	31.5	
6	Female	9954	677.1	30.4	645.3
	Male	10438	678.4	33.1	
7	Black	1041	672.5	32.7	655.6
	White	19342	688.7	33.1	
7	Female	9936	686.8	30.0	653.0
	Male	10765	689.0	36.0	
8	Black	1036	683.1	31.7	665.7
	White	19350	698.1	32.4	
8	Female	10045	696.4	29.6	663.1
	Male	10657	698.4	35.3	
10	Black	845	695.6	35.5	677.6
	White	18330	711.9	34.3	
10	Female	9623	710.2	29.6	673.6
	Male	9856	712.4	38.8	

**WESTEST 2007 Impact Analysis**

**Social Studies**

<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	1084	626.1	28.8	607.0
	White	18355	636.1	29.1	
3	Female	9707	636.8	28.5	604.6
	Male	10082	634.4	29.9	
4	Black	1038	641.1	23.9	625.5
	White	18159	651.7	26.2	
4	Female	9559	650.7	25.1	624.3
	Male	9985	651.5	27.2	
5	Black	1025	649.9	24.6	633.6
	White	18314	658.5	24.9	
5	Female	9614	657.9	22.4	631.0
	Male	10046	658.2	27.2	
6	Black	1108	651.8	36.7	630.4
	White	18994	665.2	34.8	
6	Female	9958	664.0	32.4	627.6
	Male	10466	665.1	37.5	
7	Black	1044	666.1	27.0	648.6
	White	19369	677.9	29.3	
7	Female	9952	677.4	26.7	645.8
	Male	10782	677.4	31.6	
8	Black	1036	677.9	27.4	659.9
	White	19358	689.3	29.4	
8	Female	10045	688.6	26.7	657.1
	Male	10663	688.8	31.8	

## 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 not 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, 70%-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 2007 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 2007 Operational Inter-Rater Reliability for Constructed Response Items**

<b>Mathematics</b>				
Grade	Item No.	Score Pts	% of Agreement	
			Perfect	Adjacent
3	35	3	92	99
	49	3	97	100
	50	3	81	98
	51	3	89	100
	52	3	96	100
4	42	3	95	98
	47	3	97	100
	50	3	90	97
	51	3	89	100
	52	3	94	100
5	42	3	92	100
	49	3	84	97
	50	3	79	100
	51	3	85	99
	52	3	86	100
6	39	3	92	99
	49	3	75	99
	50	3	85	96
	51	3	93	100
	52	3	97	100
7	42	3	97	99
	49	3	92	100
	50	3	88	98
	51	3	86	100
	52	3	92	99
8	39	3	93	100
	49	3	88	100
	50	3	82	99
	51	3	88	99
	52	3	82	99
10	36	3	97	99
	44	4	72	97
	47	4	82	97
	48	4	86	96
	49	4	85	99

***WESTEST 2007 Inter-rater Reliability for Constructed Response Items***

Reading/Language Arts				
Grade	Item No.	Score Pts	% of Agreement	
			Perfect	Adjacent
3	55	2	92	100
	60	2	82	99
	65	2	86	100
	69	2	84	100
	70	2	94	100
4	60	2	89	100
	64	2	78	100
	69	2	78	98
	74	2	84	99
	75	2	80	100
5	64	2	81	99
	65	2	88	100
	70	2	74	99
	75	2	84	100
	76	2	78	100
6	60	2	76	99
	65	2	70	99
	70	2	97	100
	74	2	80	99
	75	2	78	100
7	60	2	78	100
	65	2	78	100
	70	2	91	100
	74	2	84	100
	75	2	76	99
8	60	2	85	100
	63	2	74	98
	64	2	87	99
	68	2	71	98
	75	2	65	95
10	65	2	94	100
	69	2	96	100
	70	2	93	100
	74	2	69	99
	77	2	71	98

***WESTEST 2007 Inter-rater Reliability for Constructed Response Items***

Science				
Grade	Item No.	Score Pts	% of Agreement	
			Perfect	Adjacent
3	31	2	76	98
	37	2	83	99
	39	2	89	100
	40	2	73	98
	50	2	89	99
4	33	2	93	99
	34	2	94	100
	36	2	93	100
	39	2	79	99
	50	2	85	100
5	33	2	87	100
	35	2	94	100
	38	2	74	99
	49	2	97	100
	50	2	89	100
6	35	2	84	100
	37	2	77	99
	38	2	91	100
	40	2	85	100
	48	2	83	99
7	36	2	81	99
	37	2	72	99
	44	2	90	100
	49	2	86	100
	50	2	92	100
8	28	2	98	100
	37	2	97	100
	38	2	93	100
	39	2	88	100
	52	2	96	100
10	32	4	70	97
	36	4	93	99
	39	4	81	98
	40	4	87	99
	45	4	90	99

***WESTEST 2007 Inter-rater Reliability for Constructed Response Items***

<b>Social Studies</b>				
Grade	Item No.	Score Pts	% of Agreement	
			Perfect	Adjacent
3	7	2	78	100
	11	2	73	99
	16	2	97	100
	19	2	69	99
	20	2	64	96
4	9	2	82	99
	12	2	72	98
	14	2	71	98
	18	2	75	99
	19	2	82	98
5	4	2	69	96
	16	2	73	97
	17	2	79	99
	19	2	73	98
	20	2	98	100
6	10	2	70	98
	12	2	77	99
	13	2	69	98
	15	2	84	100
	20	2	72	100
7	3	2	70	96
	11	2	67	99
	12	2	81	99
	13	2	82	98
	16	2	60	97
8	10	2	71	98
	13	2	80	98
	15	2	77	99
	21	2	95	100
	25	2	86	99

## **WESTEST 2007 Operational Tests Content Standard Mastery-Below Mastery Performance Level Score Range**

The content standard mastery Mastery-Below Mastery performance level score ranges 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 2007 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 2007 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	52.00 – 100	66.00 – 100	70.00 – 100	50.00 – 100	75.00 – 100
1- Below Mastery Level	0 – 51.99	0 – 65.99	0 – 69.99	0 – 49.99	0 – 74.99
<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	59.00 – 100	55.00 – 100	66.00 – 100	50.00 – 100	55.00 – 100
1- Below Mastery Level	0 – 58.99	0 – 54.99	0 – 65.99	0 – 49.99	0 – 54.99
<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	42.00 – 100	53.00 – 100	36.00 – 100	55.00 – 100	70.00 – 100
1- Below Mastery Level	0 – 41.99	0 – 52.99	0 – 35.99	0 – 54.99	0 – 69.99
<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	60.00 – 100	40.00 – 100	50.00 – 100	40.00 – 100	50.00 – 100
1- Below Mastery Level	0 – 59.99	0 – 39.99	0 – 49.99	0 – 39.99	0 – 49.99
<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	41.00 – 100	44.00 – 100	40.00 – 100	40.00 – 100	41.00 – 100
1- Below Mastery Level	0 – 40.99	0 – 43.99	0 – 39.99	0 – 39.99	0 – 40.99
<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	55.00 – 100	42.00 – 100	41.00 – 100	22.00 – 100	61.00 – 100
1- Below Mastery Level	0 – 54.99	0 – 41.99	0 – 40.99	0 – 21.99	0 – 60.99
<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	55.00 – 100	39.00 – 100	33.00 – 100	44.00 – 100	40.00 – 100
1- Below Mastery Level	0 – 54.99	0 – 38.99	0 – 32.99	0 – 43.99	0 – 39.99

***WESTEST 2007 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	55.00 – 100	52.00 – 100
1- Below Mastery Level	0 – 54.99	0 – 51.99
<b>Grade 4 Reading/Language Arts</b>		
Performance Level	Percent Correct Range	
	1. Reading	2. Writing
2 – At or Above Mastery Level	61.00 – 100	53.00 – 100
1- Below Mastery Level	0 – 60.99	0 – 52.99
<b>Grade 5 Reading/Language Arts</b>		
Performance Level	Percent Correct Range	
	1. Reading	2. Writing
2 – At or Above Mastery Level	50.00 – 100	58.00 – 100
1- Below Mastery Level	0 – 49.99	0 – 57.99
<b>Grade 6 Reading/Language Arts</b>		
Performance Level	Percent Correct Range	
	1. Reading	2. Writing
2 – At or Above Mastery Level	47.00 – 100	48.00 – 100
1- Below Mastery Level	0 – 46.99	0 – 47.99
<b>Grade 7 Reading/Language Arts</b>		
Performance Level	Percent Correct Range	
	1. Reading	2. Writing
2 – At or Above Mastery Level	46.00 – 100	50.00 – 100
1- Below Mastery Level	0 – 45.99	0 – 49.99
<b>Grade 8 Reading/Language Arts</b>		
Performance Level	Percent Correct Range	
	1. Reading	2. Writing
2 – At or Above Mastery Level	49.00 – 100	48.00 – 100
1- Below Mastery Level	0 – 48.99	0 – 47.99
<b>Grade 10 Reading/Language Arts</b>		
Performance Level	Percent Correct Range	
	1. Reading	2. Writing
2 – At or Above Mastery Level	51.00 – 100	57.00 – 100
1- Below Mastery Level	0 – 50.99	0 – 56.99

***WESTEST 2007 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	75.00 – 100	56.00 – 100	60.00 – 100	52.00 – 100	50.00 – 100	60.00 – 100
1- Below Mastery Level	0 – 74.99	0 – 55.99	0 – 59.99	0 – 51.99	0 – 49.99	0 – 59.99
<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	50.00 – 100	37.00 – 100	75.00 – 100	47.00 - 100	50.00 – 100	66.00 – 100
1- Below Mastery Level	0 – 49.99	0 – 36.99	0 – 74.99	0 – 46.99	0 – 49.99	0 – 65.99
<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	50.00 – 100	35.00 – 100	25.00 – 100	42.00 – 100	50.00 – 100	60.00 – 100
1- Below Mastery Level	0 – 49.99	0 – 34.99	0 – 24.99	0 – 41.99	0 – 49.99	0 – 59.99
<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	50.00 – 100	43.00 – 100	20.00 – 100	45.00 – 100	50.00 – 100	25.00 – 100
1- Below Mastery Level	0 – 49.99	0 – 42.99	0 – 19.99	0 – 44.99	0 – 49.99	0 – 24.99
<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	50.00 – 100	43.00 – 100	50.00 – 100	40.00 – 100	40.00 – 100	50.00 – 100
1- Below Mastery Level	0 – 49.99	0 – 42.99	0 – 49.99	0 – 39.99	0 – 39.99	0 – 49.99

***WESTEST 2007 Operational Form Content Standard Mastery Cut Points***

<b>Grade 8 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	40.00 – 100	35.00 – 100	60.00 – 100	47.00 – 100	50.00– 100	40.00 – 100
1- Below Mastery Level	0 – 39.99	0 – 34.99	0 – 59.99	0 – 46.99	0 – 49.99	0 – 39.99
<b>Grade 10 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	50.00 – 100	23.00 – 100	40.00 – 100	27.00 – 100	50.00 – 100	33.00 – 100
1- Below Mastery Level	0 – 49.99	0 – 22.99	0 – 39.99	0 – 26.99	0 – 49.99	0 – 32.99

***WESTEST 2007 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	50.00 – 100	50.00 – 100	63.00 – 100	71.00 – 100	71.00 – 100
1- Below Mastery Level	0 – 49.99	0 – 49.99	0 – 62.99	0 – 70.99	0 – 70.99
<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	66.00 – 100	50.00 – 100	61.00 – 100	69.00 – 100	50.00 – 100
1- Below Mastery Level	0 – 65.99	0 – 49.99	0 – 60.99	0 – 68.99	0 – 49.99
<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	66.00 – 100	44.00 – 100	57.00 – 100	57.00 – 100	47.00 – 100
1- Below Mastery Level	0 – 65.99	0 – 43.99	0 – 56.99	0 – 56.99	0 – 46.99
<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	50.00 – 100	50.00 – 100	53.00 – 100	60.00 – 100	53.00 – 100
1- Below Mastery Level	0 – 49.99	0 – 49.99	0 – 52.99	0 – 59.99	0 – 52.99
<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	50.00 – 100	60.00 – 100	54.00 – 100	55.00 – 100	46.00 – 100
1- Below Mastery Level	0 – 49.99	0 – 59.99	0 – 53.99	0 – 54.99	0 – 45.99
<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	75.00 – 100	44.00 – 100	50.00 – 100	50.00 – 100	55.00 – 100
1- Below Mastery Level	0 – 74.99	0 – 43.99	0 – 49.99	0 – 49.99	0 – 54.99