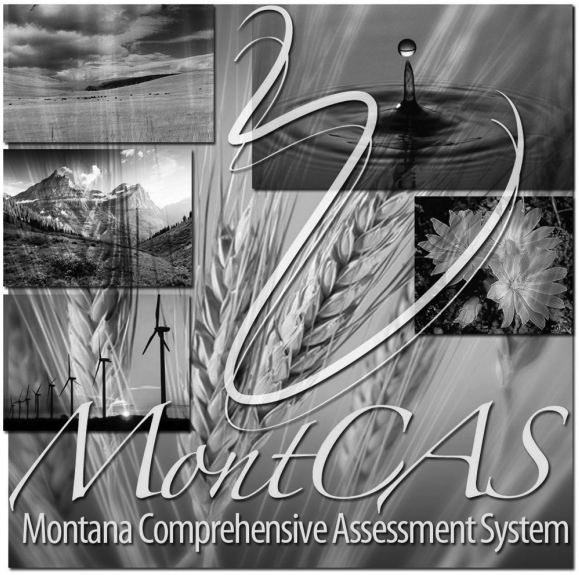
MontCAS



Interpretive Guide to the 2015 Criterion-Referenced Test in Science and CRT-Alternate Assessment Reports

Important Phone Numbers

As a test coordinator representing your system, you may require more assistance. It is readily available through the offices listed below.

For information about the CRT-Science or CRT-Alternate program administration issues, contact: Montana Service Center at (888)792-2741

Mellicent Friddell, Montana Program Manager
E-mail: friddell.mellicent@measuredprogress.org

For information about program policy issues, the CRT-Alternate Assessment, or standard and nonstandard accommodations, contact:

Judy Snow, State Assessment Director
Phone: (406) 444-3656
E-mail: jsnow@mt.gov

For information about ELL/LEP, contact:

Lynn Hinch, OPI
Phone: (406) 444-3482
E-mail: lhinch@mt.gov

For information about Title I, contact:

B. J. Granbery, OPI
Phone: (406) 444-4420
E-mail: bgranbery@mt.gov

For information about students with migrant status, contact:

Angela Branz-Spall, OPI
Phone: (406) 444-2423
E-mail: angelab@mt.gov

For information about CRT-Alternate policy issues, contact:

Frank Podobnik, OPI
Phone: (406) 444-4429
E-mail: fpodobnik@mt.gov

Montana
Office of Public Instruction
Denise Juneau, State Superintendent
opi.mt.gov

The primary purpose of this guide is to support local educators' use of test data to better serve the academic needs of students and to evaluate and improve curriculum and instruction. We hope you find this guide useful as you review the results for your school or system.

If you have any suggestions about ways in which we can improve this guide in future years, or if you have questions after reviewing this guide or its reports, please contact Judy Snow, State Assessment Director, Office of Public Instruction (OPI) at (406) 444-3656 or jsnow@mt.gov.

Additional information about the Criterion-Referenced Test in Science (CRT-Science) and the CRT-Alternate Assessment, including Montana's content standards, can be found in Appendix A of this manual and on OPI's Web site, www.opi.mt.gov.

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The Test

The Criterion-Referenced Test in Science (CRT-Science) and the CRT-Alternate Assessment are designed to measure student acquisition of the knowledge and skills in Montana's content standards for science. The assessments in science were developed to provide information at the student, class, school, and system level.

Basis for Results

CRT-Science

In the CRT-Science, the pool of test items in each grade and subject area was divided into two categories:

1. The first category of items consists of common items that appeared in all forms of the test and were completed by all students. Student, school, system, and state results are based only on these common items. In 2015 fifty percent of common items are being released.

2. The second category of items consists of field test items. The remaining items in a grade/ subject area were divided among four different forms of each test; each student completed one form. These items are called field test items. These items do not count toward a student's results. A portion of the 2015 field test items will become the set of common items in spring 2016.

CRT-Alternate Assessment

The CRT-Alternate Assessment is a point-in-time test that examined how students performed in relation to performance indicators that were expanded from the Montana science standards and benchmarks. Students participated in a series of age-appropriate short activities consisting of five or six test items each for which test administrators were given a script, written directions, and scaffolding levels. Students were encouraged to engage in the activities and showed performance on the indicators through appropriate prompting by the test administrator.

The test administrator observed and scored the student's performance on each indicator. Some items required administrators to record the sequence of responses. Forms were provided for all required recordings.

Minimum Number of Students Needed to Generate Reports

To ensure confidentiality of individual student results and to discourage generalizations about school performance based on very small populations, OPI has established 10 as the minimum number of students for which performance-level results are reported in any particular subgroup. Only the number of students ("N") in each subgroup are reported on the system and school reports.

Consequently, schools with a very small number of students enrolled in a grade that was tested may not show performance-level results in some sections of their school report. A school report was generated for any school that tested fewer than 10 students in a particular grade, and results for these students are included in system- and/or state-level results.

Students Eligible for Exclusion from School, System, and State Reports

All students in accredited schools are required to participate in either the CRT-Science or the CRT-Alternate Assessment; however, the scores of the students in the following categories were excluded from the calculation of averages:

- LEP students enrolled for the first time in a U.S. school,
- foreign exchange students,
- students not enrolled (for example, home-schooled students),
- students enrolled less than 180 hours and taking a science course,
- students enrolled in a private accredited school,
- students enrolled in a private non-accredited school, and
- students enrolled in a private non-accredited Title 1 school.

The Scores

Two types of scores are used to report performance on the CRT-Science and the CRT-Alternate Assessment—scaled scores and percentages.

Scaled Scores

Results are reported according to levels that describe student performance in relation to Montana's established state standards: Advanced (A), Proficient (P), Nearing Proficiency (NP), and Novice (N). Scaled scores in each content area range from 200 to 300. Scaled scores supplement the performance-level results by providing information about the position of a student's results within a performance level.

School- and system-level scaled scores are calculated by computing the average of student-level scaled scores. Students' total number of points on the test are translated into scaled scores using a data-analysis process called scaling. Using scaled scores greatly simplifies the task of understanding how a student performed. Scaled scores are calculated along with a standard error of measurement (indicated on the chart by a gray bar surrounding the student's score), representing the probable range of scores for the student if he or she were to take the test many times.

Percentages

Percentages are another way to report the results of the test. "Percentage" refers to the percentage of questions answered correctly; the percent correct is simply the percentage of test questions that each student answered correctly.

It is important to note that the "percentage" correct does not directly correlate to the scale score. For more information, see Appendix A.

CRT-Science and CRT-Alternate Reports

The following reports of student, school, and system results are each provided for the CRT-Science and the CRT-Alternate Assessment.

Report	Description	Explanation and sample can be found in this interpretive guide on page(s):	Method of Delivery
Student Report	This parent/guardian report provides each student's scores for the science test.	CRT-Science: 4–5 CRT-ALT: 11–12	• Hard copy shipped to system test coordinator • MARS*
Roster & Item-Level Report	This report provides information about class performance. Each student in the class is listed on the roster, which includes references to each item and the standard it measures.	CRT-Science: 6 CRT-ALT: 13	MARS
School Summary Report	This three-part summary shows the distribution of scores in each Montana performance level by subgroup, school, system, and state for students enrolled in the school or system for the entire academic school year.	CRT-Science: 7–9 CRT-ALT: 14–16	MARS
System Summary Report	This two-part summary shows the distribution of scores in each Montana performance level by subgroup, system, and state for students enrolled in the school or system for the entire academic school year.	CRT-Science: 7–9 CRT-ALT: 14–16 Separate sample not included. See School Summary Report sample.	MARS

*MARS (the Montana Analysis and Reporting System) is the secure online reporting system used for delivery of CRT-Science and CRT-Alternate test results. If you need assistance accessing MARS, contact the OPI assessment staff. (Contact information is provided on the inside of the cover page of this document.)

Part I: The CRT-Science Reports

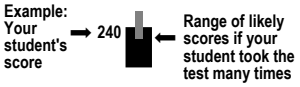
CRT-Science Student Report

This parent/guardian report provides each student's scores for the science test. The chart on the back of the Student Report, "Your student's performance level and score in each content area," reflects the student's performance level—A— and scaled score—B—for science. The gray bar surrounding the student's score represents the standard error of measurement. Next to the chart is a detailed description of the student's performance in each content area—C. Please refer to the performance-level descriptors on the front of the Student Report or on page 10 in this guide for additional information and resources.

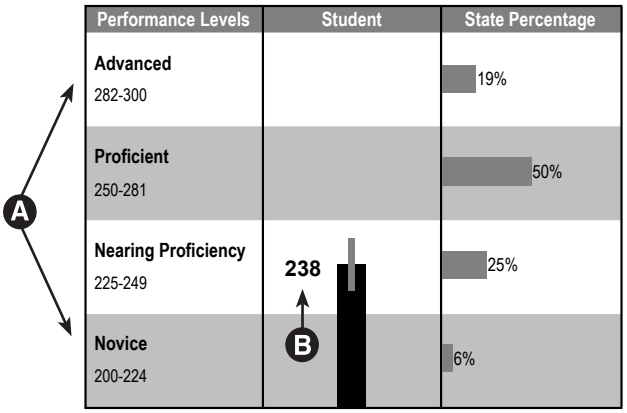
Your student's performance level and score in each content area

Display of scores and probable range of scores

In the figure below your students performance is displayed. For each subject, the left column lists the possible performance levels with the scores needed to achieve those levels. The center column is your student's performance where the black bar is their score and the small grey bar is the range of scores they might have achieved had they taken the test multiple times. The right hand column is the percentage of students that achieved each performance level on the CRT-Science across the state.



Science



Your student's Science Scaled Score is **238** which is at the **Nearing Proficiency Level.** Your student's possible range of scores is from 231 to 245.

Students at this level demonstrate a partial understanding of subject matter and are able to:

- With step-by-step direction and the appropriate tools, identify and describe a simple, safe investigation, and identify that observation is a key inquiry process used by Montana American Indians.
- With direction, effectively use tools for simple measurement of solids, liquids, and gases, naming some properties of each state of matter and naming components of basic physical and mechanical systems.
- With direction, identify some biotic (living) and abiotic (non-living) objects; group objects based on common attributes; provide basic descriptions of structure, function, and processes of a system.
- With direction, identify and describe some of Earth's features and recognize simple, observable changes of those features.
- With direction, identify some interactions among technology, science, and society.
- With direction, discuss how science plays a role in current events and local problems.
- With direction, identify some of the historical significance of scientists; with direction, identify the impact of their discoveries on humans today; and, with direction, identify influences of science and technology on the development of Montana American Indian cultures.
- With direction, identify some examples of Montana American Indian contributions to scientific and technological knowledge.

C

The chart on the back of the Student Report, "Scores on Montana Content Standards," shows the standard for each content area assessed—D, points possible for the number of items (or questions) given—E, the raw score points earned by the student—F, and the range of points on that standard earned by students in Montana who achieved proficiency or above—G.

Scores on Montana Content Standards

CRT-Science results are reported for Montana Content Standards in Science to provide standard-specific information about the student's achievement. The results can be used to show the student's relative performance on the standards within a content area.

	Science	E Total Possible Points on the Test	F Points Earned by Your Student	G Range of Points Earned by Students Who Have Achieved Proficiency in the State
	1. Scientific Investigations	14	12	3-14
	2. Physical Science	14	13	3-14
D	3. Life Science	14	13	3-14
	4. Earth/Space Science	14	11	2-14
	5. Impact on Society	Subscores are not reported for this standard.		
	6. Historical Development	Subscores are not reported for this standard.		

CRT-Science Roster & Item-Level Report

The Roster & Item-Level Report is presented by content area, and can be found on the Montana Analysis and Reporting System (MARS). It provides information about student and class performance and can be viewed online or downloaded in a variety of formats. Each student in the class is listed on the roster. Each released item on the test—A, the Montana content standard each item is measuring—B, the depth of knowledge—C, the item type—D, the correct response—E, and the total number of possible points—F—are presented along the top of the roster. Beside the name of the student and the student ID is the response the student chose for the item if the item was answered incorrectly—G. If the item was answered correctly, a plus sign is printed. The columns on the right present the raw score on each standard—H, the total points on the CRT-Science—I, the scaled score for each student—J, and the performance level—K—the student attained.

When the report is downloaded in PDF format, it lists the average scores for students in the group—L, school—M, system—N, and state—O—who answered each item correctly. A legend, with performance-level descriptors, is located on page 10 in this guide.

MontCAS
Montana Comprehensive Assessment System

Confidential
Roster and Item-Level Report
Science

System:	**Demonstration District A**
School:	**Demonstration School 1**
Grade:	**04**
Date:	**6/30/2015 11:12:37 AM** **Page: 1 of 1**

		Released Items																											Total Test Results I				J	K
A Released Item Number		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	H Points Earned by Standard on CRT					
B Content Standard		2	1	1	4	2	4	2	1	2	2	1	1	4	3	3	3	1	4	3	2	2	3	4	2	3	4	5	Standard 1	Standard 2	Standard 3	Standard 4	Total Points Earned on CRT	Scaled Score	Performance Level
C Depth of Knowledge Code		2	2	2	2	3	2	2	2	1	2	2	3	1	2	2	2	2	2	1	3	2	2	1	2	2	1	3							
D Item Type		MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	CR							
E Correct MC Response		D	A	C	B	D	A	C	D	A	A	D	C	A	D	B	C	D	A	B	D	C	A	C	D	A	D								
Name/Student ID	F Total Possible Points	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4	14	14	14	14	61		
ADJAMI, NICHOLAS	D04100015 G	D	A	+	A	+	B	C	C	D	C	A	D	+	+	B	+	+	C	+	A	+	D	+	+	A	1		4	6	9	7	27	238	NP
BROOKS, KALEB	D04100010																										2		0	0	0	0	2	200	INC
BROWN, ALEXANDE	D04100018	+	+	+	+	+	+	+	+	+	D	+	+	+	+	+	+	A	+	+	+	+	+	A	+	+	+	2	12	12	13	11	51	293	A
BRUNER, CHELSEA	D04100016	+	D	+	+	B	D	+	+	+	C	B	A	D	A	+	B	A	+	A	+	D	+	+	A	B	A	2	5	5	6	8	26	236	NP
LEE, BROOKE	D04100027	A	+	D	C	C	+	+	C	+	+	B	A	D	+	A	+	+	+	+	+	+	+	A	+	B	C	2	7	10	8	6	34	253	P
LORETDEMOLA, GUSTAVO	D04100014	+	C	+	+	+	C	+	+	+	+	B	A	D	+	+	+	C	+	+	+	+	B	+	C	+	+	3	7	12	12	11	46	279	P
MAIDA, MICHAELA	D04100031	+	C	D	D	+	+	+	+	+	D	+	+	D	C	+	B	C	+	A	D	+	+	+	A	+	A	3	10	8	8	9	38	261	P
MARTEL, JACOB	D04100005	+	C	D	+	+	D	+	+	+	C	+	+	+	+	+	+	C	+	C	+	D	+	D	+	D	A	2	6	9	8	8	34	253	P
MCGOVERN, THOMAS	D04100012	+	D	A	D	+	+	+	+	+	C	B	A	D	C	+	+	B	+	C	D	+	+	D	+	+	A	1	5	10	4	4	24	232	NP
MCKEE, MEREDITH	D04100036	+	+	D	A	+	D	A	+	+	+	+	+	D	+	+	+	A	+	+	+	+	+	D	+	+	+	4	12	12	14	8	51	293	A
MENDIOLA, JONATHAN	D04100019	+	+	A	+	B	+	A	+	+	+	B	A	B	+	+	D	A	+	A	+	+	+	+	+	B	+	2	6	9	7	9	33	251	P
NUTTING, JORDAN	D04100022	A	D	+	C	C	D	D	A	B	D	B	D	+	C	D	A	C	C	C	D	+	+	D	A	+	+	0	2	5	3	4	14	209	N
PERRY, STEVEN	D04100001	+	+	+	+	B	+	+	+	+	C	B	+	+	+	+	+	+	+	+	C	+	+	+	+	+	B	0	11	11	9	12	44	274	P
STEPHENS, LACEY	D04100030	+	D	A	D	+	+	B	+	+	D	+	+	+	+	D	A		+	A	A	D	D	D	C	+	C	3	7	6	7	8	32	249	NP
THORNS, QUAVIOUN	D04100034	+	D	+	+	+	D	A	+	+	D	+	A	C	+	+	A	A	+	A	+	B	+	A	+	+	C	3	9	7	9	4	33	251	P
WISWELL, KEVIN	D04100029	+	+	+	+	C	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	A	+	+	+	+	B	1	13	10	12	12	49	287	A
A Released Item Number		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27							
L Percent Correct/Avg. Score: Group		86	43	50	57	57	57	64	86	93	36	50	50	43	71	79	57	14	93	64	43	64	86	43	64	71	36	2.0	**8.0**	**9.0**	**8.6**	**8.1**			
M Percent Correct/Avg. Score: School		86	43	50	57	57	57	64	86	93	36	50	50	43	71	79	57	14	93	64	43	64	86	43	64	71	36	2.0	**8.0**	**9.0**	**8.6**	**8.1**			
N Percent Correct/Avg. Score: System		81	45	52	65	61	45	74	87	84	42	65	58	29	74	84	71	26	77	74	55	65	84	52	74	77	32	2.2	**8.8**	**9.6**	**9.6**	**8.4**			
O Percent Correct/Avg. Score: State		85	46	43	65	64	51	72	79	83	45	74	66	30	72	79	67	35	70	78	53	49	79	43	78	84	35	2.1	**8.7**	**9.3**	**9.1**	**8.1**			

CRT-Science School and System Summary Reports

The School and System Summary Reports (example on page 8) are presented by content area and provide information at the school and system level. These reports can be found on MARS. The first chart, "Distribution of Scores" —A, shows the distribution of scores in each performance level: Advanced (A), Proficient (P), Nearing Proficiency (NP), and Novice (N). The first column, "Scores" —B, represents the scaled score.

The "School," "System," and "State" columns are each divided into three columns that represent the number of students ("N") and the percentage of students receiving each scaled score point—C. The last column, "% of Students in Cat."—D, represents the total percentage of students within the designated performance level.

The second chart, "Subtest Results"—E, reports the total points and average points earned for each content standard.

The third chart, "Results for Subgroups of Students" (example on page 9)—F, disaggregates student data in several ways—by gender, ethnicity, school programs, and so on. This data helps measure the effectiveness of instructional programs for different groups in a school. In addition, subgroup data identifies instructional practices and program characteristics that may be more effective. Finally, subgroup data enables educators to identify factors that appear to relate to performance, and to compare students statewide with respect to those factors.

Performance-level results were not reported if fewer than 10 students were assessed. Only the number of students ("N") in each category with fewer than 10 students assessed was reported.

MontCAS CRT

School: Demonstration School 1
System: Demonstration District A
Grade: 07
Spring XX

Science

School Summary Report

I. Distribution of Scores

Perf. Level	Scores	School N	School % of Students	School % of Students in Cat.	System N	System % of Students	System % of Students in Cat.	State N	State % of Students	State % of Students in Cat.
Advanced	298-300	2	14	29	5	18	32	3335	32	49
	296-297	1	7		1	4		464	4	
	293-295	1	7		2	7		872	8	
	291-292	0	0		0	0		0	0	
	288-290	0	0		1	4		414	4	
Proficient	280-287	3	21	57	4	14	50	1406	13	36
	273-279	5	36		7	25		859	8	
	265-272	0	0		1	4		654	6	
	258-264	0	0		0	0		362	3	
	250-257	0	0		2	7		452	4	
Nearing Proficiency	245-249	1	7	7	3	11	14	257	2	10
	240-244	0	0		0	0		238	2	
	235-239	0	0		0	0		242	2	
	230-234	0	0		1	4		173	2	
	225-229	0	0		0	0		168	2	
Novice	220-224	1	7	7	1	4	4	162	2	5
	215-219	0	0		0	0		156	1	
	210-214	0	0		0	0		60	1	
	205-209	0	0		0	0		87	1	
	200-204	0	0		0	0		92	1	

II. Subtest Results

Science		Possible Points	Average Points Earned: School	Average Points Earned: System	Average Points Earned: State
Total Points		60	41	40	42
Standards	1. Students construct meaning as they comprehend, interpret, and respond to what they read	18	13	13	12
	2. Students apply a range of skills and strategies to read	20	13	12	14
	3. Students set goals, monitor, and evaluate their reading progress	This standard is not measurable in a statewide assessment.			
	4. Students select, read, and respond to print and nonprint material for a variety of purposes	9	7	7	7
	5. Students gather, analyze, synthesize, and evaluate information from a variety of sources, and communicate their findings in ways appropriate for their purposes and audiences	13	8	9	9

CRT Performance Level Descriptors

Advanced (288-300)
This level denotes superior performance.

Proficient (250-287)
This level denotes solid academic performance for each benchmark. Students reaching this level have demonstrated competency over challenging subject matter, including subject-matter knowledge, application of such knowledge to real-world situations, and analytical skills appropriate to the subject matter.

Nearing Proficiency (225-249)
This level denotes that the student has partial mastery or prerequisite knowledge and skills fundamental for proficient work at each benchmark.

Novice (200-224)
This level denotes that the student is beginning to attain the prerequisite knowledge and skills that are fundamental for work at each benchmark.

MontCAS CRT

Confidential

Science

School Summary Report

School: Demonstration School 1
System: Demonstration District A
Grade: 07
Spring XX

F → III. Results for Subgroups of Students

Reporting Category	School					System					State				
	Number	% in N	% in NP	% in P	% in A	Number	% in N	% in NP	% in P	% in A	Number	% in N	% in NP	% in P	% in A
All Students	14	7	7	57	29	28	4	14	50	32	10453	5	10	36	49
Gender															
Male	7	*	*	*	*	14	0	21	64	14	5367	7	12	39	43
Female	7	*	*	*	*	14	7	7	36	50	5079	4	9	33	55
Ethnicity															
American Indian or Alaska Native	1	*	*	*	*	4	*	*	*	*	1203	15	22	40	23
Asian	0	*	*	*	*	1	*	*	*	*	93	4	5	32	58
Hispanic	3	*	*	*	*	4	*	*	*	*	301	7	15	43	35
Black or African American	0	*	*	*	*	1	*	*	*	*	122	4	17	42	37
Native Hawaiian or Other Pacific Islander	0	*	*	*	*	1	*	*	*	*	27	0	11	59	30
White	10	0	10	50	40	17	0	18	35	47	8700	4	8	35	53
Special Education	0	*	*	*	*	2	*	*	*	*	1107	28	30	34	8
Students with a 504 Plan	0	*	*	*	*	0	*	*	*	*	96	7	13	35	45
Title I (optional)	3	*	*	*	*	6	*	*	*	*	3473	9	16	40	35
Tested with Standard Accommodation	0	*	*	*	*	2	*	*	*	*	1156	24	31	35	10
Tested with Non-Standard Accommodation	0	*	*	*	*	1	*	*	*	*	50	26	36	36	2
Alternate Assessment	If a student in your system or school took the CRT-Alternate, please refer to Table III on the CRT-Alternate System or School Summary Report														
Migrant	0	*	*	*	*	1	*	*	*	*	12	17	8	58	17
Gifted/Talented	1	*	*	*	*	1	*	*	*	*	867	0	0	9	91
LEP/ELL	2	*	*	*	*	3	*	*	*	*	290	32	36	29	3
Former LEP Student	1	*	*	*	*	2	*	*	*	*	209	6	22	53	19
LEP Student Enrolled for First Time in a U.S. School	0	Performance levels are not reported for 1st year LEP students													
Free/Reduced Lunch	5	*	*	*	*	13	8	15	69	8	4313	9	16	42	33

*Less than ten (10) students were assessed

CRT-Science Performance-Level Descriptors

Advanced

This level denotes superior performance.

Proficient

This level denotes solid academic performance for each benchmark. Students reaching this level have demonstrated competency over challenging subject matter, including subject-matter knowledge, application of such knowledge to real-world situations, and analytical skills appropriate to the subject matter.

Nearing Proficiency

This level denotes that the student has partial mastery or prerequisite knowledge and skills fundamental for proficient work at each benchmark.

Novice

This level denotes that the student is beginning to attain the prerequisite knowledge and skills that are fundamental for work at each benchmark.

The above performance-level descriptors are general across all grades and content areas. Performance-level descriptors by grade were reviewed and revised during standard setting in the spring of 2008. Performance-level descriptors are available online at www.opi.state.mt.gov/assessment.

CRT-Science Scaled Score Ranges for Performance Levels

Grade 4

Performance Level	Science
Advanced	282–300
Proficient	250–281
Nearing Proficiency	225–249
Novice	200–224

Grade 8

Performance Level	Science
Advanced	282–300
Proficient	250–281
Nearing Proficiency	225–249
Novice	200–224

Grade 10

Performance Level	Science
Advanced	270–300
Proficient	249–269
Nearing Proficiency	225–248
Novice	200–224

Part II: The CRT-Alternate Reports

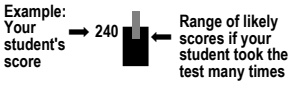
CRT-Alternate Student Report

This parent/guardian report provides each student's scores for the science test. The chart on the back of the Student Report, "Your student's performance level and score in each content area," reflects the student's performance level—A—and scaled score—B—for science. The gray bar surrounding the student's score represents the standard error of measurement. Next to the chart is a detailed description of the student's performance in each content area—C. Please refer to the performance-level descriptors on the front of the Student Report or on page 17 in this guide for additional information and resources.

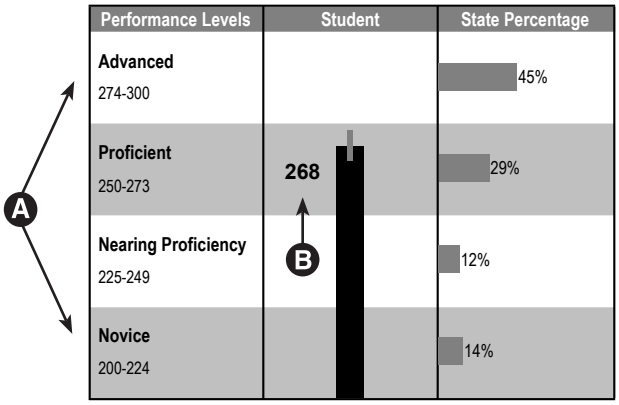
Your student's performance level and score in each content area

Display of scores and probable range of scores

In the figure below your students performance is displayed. For each subject, the left column lists the possible performance levels with the scores needed to achieve those levels. The center column is your student's performance where the black bar is their score and the small grey bar is the range of scores they might have achieved had they taken the test multiple times. The right hand column is the percentage of students that achieved each performance level on the CRT-Alternate across the state.



Science



Your student's Science Scaled Score is **268** which is at the **Proficient Level.** Your student's possible range of scores is from 264 to 272.

The student at the Proficient level, given limited prompting, demonstrates the ability to respond accurately in performing a wide variety of content-specific performance indicators. These performance indicators include the ability to:

- create and separate simple mixtures
- identify parts of the water cycle
- identify weather features identify the four seasons

C

The chart on the back of the Student Report, "Scores on Montana Content Standards," shows the standard for each content area assessed—D, points possible for the number of items (or questions) given—E, the raw score points earned by the student—F, and the range of points on that standard earned by students in Montana who achieved proficiency or above—G.

Scores on Montana Content Standards

CRT-Alternate results are reported for Montana Content Standards in Science to provide standard-specific information about the student's achievement. The results can be used to show the student's relative performance on the standards within a content area.

Science	E Total Possible Points on the Test	F Points Earned by Your Student	G Range of Points Earned by Students Who Have Achieved Proficiency in the State
1. Scientific Investigations	4	2	0-4
2. Physical Science	32	25	19-32
3. Life Science	20	18	10-20
4. Earth/Space Science	36	36	26-36
5. Impact on Society	Subscores are not reported for this standard.		
6. Historical Development	Subscores are not reported for this standard.		

D

CRT-Alternate Roster & Item-Level Report

The Roster & Item-Level Report is presented by content area and can be found on MARS. It provides information about class performance. Each student in the class is listed on the roster. Each item (performance indicator) on the test—A, the Montana content standard each item is measuring—B, the tasklet number—C, and the total number of possible points (four for every item)—D—is presented along the top of the roster. Beside the name of the student is the score the student received for each item—E.

The columns on the right present the score on each content standard—F, the scaled score for each student—G, and the performance level—H—the student attained. The end of the report lists the item average for students in the class—I, school—J, system—K, and state—L—who answered each item. A legend, with performance-level descriptors, is located on page 17 in this guide.

MontCAS
Montana Comprehensive Assessment System

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Roster and Item-Level Report

Science

Class: DEMA
School: Demonstration School 1
System: Demonstration District A
Grade: 04

Page: 1 of 2

CRT-Alternate

																												Total Test Results							G	H
																												F Points Earned by Standard								
A → Item Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26											
B → Content Standard	2	2	2	2	2	2	3	3	3	3	3	4	4	4	4	4	4	4	4	4	6	2	2	5	1	5											
C → Tasklet	1	1	1	1	1	2	2	2	2	2	2	3	3	3	3	3	4	4	4	4	4	5	5	5	5	5	Standard 1	Standard 2	Standard 3	Standard 4	Standard 5	Standard 6	Total Points Earned	Scaled Score	Performance Level		
Name/Student ID D Total Possible Points	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	**4**	**32**	**20**	**36**			**104**				
PRATT, KYLE D0410E03	4	4	3	3	0	4	4	3	4	3	4	4	4	4	4	4	4	4	4	4	3	4	3	4	2	4	2	25	18	36	Sub scores are not reported for this standard.	Sub scores are not reported for this standard.	92	268	P		
I Class Average	4.0	4.0	3.0	3.0	0.0	4.0	4.0	3.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	3.0	4.0	2.0	4.0	2	25	18	36			92				
J School Average	4.0	4.0	3.0	3.0	0.0	4.0	4.0	3.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	3.0	4.0	2.0	4.0	2	25	18	36			92				
K System Average	3.6	3.1	2.5	3.3	2.5	3.6	3.6	3.4	3.9	3.1	3.6	3.6	3.6	3.6	4.0	3.6	3.6	3.6	3.1	3.8	2.3	3.6	3.1	3.0	3.0	3.3	3	25	16	32			84				
L State Average	3.8	2.9	2.9	3.3	3.1	3.7	3.3	3.3	3.4	3.3	3.3	3.8	3.4	3.4	3.6	3.6	3.7	3.2	3.1	3.4	2.3	3.7	3.1	3.0	3.1	3.3	3	26	15	30			82				

The sum of the points for each standard may exceed the total points, as some items correlate with more than one standard.

† Student did not complete the assessment. ¥ Not in school and/or system for full academic year.

§ Teacher halted the administration of one or more of the five tasklets after the student scored a 0 for three consecutive items within a tasklet on two different test administrations. Any completed tasklets have been scored and are reflected in the student's scaled score.

CRT-Alternate School and System Summary Reports

The School and System Summary Reports (example on page 15) are presented by content area and provide information at the school and system level. These reports can be found on MARS. The first chart, "Distribution of Scores"—A, shows the distribution of scores in each performance level: Advanced (A), Proficient (P), Nearing Proficiency (NP), and Novice (N). The first column, "Scores"—B, represents the scaled score.

The "School," "System," and "State" columns are each divided into three columns that represent the number of students ("N") and the percentage of students receiving each scaled score point—C. The last column, "% of Students in Cat."—D, represents the total percentage of students within the designated performance level.

The second chart, "Subtest Results"—E, reports the total points and average points earned for each content standard.

The third chart, "Results for Subgroups of Students" (example on page 16)—F, disaggregates student data in several ways—by gender, ethnicity, school programs, and so on. This data helps measure the effectiveness of instructional programs for different groups in a school. In addition, subgroup data identifies instructional practices and program characteristics that may be more effective. Finally, subgroup data enables educators to identify factors that appear to relate to performance, and to compare students statewide with respect to those factors.

Performance-level results were not reported if fewer than 10 students were assessed. Only the number of students ("N") in each category with fewer than 10 students assessed was reported.

MontCAS CRT-Alternate

School: Demonstration School 1
System: Demonstration District A
Grade: 07
Spring XX

Reading

School Summary Report

A → I. Distribution of Scores

Perf. Level	Scores	School N	School % of Students	School % of Students in Cat.	System N	System % of Students	System % of Students in Cat.	State N	State % of Students	State % of Students in Cat.
Advanced	296-300	1	100	100	1	9	55	3	3	60
	291-295	0	0		0	0		0	0	
	287-290	0	0		0	0		3	3	
	282-286	0	0		4	36		33	32	
	277-281	0	0		1	9		23	22	
Proficient	272-276	0	0	0	0	0	18	11	11	31
	266-271	0	0		0	0		9	9	
	261-265	0	0		0	0		6	6	
	255-260	0	0		2	18		3	3	
	250-254	0	0		0	0		3	3	
Nearing Proficiency	245-249	0	0	0	2	18	27	3	3	10
	240-244	0	0		1	9		2	2	
	235-239	0	0		0	0		0	0	
	230-234	0	0		0	0		5	5	
	225-229	0	0		0	0		0	0	
Novice	220-224	0	0	0	0	0	0	0	0	0
	215-219	0	0		0	0		0	0	
	210-214	0	0		0	0		0	0	
	205-209	0	0		0	0		0	0	
	200-204	0	0		0	0		0	0	

B C D C D C D

E → II. Subtest Results

Reading		Possible Points	Average Points Earned: School	System	State
Total Points*		100	100	80	85
Standards	1. Students construct meaning as they comprehend, interpret, and respond to what they read	52	52	44	48
	2. Students apply a range of skills and strategies to read	28	28	21	21
	3. Students set goals, monitor, and evaluate their reading progress	This standard is not measurable in a statewide assessment.			
	4. Students select, read, and respond to print and nonprint material for a variety of purposes	4	--	--	--
	5. Students gather, analyze, synthesize, and evaluate information from a variety of sources, and communicate their findings in ways appropriate for their purposes and audiences	16	16	12	13

--There were too few score points to report on this standard, or no items on the test measured this standard.

CRT-Alternate Performance Level Descriptors

Advanced (277-300)
The student at the Advanced level accurately and independently demonstrates the ability to carry out comprehensive content specific performance indicators.

Proficient (250-276)
The student at the Proficient level, given limited prompting, demonstrates the ability to respond accurately in performing a wide variety of content specific performance indicators.

Nearing Proficiency (225-249)
The student at the Nearing Proficiency level, given moderate prompting, demonstrates the ability to respond accurately in performing a narrow set of content specific performance indicators.

Novice (200-224)
The student at the Novice level, given physical assistance and/or modeling, is supported to participate in content specific performance indicators.

*The sum of the points for each standard may exceed the total points, as some items correlate with more than one standard.

MontCAS CRT-Alternate

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Reading — **School Summary Report**

School: Demonstration School 1
System: Demonstration District A
Grade: 07
Spring XX

III. Results for Subgroups of Students

Reporting Category	School					System					State				
	Number	% in N	% in NP	% in P	% in A	Number	% in N	% in NP	% in P	% in A	Number	% in N	% in NP	% in P	% in A
All Students	1	*	*	*	*	11	0	27	18	55	104	0	10	31	60
Gender															
Male	0	*	*	*	*	6	*	*	*	*	67	0	13	31	55
Female	1	*	*	*	*	5	*	*	*	*	36	0	3	31	67
Ethnicity															
American Indian or Alaska Native	0	*	*	*	*	2	*	*	*	*	19	0	16	26	58
Asian	0	*	*	*	*	0	*	*	*	*	0	*	*	*	*
Hispanic	0	*	*	*	*	1	*	*	*	*	2	*	*	*	*
Black or African American	0	*	*	*	*	0	*	*	*	*	2	*	*	*	*
Native Hawaiian or Other Pacific Islander	0	*	*	*	*	0	*	*	*	*	0	*	*	*	*
White	0	*	*	*	*	7	*	*	*	*	80	0	8	33	60
Special Education	0	*	*	*	*	9	*	*	*	*	101	0	10	32	58
Students with a 504 Plan	0	*	*	*	*	0	*	*	*	*	0	*	*	*	*
Title I (optional)	0	*	*	*	*	4	*	*	*	*	30	0	20	37	43
Migrant	0	*	*	*	*	0	*	*	*	*	0	*	*	*	*
Gifted/Talented	0	*	*	*	*	0	*	*	*	*	0	*	*	*	*
LEP/ELL	0	*	*	*	*	1	*	*	*	*	4	*	*	*	*
Former LEP Student	0	*	*	*	*	1	*	*	*	*	3	*	*	*	*
LEP Student Enrolled for First Time in a U.S. School	0	Performance levels are not reported for 1st year LEP students													
Free/Reduced Lunch	0	*	*	*	*	5	*	*	*	*	60	0	10	28	62

*Less than ten (10) students were assessed

CRT-Alternate Performance-Level Descriptors

Advanced

The student at the Advanced level accurately and independently demonstrates the ability to carry out comprehensive content-specific performance indicators.

Proficient

The student at the Proficient level, given limited prompting, demonstrates the ability to respond accurately in performing a wide variety of content-specific performance indicators.

Nearing Proficiency

The student at the Nearing Proficiency level, given moderate prompting, demonstrates the ability to respond accurately in performing a narrow set of content-specific performance indicators.

Novice

The student at the Novice level, given physical assistance and/or modeling, is supported to participate in content-specific performance indicators.

The above performance-level descriptors are general across all grades and content areas. Performance-level descriptors for each grade and content area were reviewed and revised throughout a series of standard-setting meetings that occurred between 2006 and 2009. Performance-level descriptors are available online at www.opi.state.mt.gov/assessment.

CRT-Alternate Scaled Score Ranges for Performance Levels

Grade 4

Performance Level	Science
Advanced	274–300
Proficient	250–273
Nearing Proficiency	225–249
Novice	200–224

Grade 8

Performance Level	Science
Advanced	271–300
Proficient	250–270
Nearing Proficiency	225–249
Novice	200–224

Grade 10

Performance Level	Science
Advanced	269–300
Proficient	250–268
Nearing Proficiency	225–249
Novice	200–224

Appendix A

Overview of Assessment Instruments and Procedures
MontCAS CRT-Science and CRT-Alternate

Montana Educator Involvement in Test Development

Montana educators were actively involved in each aspect of test development—from the development of *Montana Comprehensive Assessment System Grade Level Expectations (GLEs)* to the review of all passages and items for bias and sensitivity issues, as well as review of all items for purposes of alignment, depth of knowledge, age appropriateness, and accuracy of content. Standards were set for both the CRT-Science and the CRT-Alternate by committees comprised of Montana educators. Standards for math and reading were set during the summer of 2006. Standards for science were set in the spring of 2008.

Grade-Level Learning Expectations Development

OPI developed GLEs in mathematics, reading, and science in response to the requirements of the federally mandated *No Child Left Behind Act of 2001* to test all students, beginning in the 2005–2006 academic year, in each of grades 3–8 and 10 in mathematics and reading. Science was included in the test beginning in the spring of 2008. Although these sets of GLEs were developed for this purpose, the intent was to build coherent sets of expectations that would focus, not narrow, the curricula; would support good instruction; and would be aligned with Montana's standards.

In the 2004–2005 academic year, reading and math GLEs were expanded to include students with significant cognitive disabilities. Similarly, in the 2006–2007 academic year, the same was done for the new content area, science. The resulting documents—*Montana Standards and Expanded Benchmarks for Reading*, *Montana Standards and Expanded Benchmarks for Math*, and *Montana Standards and Expanded Benchmarks for Science*—were used as a framework to create the CRT-Alternate Assessment.

Throughout the development process of both the *Montana Comprehensive Assessment System Grade Level Expectations* and the *Montana Standards and Expanded Benchmarks* documents, OPI has relied upon the expertise of Montana educators. These educators have helped guide the development of these documents and have made numerous insightful contributions in an effort to help support meaningful instruction in mathematics, reading, and science.

Item Review Committee

A committee of local educators is convened annually to review all of the items developed for the CRT-Science and the CRT-Alternate Assessment. Committee member comments are solicited for each item. Each item is evaluated on the following criteria:

- alignment with the standard being measured,
- appropriateness for grade level,
- content accuracy, and
- depth of knowledge.

Bias and Sensitivity Committee

A committee of Montana educators also meets to review all reading passages and individual test items. Committee members determine if a passage or item is likely to place a particular group of students at an advantage or disadvantage for non-educational reasons; if so, OPI will make a decision to remove or revise the passage or item.

Technical Advisory Committee

A committee of nationally recognized test and measurement experts (psychometricians) meets regularly to ensure the technical integrity of the CRT-Science and the CRT-Alternate Assessment.

CRT-Science Test Design

Types of Items on CRT-Science

In order to provide a valid assessment of students' attainment of the Montana standards and GLEs, a variety of item types needed to be used. Therefore, multiple-choice items and constructed-response items were used as follows.

Multiple Choice (one point)

Multiple-choice items are efficient for testing a broad array of content in a relatively short time span.

Constructed Response (four points)

This is a more complex item type that requires students to give longer responses to items related to reading passages or to solve multistep mathematics problems.

Common and Field Test Items

There are four versions, or forms, of the CRT-Science created for each grade level tested in science. Half of the items in each of the CRT-Science forms were the same in every form, or were "common" to all forms of the test. All individual student results (performance levels, scaled scores, content area subscores) and school results are based only on common items. The other half of the items in each form were field tested. "Field testing" means distributing a large number of items among the different forms of the test. This approach allows for field testing of new items for subsequent years' tests and also allows some items to be administered in successive years for purposes of equating the tests from year to year.

Following each year's test administration, 50% all common items are publicly released to inform local curriculum and instruction. Released common items are replaced each year with some of the items from the previous year's field tested section.

CRT-Alternate Test Design

To provide an option for participation of all students in the state's accountability system, including those for whom a paper-and-pencil test is not appropriate, Montana has developed the CRT-Alternate Assessment. It is expected that only Individuals with Disabilities Education Act (IDEA)–eligible students with the most significant cognitive disabilities will participate in the CRT-Alternate. The CRT-Alternate consists of test activities in reading and math for students in grades 3–8 and 10, and in science for grades 4, 8, and 10. The components of the test are identified below

to provide an overview of the test and an introduction to terminology used to describe the test's structure. Each component of the test is described in detail in the *CRT-Alternate Administration Manual.*

Rubric

The scoring rubric is a matrix that describes various levels of achievement for each test item. It incorporates increasing levels of teacher support designed to elicit a correct response from the student. The rubric incorporates a numerical scale that extends from 0 to 4.

Scoring

The scoring system is guided by the rubric. Student performance on each item is scored based on the amount of assistance required to elicit the correct response. Scoring rules guide the administrator if the student is unresponsive, uncooperative, or repeatedly unsuccessful with test items.

Scaffolding

Scaffolding is a systematic process of providing increasing levels of assistance on each test item. The test booklet provides teacher instruction and suggested language to scaffold each test item.

Scoring

In April 2015, more than 100,000 Montana responses were processed and scored at Measured Progress. The scoring activities that were used to produce the results for the CRT-Science reports are described below.

Scoring was separated into the following two major tasks:

- scoring of responses to multiple-choice items, and
- scoring of responses to constructed-response items.

Scoring of Multiple-choice Items

Multiple-choice items were machine-scored using digital scanning equipment. Correct responses were assigned a score of 1 point each; incorrect or blank responses were assigned a score of 0 points each.

Scoring of Constructed-response Items

Constructed-response items were scored by Measured Progress and were given a score of 0 or 1. Constructed-response items were given a score from 0 to 4. A score of 0 is given when a student produces some work, but the work is totally wrong or irrelevant, or if he or she leaves the item blank. For purposes of aggregating item results, blanks and scores of 0 both count as 0 points toward a student's score.

The work in preparation for scoring student responses included

- development of scoring guides (rubrics) by content specialists (educators) from the Montana and Measured Progress test developers, and
- selection of "benchmark" responses—examples of student work at different score points for each item—that were used in training and continuous monitoring of scorer accuracy.

Scorer training consisted of

- review of each item and its related content and performance standard,
- review and discussion of the scoring guide and multiple sets of benchmark responses for each score point, and
- qualifying rounds of scoring in which scorers needed to demonstrate a prescribed level of accuracy.

Setting Standards for Performance on the CRT-Science and CRT-Alternate Tests

Standard setting is the process of determining the minimum or "threshold" score for each performance level, grade, and subject for which results are reported. The multistep process of setting standards for the CRT-Science and the CRT-Alternate Assessment began with creation of performance-level descriptors.

More than 400 Montana educators, invited to participate by OPI, have composed standard-setting panels in order to set standards in each content area.

In 2008, OPI convened panels of educators to participate in a standard-setting process for the CRT-Science and CRT-Alternate science assessments in grades 4, 8, and 10.

A challenging aspect of standard setting is that many methods exist to set standards and establish cut points. With this in mind, OPI, in consultation with the Technical Advisory Committee and Measured Progress, determined that judgments would be employed for setting standards on the tests.

Upon completion of the data-gathering phases of standard setting described above and recommendations from the Technical Advisory Committee, the state superintendent of the Office of Public Instruction approved the recommended cut points.

CRT-Science: Bookmark Standard-Setting Process

The bookmark method of standard setting is a multistep process. First, participants took the CRT-Science as though they were students. Then, as a group, the panels reviewed the performance-level descriptors, paying special attention to differentiating between knowledge, skills, and abilities typically associated with students described as being on the borderline between performance levels. Panelists then looked at "ordered item booklets," which show each common item on the test in order from easiest to hardest. The ordered item booklets also include actual student work samples for each score point for constructed-response items. Participants made decisions about which items would differentiate between students at each performance level and placed a "bookmark" between those items to represent the cut point

between performance levels. Small- and large-group discussions followed regarding the knowledge, skills, and abilities associated with the items around each cut point. Participants had the opportunity to change their placement of the bookmark based on these discussions. Finally, panelists had the opportunity to provide feedback on the performance-level descriptors.

CRT-Alternate: Body of Work Standard-Setting Process

The body-of-work method of standard setting for the alternate assessment is a multistep process. First, participants reviewed the CRT-Alternate Assessment and the scoring rubric, which determined how various responses to each item were scored. Then, as a group, the panelists reviewed the performance-level descriptors, paying special attention to differentiating between knowledge, skills, and abilities typically associated with students assigned to each of the performance levels. Panelists then looked at "ordered item lists," which show each common item on the test in order from easiest to hardest. The Ordered Item List participants were also given a set of student profiles, which showed the average response on each item of the entire test for students who received a score within a specific range. Participants reviewed each of the student profiles and made an individual determination as to which performance level each student profile should be assigned. Large-group discussions followed regarding the knowledge, skills, and abilities associated with the student profiles in each performance level. Participants had the opportunity to change their placement of any or all student profiles based on these discussions. Finally, panelists had the opportunity to provide feedback on the performance-level descriptors.

Reporting

The tests were designed to measure student performance against the learning goals described in *Montana Content Standards*. Consistent with this purpose, primary results on the tests are reported in terms of performance levels that describe student performance in relation to these established state standards. There are four performance levels: Advanced, Proficient, Nearing Proficiency, and Novice. Students receive a separate performance-level classification (based on total scaled score) in each content area (science) in which they complete a test. There is no overall classification of student performance across content areas. School- and system-level results are reported as the number and percentage of students attaining each performance level at each grade level tested.

In addition to performance levels, CRT-Science and CRT-Alternate results are also reported as scaled scores. The major purpose of including scaled scores in reports is to enhance the level of feedback provided to students, parents, and teachers. Each of the four performance levels encompasses a range of student performance. A student whose test performance is just above Nearing Proficiency and a student whose level of performance is slightly below Proficient are both classified as Nearing Proficiency. However, scaled-score results are more precise since they pinpoint a student's performance (score) on the continuum of scores within the performance levels. The additional information provided by scaled scores is critical in forming the most accurate impression of performance possible.

Translating Raw Scores to Scaled Scores and Performance Levels

CRT-Science and CRT-Alternate scores in each content area are reported on a scale that ranges from 200 to 300. Scaled scores supplement the performance-level results by providing information about the position of a student's results within a performance level. School- and system-level scaled scores are calculated by computing the average of student-level scaled scores. Students' raw scores, or total number of points, on the tests are translated to scaled scores using a data-analysis process called scaling. Scaling simply converts raw points from one scale to another. In the same way that the same temperature can be expressed on either the Fahrenheit or Celsius scales and the same distance can be expressed either in miles or kilometers, student scores on the tests could be expressed as raw scores (i.e., number correct) or scaled scores.

It is important to note that converting from raw scores to scaled scores does not change the students' performance-level classifications. Given the relative simplicity of raw scores, it is fair to question why scaled scores are used in reports instead of raw scores. Foremost, scaled scores offer the advantage of simplifying the reporting of results across content areas, grade levels, and subsequent years. Because the standard-setting process typically results in different cut scores across content areas on a raw score basis, it is useful to transform these raw cut scores to a scale that is more easily interpretable and consistent. Using scaled scores greatly simplifies the task of understanding how a student performed.