

**Colorado Measures of Academic Success  
Colorado Alternate Assessment Program**

# Science and Social Studies



## Interpretive Guide to Assessment Reports

A Guide for Parents and Educators

# 2016

## A Parent and Educator Guide to Understanding the Colorado Measures of Academic Success (CMAS) Student Performance Report

### Program Overview

CMAS is Colorado's standards-based assessment designed to measure the Colorado Academic Standards (CAS). The CAS contain the concepts and skills students need to learn in order to be successful in the current grade and to make academic progress from year to year. CMAS science assessments are given each spring to students in grades 5, 8, and once in high school, while CMAS social studies assessments are given in grades 4 and 7 (social studies assessments are administered on a sampling basis to one-third of the elementary and middle schools each year). **The purpose of the CMAS is to indicate the degree to which students have mastered the CAS in the assessed content areas at the end of the tested grade level. CMAS results are intended to provide one measure of a student's academic progress relative to the CAS.**

A Student Performance Report is created for each student who takes a CMAS assessment so that parents can understand their child's command over the Colorado Academic Standards in the assessed grade level and content area. This section of the guide explains the elements of the Student Performance Report.

### Types of Scores on the CMAS Student Performance Report

To understand each part of the Student Performance Report, it is important to become familiar with the types of assessment scores that are included on the report. At varying levels, student performance is described by scale scores, performance levels, and percent correct. State, district, and school level information is also provided in relevant sections of the Student Performance Report to help parents understand how their child's performance compares to other students.

#### Scale Scores

When the points a student earns on an assessment are placed on a common scale, the student's score becomes a scale score. Scale scores adjust for slight differences in difficulty on versions of the assessment that can vary slightly from student to student within a year (referred to as forms of the assessment) or between school years (referred to as administrations). Scale scores allow for comparisons of assessment scores, within a particular grade and subject area, across administrations. As an example, a student who receives a score of 475 on one form of the 7th grade social studies assessment is expected to score a 475 on any form of the assessment. Scale scores maintain their meaning and can be compared across years. A student who scores 650 on 8th grade science in 2017 will demonstrate the same level of mastery of concepts and skills as an 8th grade science student who scores 650 in 2016. For CMAS science and social studies, scale scores cannot be used to compare student performance across grades (e.g., grade 4 to grade 7) or subject areas (e.g., science to social studies).

Scale scores for the CMAS science and social studies assessments range from 300 to 900. Scale scores are reported for the overall test, content standards and Scientific Inquiry/Nature of Science (referred to as "Reporting Categories"), and Item type.

#### Performance Levels

Scale scores are used to determine a student's performance level for the overall assessment. Each performance level describes a range of scores at the overall assessment level (i.e., science or social studies). The range of scores in each performance level were recommended by a group of Colorado

educators and adopted by the Colorado State Board of Education. Performance levels describe the concepts and skills that students are expected to demonstrate at each of the levels. The grade level concepts and skills related to each performance level are listed on page 4 of the Student Performance Report. The four cross-grade and content area performance levels are Exceeded Expectations, Met Expectations, Approached Expectations, and Partially Met Expectations. Performance Level Descriptors for each grade level and content area are included in Appendix A of this document.

Elementary and middle school students in the top two performance levels, Exceeded Expectations and Met Expectations, are considered on track to being college and career ready in the content area of science or social studies; high school students in the top two performance levels are considered college and career ready. The Approached Expectations or Partially Met Expectations performance levels indicate that students in these levels may need academic support to successfully engage in further studies in the content area.

### Percent Correct

Percent correct refers to the number of points a student earned out of the total number of points possible within a reporting category. The percent correct indicator can only be used to compare performance of the individual student to the average district and average state performance on the specific set of items being considered. Some groups of items may be more difficult than other sets of items, so unlike the scale score, the percent correct indicator cannot be compared across groups of items or across school years. Percent correct scores are provided for Prepared Graduate Competencies (PGCs) and Grade Level Expectations (GLEs) in elementary and middle school reports. Percent correct scores are provided at the PGC level in the high school report. PGCs and GLEs are described more fully later in this guide.

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## Sample CMAS Student Performance Report

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A sample grade 5 Student Performance Report is displayed at the end of this section on pages B-6 to B-9. Each page of the sample report is included individually. The sample report includes the same type of information that is included on all of the science and social studies reports. The information below describes each part of the report. To learn more about each part of the Student Performance Report, match the white letters in gray circles from the sample report to the information included with the corresponding letters on the following pages.

### General Information (Refer to Page 1 of the Student Performance Report)

**A. Identification Information**

The top of the Student Performance Report lists your child's name, state assigned student identification number (SASID), birthdate, school, and district.

**B. Test Date**

The season and year your child took the assessment is indicated.

**C. Subject Area**

The subject area of your child's assessment is identified (either science or social studies).

**D. Grade Level**

The grade level of your child's assessment is indicated.

### Overall Assessment Scores (Refer to Page 1 of the Student Performance Report)

**E. Explanation of Overall Performance**

A brief explanation of the overall assessment results is given to help you understand the information provided in the box below the explanation.

**F. Your Child's Overall Scale Score and Performance Level**

Your child's overall scale score (the number between 300 and 900), performance level

(Exceeded Expectations, Met Expectations, Approached Expectations, Partially Met Expectations), and percentile ranking are provided. The scale score and performance level included in this part of the report represent your child's overall performance on the assessment in the content area (science or social studies). The percentile ranking shows how well your child performed in comparison to other students in the state. For example, a student in the 75th percentile performed better than 75 percent of students in the state. Grade level and content area specific performance level descriptors providing the concepts and skills students are typically able to demonstrate at each level may be found on the last page of the report.

**G. Graphical Representation of Overall Performance: Scale Score and Performance Level by Student, School, District, and State**

Your child's scale score is indicated by a large diamond on the graph. The arrows to the left and right of the diamond indicate the range of scores your child would likely receive if the assessment was taken multiple times.

The average scale scores at the school, district, and state levels are identified to the left of the graph and are indicated by smaller diamonds on the graph. By comparing the location of the diamonds, you can see how your child performed in comparison to the average student in their school, district, or the state. If your child's score diamond is to the right of the school, district, or state average diamond, then your child performed better than that group's average. If your child's diamond is to the left of the school, district, or state diamond, then on average, that group performed better than your child.

The dotted lines on the graph show the lowest scores needed to achieve Approached Expectations, Met Expectations, and Exceeded Expectations performance levels. The scale scores representing each of those scores are indicated on the bottom of the graph.

**Subscale Performance (Refer to Page 1 of the Student Performance Report)**

**H. Explanation of Subscale Performance**

In this part of the report, your child's performance is presented by individual reporting categories. Information to help you understand the graphical representation in this section is included.

**I. Reporting Category Descriptions**

Reporting categories include the standards for social studies (history, geography, economics, and civics) and for science (physical science, life science, and earth systems science). Science also includes Scientific Investigation and the Nature of Science as a reporting category. Descriptions of the reporting categories from the CAS are included in this section of the report.

**J. Subscale Scores**

Subscale scores indicate how your child performed in each reporting category. Like the overall science and social studies scale scores, subscale scores range from 300 to 900 and can be compared across school years. Average subscale scores are also provided for your child's school and district.

**K. Graphical Representation of Subscale Performance by Student, School, and District**

The graphical representation of subscale performance shows how your child performed in each reporting category. Your child's performance is represented by a large diamond on the graph. The arrows around your child's diamond show the range of scores that your child would likely receive if the assessment was taken multiple times.

The graphical representation also shows how your child performed in comparison to other students in your child's school or district. Performance of students in the school and district are represented by smaller diamonds. If your child's score diamond is to the right of the school or district average diamond, then your child's scale score was higher than the school or district average scale score. If your child's diamond is to the left, then your child's scale score was lower than the school or district average.

The shaded areas of the graph represent the performance of about 70% of students in the state. If your child's score diamond is to the right of the shaded area, your child's performance is considered relatively strong in that area in comparison to other students in the state. If your child's score diamond is to the left of the shaded area, your child's performance is considered relatively weak in that area in comparison to other students in the state. These categories are based on the state performance for the current year and can change from year to year.

**L. Document Process Number**

The document number located in the bottom-right corner of the report is a unique number that is assigned to your child's record by the testing contractor.

## **Performance by Prepared Graduate Competencies (PGCs) and Grade Level Expectations (GLEs) (Refer to Page 2 of the Student Performance Report)**

**M. Explanation**

PGCs and GLEs are important parts of the Colorado Academic Standards. PGCs represent the concepts and skills students need to master in order to be college and career ready by the time of graduation. GLEs are grade-specific expectations that indicate that students are making progress toward the PGCs. This section of the report describes performance with percent correct for PGCs and GLEs at the elementary and middle school levels and for PGCs at the high school level.

**N. Graph Key**

The graph key includes the explanatory text for the bars in the Percent Correct graph: student's performance, district average, and state average.

**O. Standard, PGC, and GLE**

Descriptions of the PGCs and GLEs that were included on the assessment are listed under each standard. **NOTE: The high school report does not include GLE-level information.**

**P. Points Possible**

This number shows the total points possible for each PGC and GLE on the assessment. **NOTE: Information is not reported at the GLE level on the high school report.**

**Q. Graphical Representation of Percent Correct**

The graph shows the percentage of items that were answered correctly out of the total number of items for each PGC and GLE. When looking at the shaded bars in the graph, you can compare your child's performance to the average district and state performance. Keep in mind that there are relatively few points associated with each PGC or GLE. A student's bar can look much longer or much shorter based on a single correct or incorrect item-response. **NOTE: Information is not reported at the GLE level on the high school report.**

On elementary and middle school reports, the graph for the PGCs is blank when a PGC has only one associated GLE.

**Remember, percent correct score information cannot be compared across PGCs, GLEs, or years.**

## **Performance by Item Type (Refer to Page 3 of the Student Performance Report)**

CMAS assessments include selected-response and constructed-response items. Selected-response items require students to choose the correct answer(s) from options provided. Sometimes these are referred to as multiple choice items. In the CMAS computer-based assessments, these can also include technology-enhanced items referred to as drag-and-drop and hot spot. Constructed-response items require students to develop their own answers to questions.

**R. Selected-Response Scale Score**

Your child's scale score for selected-response items is shown. You can compare your child's scale score with the average scale scores for selected-response items for your child's school, district, and the state. Your child's school and district can compare next year's groups of

students to this year's students by looking at selected-response scale scores. This information can be used to support school and district program and instructional improvement decisions.

**S. Constructed-Response Scale Score**

Your child's scale score for constructed-response items is shown. You can compare your child's scale score with the average scale scores for constructed-response items for your child's school, district, and the state. Your child's school and district can look at next year's groups of students and compare them to this year on the constructed-response scale score. This information can be used to support school and district program and instructional improvement decisions.

**T. Graphical Representation of Selected-Response and Constructed-Response Scale Scores**

A graphical representation of your child's scale score is provided. The large diamond on the graph represents your child's scale score. The arrows around your child's score diamond show the range of scores that your child would likely receive if the assessment was taken multiple times. The smaller diamonds represent the average scale scores of your child's school, district, and the state. If your child's score diamond is to the right of the school, district, or state average diamond, then your child performed better than that group's average. If your child's diamond is to the left of the school, district, or state diamond, then that group performed better than your child on average.

**Performance Level Descriptions (Refer to Page 4 of the Student Performance Report)**

**U. Performance Level Descriptions**

Specific grade level and content area descriptions have been developed for each of the four CMAS performance levels:

- Exceeded Expectations
- Met Expectations
- Approached Expectations
- Partially Met Expectations

Your child's report will reflect the performance level descriptions specific to the assessed grade level and content area. These performance level descriptors describe the specific concepts and skills that students in each performance level typically demonstrate for your child's assessed grade level and content area. Performance level descriptors for each grade level and content area are included in Appendix A of this document.

Elementary and middle school students in the top two performance levels, Exceeded Expectations and Met Expectations, are considered on track to being college and career ready in the content area of science or social studies; high school students in the top two performance levels are considered ready.

# Sample CMAS Student Performance Report – Page 1



**Student Performance Report**

**Colorado Measures of Academic Success**

Student: **FIRSTNAME M. LASTNAME** **A**

SASID: 999999999 Birthdate: 07/07/2005

School: SCHOOL NAME (9999)

District: DISTRICT NAME (9999)

**B** Spring 2016

**C** Science **D** Grade 5

This score report provides information about your student's performance on the Colorado Measures of Academic Success (CMAS) Science Assessment. **E**

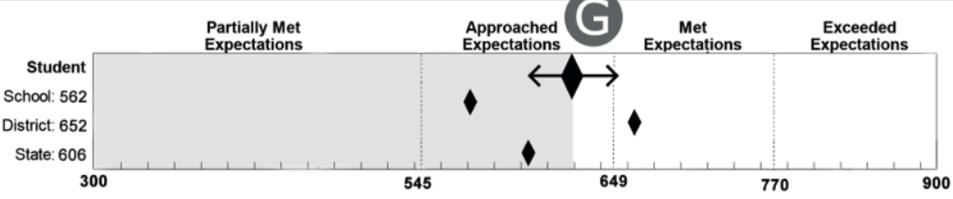
- Your student's performance is represented by a scale score, a performance level, and a percentile rank. (Scores are placed on a scale so that student performance can be compared across years.)
- On the graph, scale scores are represented by diamonds. The arrows around the student's diamond show the range of scores that your student would likely receive if the assessment was taken multiple times.
- School, district, and state averages are provided so that you can compare your student's performance to the performance of others. The percentage of students in each performance level across the state is reported below the graph.
- Dotted lines show where the range of scores is divided into performance levels. Descriptions of the performance levels can be found at the end of this report.

Your Student's Score **F**

624

Approached Expectations

75th Percentile



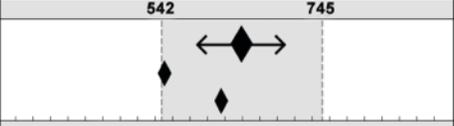
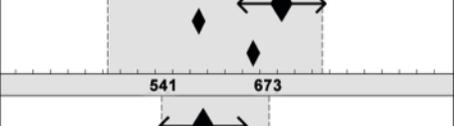
Percent of CO students by Performance Level:

Partially Met Expectations	30.6%	Approached Expectations	38.1%	Met Expectations	28.2%	Exceeded Expectations	3.1%
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The Colorado Academic Standards include expectations for student performance. Your student demonstrated a moderate command of 5th grade level concepts and skills in science.

**Subscale Performance**

- The shaded areas in the table below represent approximately 70% of student scores across the state.
- Scores outside of the shaded area indicate a potential weakness or strength compared to the state. **H**

Reporting Category Description <b>I</b>	Subscale Score <b>J</b>		Potential Relative Weakness	Typical	Potential Relative Strength
<b>Physical Science</b>			300	542	745
Students know and understand common properties, forms, and changes in matter and energy.	<b>648</b>	<b>Student</b>			
	544	School			
	615	District			
<b>Life Science</b>			457	674	
Students know and understand the characteristics and structure of living things, the processes of life, and how living things interact with each other and their environment.	<b>614</b>	<b>Student</b>			
	503	School			
	578	District			
<b>Earth Systems Science</b>			458	743	
Students know and understand the processes and interactions of Earth's systems and the structure and dynamics of Earth and other objects in space.	<b>698</b>	<b>Student</b>			
	576	School			
	654	District			
<b>Scientific Investigations and the Nature of Science</b>			541	673	
Students understand the processes of scientific investigation and design, conducting and evaluating, as well as communicating about, such investigations. Students understand that the nature of science involves a particular way of building knowledge and making meaning of the natural world.	<b>589</b>	<b>Student</b>			
	499	School			
	558	District			

**Purpose**

This report describes your student's mastery of the Colorado Academic Standards in Science.

For more information on the CMAS assessment program, visit: [www.cde.state.co.us/assessment](http://www.cde.state.co.us/assessment) **L**

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## Colorado Measures of Academic Success

### Science

#### Performance by Prepared Graduate Competencies (PGCs) and Grade Level Expectations (GLEs)

- Within each standard, PGCs are identified. PGCs represent the concepts and skills that students need to master in order to be college and career ready.
- GLEs are grade-specific expectations that indicate a student is making progress toward the PGCs.
- The figure below shows the percentage of items that your student answered correctly for each GLE represented in the grade. If there is more than one GLE for a PGC, the percentage of items your student answered correctly by PGC is also provided.

N

Student's performance  
 District average  
 State average

Standard, PGC, and GLE	Points Possible	Percent Correct*				
		0%	25%	50%	75%	100%
<b>Physical Science</b>						
PGC 1: Apply an understanding of atomic and molecular structure to explain the properties of matter, and predict outcomes of chemical and nuclear reactions						
GLE 1: Mixtures of matter can be separated regardless of how they were created; all weight and mass of the mixture are the same as the sum of weight and mass of its parts	20	67%				
<b>Life Science</b>						
PGC 1: Analyze how various organisms grow, develop, and differentiate during their lifetimes based on an interplay between genetics and their environment						
GLE 1: All organisms have structures and systems with separate functions	13	68%				
PGC 2: Analyze the relationship between structure and function in living systems at a variety of organizational levels, and recognize living systems' dependence on natural selection						
GLE 2: Human body systems have basic structures, functions, and needs	17	66%				
<b>Earth Systems Science</b>						
PGC 1: Describe how humans are dependent on the diversity of resources provided by Earth and Sun						
GLE 1: Earth and sun provide a diversity of renewable and nonrenewable resources	10	79%				
PGC 2: Evaluate evidence that Earth's geosphere, atmosphere, hydrosphere, and biosphere interact as a complex system	20	80%				
GLE 2: Earth's surface changes constantly through a variety of processes and forces	11	67%				
GLE 3: Weather conditions change because of the uneven heating of Earth's surface by the Sun's energy. Weather changes are measured by differences in temperature, air pressure, wind, and water in the atmosphere and type of precipitation	9	66%				

\*Percent correct scores cannot be compared across years because individual items change from year to year. They also cannot be compared across PGCs because the number of items and the difficulty of items may not be the same.

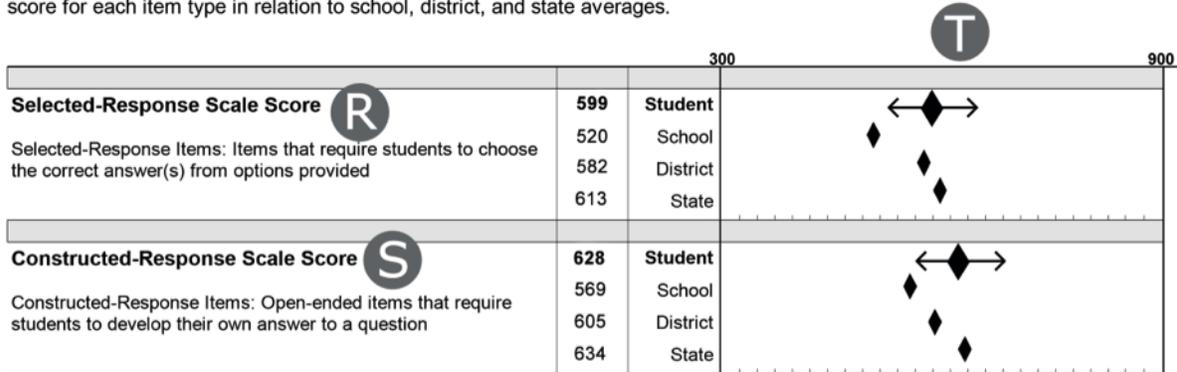
Sample CMAS Student Performance Report – Page 3

FIRSTNAME M. LASTNAME

Grade 5

Performance by Item Type

CMAS assessments include selected-response and constructed-response items. The figure below shows your student's scale score for each item type in relation to school, district, and state averages.



## Science Performance Level Descriptions



Students demonstrate mastery of science concepts and 21<sup>st</sup> century skills aligned to the Colorado Academic Standards at various performance levels. The performance level descriptors are organized in a manner that assumes students demonstrating higher levels of command have mastered the concepts and skills within the lower levels. For example, a student at moderate command also masters the concepts and skills of limited command.

**Students who Exceeded Expectations demonstrated distinguished command of the Colorado Academic Standards and can typically**

- evaluate and provide feedback on scientific evidence and reasoning about the separation of mixtures and how separation affects the total weight/mass;
- develop hypotheses about why similarities and differences exist between the body systems and parts of humans, plants, and animals;
- evaluate scientific claims about natural resources, in terms of reasonability and validity; and
- assess and provide feedback, through reasoning based on evidence, on scientific explanations about weather and factors that change Earth's surface.

**Students who Met Expectations demonstrated strong command of the Colorado Academic Standards and can typically**

- explain why certain procedures that are used to separate simple mixtures work and discuss any unexpected results;
- evaluate evidence and models of the structure and functions of human, plant, and animal organs and organ systems;
- investigate and generate evidence that human systems are interdependent;
- analyze and interpret data to explore concerns associated with natural resources; and
- formulate testable questions and scientific explanations around weather and factors that change Earth's surface.

**Students who Approached Expectations demonstrated moderate command of the Colorado Academic Standards and can typically**

- discuss how the mass/weight of a mixture is a sum of its parts and design a procedure to separate simple mixtures based on physical properties;
- create models of human, plant, and animal organ systems, and compare and contrast similarities and differences between the organisms;
- explore and describe the origins and usage of natural resources in Colorado; and
- interpret data about Earth, including weather and changes to Earth's surface.

**Students who Partially Met Expectations demonstrated limited command of the Colorado Academic Standards and can typically**

- select appropriate tools and follow procedures to separate simple mixtures;
- identify how humans, plants, and animals address basic survival needs;
- identify the functions of human body systems;
- distinguish between renewable and nonrenewable resources; and
- use appropriate tools and resources to gather data regarding weather conditions and Earth processes.

For more information about the standards included in this assessment, please visit the Colorado Department of Education's website at [www.cde.state.co.us/standardsandinstruction](http://www.cde.state.co.us/standardsandinstruction)