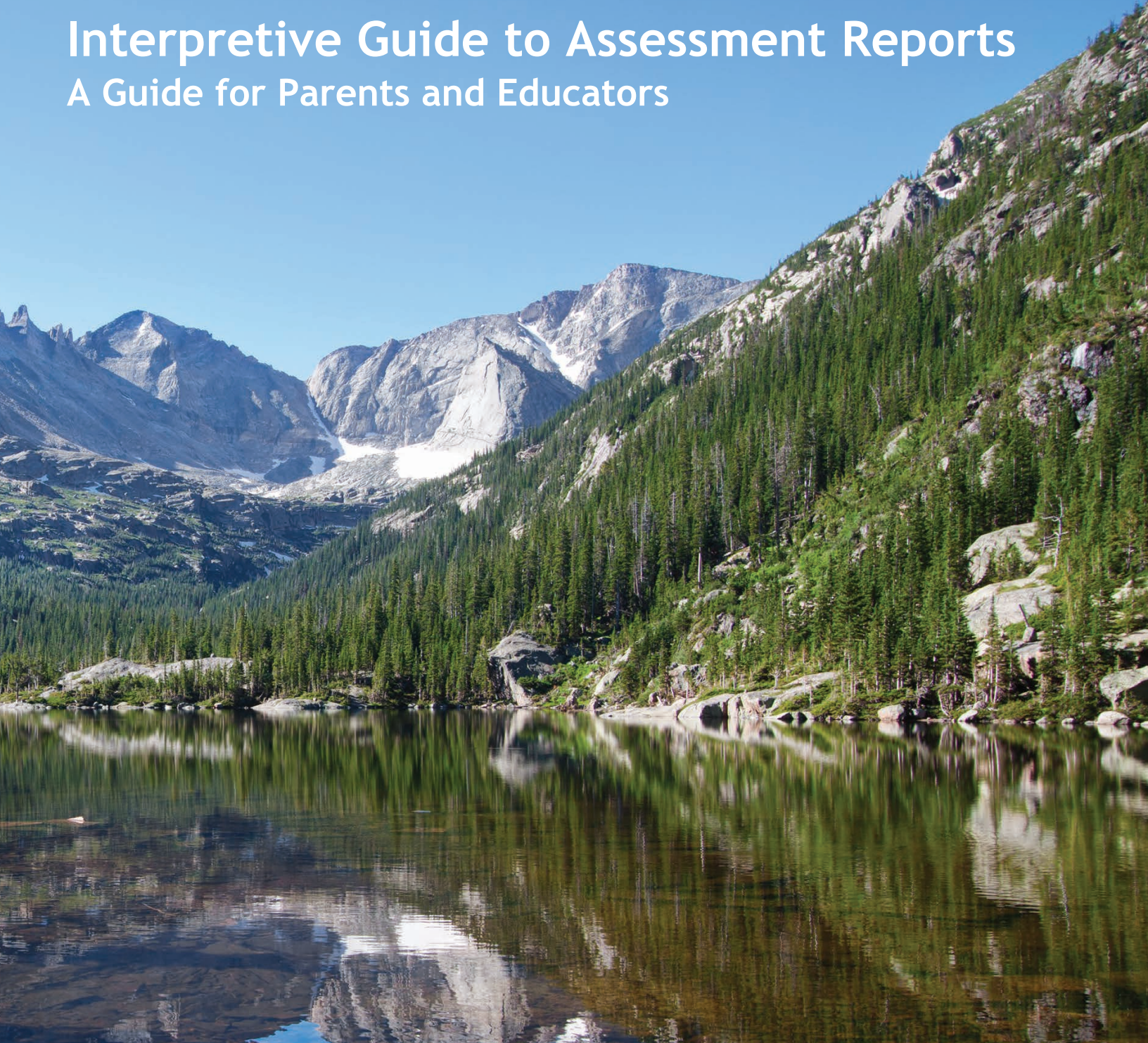




Colorado Measures of Academic Success
Colorado Alternate Assessment Program

Interpretive Guide to Assessment Reports

A Guide for Parents and Educators



Science, Mathematics and
English Language Arts, including
Colorado Spanish Language Arts

Spring 2024 Administration

1.0 General Information for Parents and Educators

1.1 Purpose of This Guide

This guide provides information on the individual student performance reports, school reports, and district reports provided for the Colorado Measures of Academic Success (CMAS) and Colorado Alternate (CoAlt) assessment results. Section 2.0 outlines and explains elements of the individual student report and may be shared with parents and educators to help them understand their students' test results. Sections 3.0 through 9.0 outline and explain elements of the school and district reports.

Please note the sample reports included in this guide are for illustration purposes only. They are provided to show the basic layout of the reports and the information they provide. Sample reports do not include actual data from any administration.

1.2 Background

1.2.1 Colorado Measures of Academic Success (CMAS) and Colorado Alternate (CoAlt) Assessments

The CMAS assessments are Colorado's standards-based assessments designed to measure the Colorado Academic Standards (CAS) in the content areas of mathematics, English language arts (ELA), and science. Eligible multilingual learners in grades 3 and 4 may take the Colorado Spanish Language Arts (CSLA) form as an accommodation in place of an ELA form. A small number of students with the most significant cognitive disabilities who meet specific criteria may demonstrate their content knowledge on the CoAlt assessments which measure the Extended Evidence Outcomes (EEOs) of the CAS. This guide addresses CoAlt science assessments specifically. The purpose of the CMAS and CoAlt assessments are to indicate the degree to which students mastered the expectations of the CAS in each content area at the end of the tested grade level. Results are intended to provide one measure of a student's academic progress relative to the CAS. Take results into consideration alongside other achievement information available locally.

CMAS and CoAlt science assessments were first administered across Colorado in 2013-2014 and CMAS mathematics and ELA assessments were first administered in 2014-2015.

The following table includes the content areas and grade levels assessed across Colorado in spring 2024.

Content Area	2024 Grades
ELA*	Grades 3-8
Mathematics	Grades 3-8
Science	Grade 5, 8, and 11

*As a requirement of Colorado School Law C.R.S. §22-7-1006.3 (4) (a) and (b), Spanish-speaking students in grades 3 and 4 who meet established eligibility criteria may take the CSLA form in place of the ELA form of the CMAS assessment.

CMAS Mathematics, ELA, and Science

Available in online and paper formats, CMAS assessments are developed by Colorado educators, the Colorado Department of Education, and the testing contractor.

CSLA

Available in paper format, CSLA forms are designed for students with a primary or home language of Spanish who are enrolled in bilingual programs in grades 3 and 4. The CSLA forms serve as accommodated versions of the CMAS ELA assessments. They are parallel and comparable to CMAS ELA in test design, item type, scoring, and reporting. Therefore, separate CSLA reports are not included throughout this guide (refer to ELA reporting information and examples).

1.2.2 Colorado Alternate (CoAlt) Assessments – Additional Information

CoAlt is the standards-based assessment designed specifically for students with the most significant cognitive disabilities who, even with accommodations, are unable to participate in CMAS. CoAlt assesses the performance expectations of the EEOs of the CAS and students must meet participation requirements to take the assessments. CoAlt assessments are administered in a one-on-one setting between teachers and students. Teachers use CoAlt scoring rubrics to evaluate student responses before submitting performance results. For each CMAS assessment there is a corresponding CoAlt assessment; however, this guide only includes the CoAlt science assessments. The CoAlt mathematics and ELA assessments were developed by the Dynamic Learning Maps (DLM) consortium and reports for those assessments are not included in this guide.

1.3 Reporting Results

1.3.1 Sharing Results with Parents

As a requirement of Colorado School Law C.R.S. §22-7-1006.3 (8) (a), personnel within the district and school must share with and explain to the parent or legal guardian of each student the student's state assessment results. When discussing aggregated results with parents, districts and schools are strongly encouraged to closely review their local participation rates as participation rates are critical to interpretation.

1.3.2 Confidentiality of Reporting Results

The results of individual student performance on all Colorado assessments are confidential. Only release individual student performance in accordance with the Family Educational Rights and Privacy Act of 1974 (20 U.S.C. Section 1232g). When possible, aggregated student performance data representing 16 or more students is made available to the public. Additional data suppression rules are also applied to aggregated reports to protect student privacy. Aggregated reports do not contain the names of individual students or teachers.

1.4 Spring 2024 Interpretation Considerations

1.4.1 COVID-19

Beginning in spring 2020, the COVID-19 pandemic impacted many aspects of education in Colorado, resulting in reduced, disrupted and/or adjusted learning opportunities for many students. While schools continued to transition to increased normalcy throughout the 2021-2022, 2022-2023, and 2023-2024 school years, take into consideration the pandemic's sustained impact on learning experiences for some students when interpreting spring 2024 results.

1.4.2 Participation Rates

Participation in the state assessments varies across schools, grade levels, and student groups. Review

and thoughtfully take into consideration participation information when interpreting state assessment results, particularly at the district and school levels. As participation rates decrease and vary across student, school and district groups, challenges with interpreting results increase. Depending on the specific school or district, some student groups may be overrepresented in the results and others may be underrepresented. Participation information may indicate that conclusions should be drawn with caution or completely avoided in some cases. Data does not support all cross-state comparisons and historical uses when participation rates are low. Additionally, consider participation rates and differences for each administration for any comparisons made across years.

1.4.3 Science Assessment Changes

The CMAS and CoAlt science assessments aligned to the 2020 Science CAS were given for the first time in spring 2022. Spring 2024 is the second administration of the updated science assessments. Only compare scores on the 2024 science assessments to scores from 2023 due to the extensive changes to the standards.

2.0 A Parent and Educator Guide to Understanding the Colorado Measures of Academic Success (CMAS) and Colorado Alternate (CoAlt) Assessment Student Performance Reports

Note: Parent-focused communication resources are available at <https://www.cde.state.co.us/assessment/factsheetsandfags>.

2.1 Program Overview

CMAS assessments, along with CoAlt for students with the most significant cognitive disabilities, are Colorado's standards-based assessments designed to measure the Colorado Academic Standards (CAS). The CAS contain the concepts and skills students are typically expected to learn in order to be successful in the current grade and to make academic progress from year to year. The purpose of CMAS and CoAlt 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 and CoAlt results are intended to provide one measure of a student's academic progress relative to the CAS. An individual student performance report is created for each student who takes a CMAS and CoAlt assessment so parents can understand their student's demonstration of learning of the CAS in the assessed grade level and content area.

As a requirement of Colorado School Law C.R.S. §22-7-1006.3 (4) (a) and (b), Spanish-speaking students in grades 3 and 4 who meet established eligibility criteria may take the Colorado Spanish language arts (CSLA) form in place of the ELA form. CSLA forms are parallel and comparable to the CMAS ELA forms in test design, item type, scoring, and reporting. Therefore, separate CSLA reports and descriptions are not included in this guide (refer to ELA reporting information and examples).

2.2 Performance Levels and Types of Scores on the Student Reports

To understand each part of the individual student performance reports, it is important to become familiar with the types of assessment scores included on the reports. Student performance on the Colorado assessments is described at varying levels on the individual student reports using scale scores, performance levels, and subclaim performance indicators. State, district, and school average results are included in relevant sections of the report to help parents understand how their student's performance compares to that of other students. In some instances, a dash (–) appears in place of average results for a school and/or district. This indicates there were too few student scores (less than 16) to maintain student privacy, and therefore, results are not reported.

2.2.1 Scale Scores

A scale score is a numerical value that summarizes student performance. 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 700 on one form of the 7th grade mathematics assessment is expected to score a 700 on any form of the assessment. A student who scored 750 on the 4th grade ELA assessment in 2024 demonstrated the same level of mastery of concepts and skills as an 4th grade student who scored 750 on the ELA test in 2017. Scale scores cannot be used to compare student performance across grades (e.g., grade 4 to grade 7) or subject areas (e.g., ELA to mathematics).

Mathematics, ELA, including CSLA, and Science scale scores for the overall test range from 650 to 850. ELA, including CSLA, reports also provide separate scale scores for reading. Reading scale scores range from 110 to 190.

CMAS Science reports provide separate scale scores for content standards and Science and Engineering Practices (referred to as reporting categories). The content standards scale score ranges from 400 to 550.

CoAlt Science scale scores are reported for the overall test and range from 150 to 350.

2.2.2 Performance Levels

Scale scores are used to determine a student’s performance level for the overall assessment. Performance levels describe the concepts and skills students are expected to demonstrate within a certain range of scores at the overall assessment level (i.e., ELA, mathematics, or science). Descriptors for each tested grade level and content area are included in **Appendix B** of this document.

CMAS Performance Levels

There are five cross-grade and content area performance levels for CMAS mathematics and ELA, including CSLA, assessments. There are four cross-grade and content area performance levels for CMAS science.

CMAS Performance Levels	
CMAS Mathematics, ELA, and CSLA	CMAS Science
Level 5: Exceeded Expectations*	Level 4: Exceeded Expectations*
Level 4: Met Expectations*	Level 3: Met Expectations*
Level 3: Approached Expectations	Level 2: Approached Expectations
Level 2: Partially Met Expectations	Level 1: Partially Met Expectations
Level 1: Did Not Yet Meet Expectations	

*Students in the top two performance levels met or exceeded the expectations of the CAS and are considered on track for the next grade level in the content areas of language arts, mathematics, or science. Students in the remaining performance levels may need academic support to successfully engage in further studies in the content area.

CoAlt Performance Levels

CoAlt science includes four performance levels.

CoAlt Performance Levels
Science
Advanced*
At Target*
Approaching Target
Emerging

*The top two performance levels indicate that with appropriate supports, the student is prepared for further study in the content area.

2.2.3 Percentile Ranking

A percentile ranking is included on all CMAS individual student performance reports. The percentile ranking shows how well the student 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.

2.2.4 Additional Performance Indicators

In addition to scale scores and performance levels, individual student performance reports include other indicators to help parents and educators understand their student's performance. These performance indicators are described below for each assessment.

Note: Percent earned refers to the number of points earned out of the total number of points possible within a reporting category. Only use the percent earned indicator to compare performance of the individual student to the average district and average state performance on the specific set of items being considered. Take participation rates into consideration when comparing individual student subclaim performance to state or district average performance. Some groups of items may be more difficult than other sets of items, so unlike the scale score, the percent earned indicator cannot be compared across groups of items or across school years.

CMAS Mathematics and ELA (including CSLA)

CMAS mathematics and ELA, including CSLA, student reports provide subclaim performance graphics comparing the performance of the student, their district, and the state. ELA and CSLA student reports include a reading scale score. A single cut score at 150 indicates a level of performance comparable to the Met Expectations cut on the overall ELA assessment. This cut is consistent across years and can be used in trend comparisons.

Subclaim performance on the assessments is reported as the percent of points earned for overall writing and for each of the writing, reading, and mathematics subclaims. Percent earned refers to the number of points earned out of the total number of points possible within a reporting category.

For the overall writing claim and each subclaim, a marker indicates the average performance on that claim or subclaim of students at the Met Expectations cut score point on the overall test. This indicator

provides criterion referenced context for the subclaims by showing how students who met the content based overall expectations performed.

CMAS Science

CMAS science reports include a performance indicator for the content standards (Physical, Life, and Earth and Space Science) and Science and Engineering Practices (SEP), which indicates whether a student's scale score is Lower than Average, Average, or Higher than Average. These indicators are based on the state mean and one standard deviation below and above that mean. The average scale score of students at the Met Expectations cut score point is indicated in the same graph.

CMAS science reports include percent earned indicators for Grade Level Expectations (GLEs) in elementary school and Prepared Graduate Statements (PGs)* in middle school and high school.

*PGs and GLEs are described more fully in **Appendix C**.

CoAlt Science

CoAlt science reports include the percent of points earned for the content standards (Physical, Life, and Earth and Space Science) and Science and Engineering Practices (SEP).

2.3 Description of Individual Student Performance Reports for CMAS Mathematics and ELA, including CSLA

Sample CMAS grade 3 ELA and mathematics Student Performance Reports are displayed in Sections 2.4 and 2.5. Each page of the sample report is included individually. The sample report provides the same type of information included on all mathematics and ELA, including CLSA, reports. 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.

2.3.1 General Information

Refer to page 1 of the Student Performance Report.

A. Identification Information

The student's name, state assigned student identification number (SASID), birthdate, school, and district. Students are identified by first name, middle initial, and last name. If the student has a preferred first name that is different than their legal name, it is listed in parentheses.

B. Test Date

The season and year the student took the assessment.

C. Subject Area

The subject area of the student's assessment (i.e., mathematics or ELA, including CSLA).

D. Grade Level

The grade level of the student's assessment.

E. Explanation of Overall Performance

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

2.8 Description of Individual Student Performance Report – CoAlt Science

A Student Performance Report is created for each student who takes a CoAlt assessment. This section of the guide explains the elements of the Student Performance Report. A sample CoAlt Student Performance Report is displayed in Section 2.9.

2.8.1 General Information

Refer to page 1 of the Student Performance Report.

A. Identification Information

The student's name, state assigned student identifier (SASID), birthdate, school, and district. Students are identified by first name, middle initial, and last name. If the student has a preferred first name that is different than their legal name it is listed in parentheses.

B. Test Date

The season and year the student took the assessment.

C. Subject Area

The subject area of the student's assessment (science).

D. Grade Level

The grade level of the student's assessment.

E. Explanation of Overall Performance

A brief explanation of the overall assessment results to help understand the reported information.

2.8.2 Student Performance Information

Refer to page 1 of the Student Performance Report.

F. Student's Overall Scale Score and Performance Level

The student's overall scale score (the number between 150 and 350) and performance level (Emerging, Approaching Target, At Target, or Advanced) are provided. The scale score and performance level included in this part of the report represent the student's overall performance on the assessment.

G. Graphical Representation of the Overall Scale Score and Performance Level by Student and State

The student'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 the student would likely receive if the assessment were taken multiple times.

The average scale score at the state level is identified by a smaller black diamond on the graph. The location of the diamonds can be compared to see how the student performed in comparison to the average student at the state level. If the student's score diamond is to the right of the state average diamond, the student performed better than the state average. If the student's diamond is to the left of the state diamond, the student performed below the state average.

The dotted lines on the graph show the lowest scores needed to achieve Approaching Target, At Target, and Advanced performance levels. The scale scores representing each of those scores are indicated on the bottom of the graph.

H. Percent of Students Tested

The percent of students tested at the state level provides participation information that should be considered when interpreting aggregated results. Interpretations of, and comparisons of scores between, the student and district and state levels should be made with caution or completely avoided when participation is low.

I. Percent of Students at Each Performance Level

The bars beneath the overall performance graphic show the percentage of students within Colorado who performed at each of the four performance levels and gives a sense of how the student's performance compares to other students' performance in Colorado.

J. Performance Level Descriptor (PLD)

PLDs provide details about the specific grade-level content area concepts and skills typically demonstrated by students within a performance level. The PLD that corresponds to the student's performance level is included on the report. The full list of performance level descriptors for each grade level and content area is included in **Appendix B** of this document.

K. QR Code

Scan the QR code to view a video about student performance displayed on the report. Links to sample questions, the Colorado Academic Standards, and other parent resources (including the full version of the PLD text) are also available through the QR code. Alternatively, access the materials by visiting <https://coassessments.com/parentsandguardians>.

2.8.3 Content Standard Performance

Refer to page 2 of the Student Performance Report.

L. Content Standard Descriptions

Descriptions for Science standards (physical science, life science, and earth and space science) and Science and Engineering Practices.

M. Points Earned

Points earned indicates how many points the student earned for each content standard.

N. Points Possible

Points possible indicates the total number of points possible for each content standard.

O. Graphical Representation of Content Standard Performance by Student and State

The graphical representation of content standard performance shows how the student performed in each standard compared to the state average percent of points earned. The student's performance is represented by a bar graph. The average percent of points earned for each content standard at the state level is identified by a second bar graph. If the student's bar ends to the right of the state average bar, the student's percent of points earned was higher than the state average. If the student's bar ends to the left of the state average bar, the student's percent of points earned was lower than the state average. Interpretations of, and comparisons of scores between, the student and state levels should be made with caution or completely avoided when participation is low.

P. Graph Key

Indicates the student's percent of points earned and the state average percent of points earned.

Confidential Student Performance Report

Spring 2024

Colorado Alternate Assessment

Student: **FIRSTNAME LASTNAME**

SASID: 999999999 Birthdate: MM/DD/YYYY

School: **SAMPLE SCHOOL NAME (9999)**

District: **SAMPLE DISTRICT NAME (9999)**

Watch a video about this report!

Science

Grade 8

This Colorado Alternate Assessment (CoAlt) report provides information about your student's understanding of the Extended Evidence Outcomes (EEOs) of Colorado's middle school science standards. Scan the QR code to see a video that will talk you through your student's report.

Your student's performance is shown as:

- A number on a scale between 150 and 350
- A performance level that is described below

As you review this report:

- Review arrows around the large diamond to see where your student may have scored if the assessment was taken multiple times.
- Make state comparisons with caution if participation is low.
- Talk with your student's teacher about your student's progress in science.

Your Student's Score

F 235

Approaching Target

State: 252

State Participation: 47.4%

Performance Level	Percentage
Emerging	29.6%
Approaching Target	18.5%
At Target	22.2%
Advanced	29.6%

Performance Level Description - Approaching Target

FIRSTNAME008 showed a limited understanding of the EEOs of Colorado's middle school science standards and will likely need moderate academic support to successfully engage in the next grade level. Students in the Approaching Target level typically:

- Identify that the amount of or the mass of atoms does not change in a chemical reaction.
- Identify simple molecules, such as water or oxygen gas.
- Identify a device that releases or absorbs heat energy by chemical processes and a device that either minimizes or maximizes heat energy transfer.
- Identify the relative amounts of kinetic and potential energy in a system.
- Identify that different materials can affect the reflection, absorption, or transmission of a light or sound wave.
- Identify how characteristic animal behaviors and specialized plant structures help the plants and animals survive, and identify examples of competitive, predatory, and mutually beneficial relationships between organisms.
- Identify an example of the cycling of matter and energy among living and nonliving parts of an ecosystem.
- Identify that variations of traits in populations increase some individuals' probability of surviving and reproducing and that natural selection works over many generations.
- Identify two locations of similar or different climates.
- Identify that regional climate is based on the region's landforms and latitude.
- Identify that Earth's resources are limited and unevenly distributed.
- Identify gravity as what keeps Earth and the Moon in their orbits and as what draws and holds together the matter making up Earth and the Moon.

To view a video report and the full version of the performance level descriptor, visit <https://coassessments.com/parentsandguardians/> or a QR code.

Watch a video about this report!

Information about the Colorado Academic Standards measured by this assessment:
<http://www.cde.state.co.us/coextendedeo>

Page 1 of 2

03192024-Z9999999-9999-9999 - 0000000

FIRSTNAME LASTNAME

Content Standard Performance

Content Standard Performance

L

M N

Reporting Category Description	Points Earned	Points Possible	Percent of Points Earned*				
			0%	25%	50%	75%	100%
Physical Science Common properties, forms, and changes in matter and energy	9	18	50%				
			61%				
Life Science Characteristics and structure of living things, the processes of life, and how living things interact with each other and their environment	15	15	100%				
			73%				
Earth and Space Science Processes and interactions of Earth's systems and the structure and dynamics of Earth and other objects in space	0	15	0%				
			30%				
Science and Engineering Practices Making sense of the natural world through investigation and problem solving	14	30	47%				
			54%				

*Percent of points earned cannot be compared across years because individual test questions change from year to year. They also cannot be compared across specific areas of science because the number and difficulty of questions may not be the same.

Student's Score State Average

P

For information on the CoAlt assessment program, visit <http://www.cde.state.co.us/assessment>.

Appendix A

Scale Score Ranges

**CMAS Science
Overall Scale Score Ranges**

Grade Level	Partially Met Expectations	Approached Expectations	Met Expectations	Exceeded Expectations
	Level 1	Level 2	Level 3	Level 4
Grade 5	650-724	725-749	750-788	789-850
Grade 8	650-724	725-749	750-796	797-850
Grade 11	650-724	725-749	750-786	787-850

**CMAS Science
2024 Content Standards Performance Indicator Ranges***

Grade Level	Physical Science	Life Science	Earth and Space Science	Science and Engineering Practices
Grade 5	450-520	446-523	449-521	452-519
Grade 8	443-515	441-516	438-516	446-514
Grade 11	445-511	440-513	437-512	447-509

* At the content standards level there are performance indicators based on the overall state performance. These levels are not for accountability use and are not set in relation to the content or the overall performance levels. The cut scores are set using one standard deviation around the mean scale score for the state. They change from year to year. Students within this range have “average” performance compared to the state. Students with scores below this range scored “lower than average” in this area and students above the range scored “higher than average”.

**CoAlt Science
Overall Scale Score Ranges**

Grade Level	Emerging	Approaching Target	At Target	Advanced
	Level 1	Level 2	Level 3	Level 4
Grade 5	150-224	225-249	250-272	273-350
Grade 8	150-224	225-249	250-276	277-350
Grade 11	150-224	225-249	250-276	277-350

Appendix B

Performance Level Descriptors

Grade 5 CoAlt Science Performance Level Descriptors

Students demonstrate science concepts and skills aligned to the Grade Level Expectations and Extended Evidence Outcomes contained in the Colorado Academic Standards.

Student showed an initial understanding of the EEOs of Colorado’s grade 5 science standards and will likely need extensive academic support to successfully engage in the next grade level. Students in the Emerging level typically:

- Identify that matter is made of particles and that adding or removing matter from a sample changes the mass of the sample.
- Identify matter as solid, liquid, or gas.
- Identify down as the direction gravity causes objects to move.
- Identify that the Sun is the source of energy for plants and identify air and water as what plants need to grow.
- Identify an animal’s source of food.
- Identify that the Sun appears brighter than other stars.
- Identify the length of shadows as something that changes at different times of the day and the amount of daylight as something that changes across seasons.
- Identify a living or nonliving thing involved in an interaction between any two of Earth’s systems.
- Identify a source of salt water or fresh water.
- Identify a way to protect Earth’s resources and environment.

Student showed a limited understanding of the EEOs of Colorado’s grade 5 science standards and will likely need moderate academic support to successfully engage in the next grade level. Students in the Approaching Target level typically:

- Identify that matter is made of particles whose behavior has observable effects.
- Identify that heating, cooling, and mixing substances does not change the total mass of the substances.
- Use an example to identify a material based on its properties.
- Identify gravity as the force that causes an object to move down toward Earth.
- Identify that the energy in animals’ food was once energy from the Sun.
- Identify what living components of a food chain or web make their own food or must eat food.
- Identify that the Sun is a star that appears brighter than other stars because of their different distances from Earth.
- Identify an interaction between any two of Earth’s systems (geosphere, biosphere, hydrosphere, and atmosphere).
- Identify that there is much more salt water than fresh water on Earth.
- Identify a way to protect Earth’s resources and environment.

Student showed a foundational understanding of the EEOs of Colorado’s grade 5 science standards and is academically prepared to successfully engage in the next grade level with appropriate support. Students in the At Target level typically:

- Classify materials based on similarities and differences in their properties.
- Identify that heating, cooling, and mixing substances does not change the total mass of the substances but can change the properties of the substances.
- Describe that the force of gravity pulls all objects down toward Earth.
- Describe that air and water, but not soil, are sources of matter that plants need to grow.
- Describe the movement of matter between two components of a food chain or web.
- Identify that the Sun is a star that appears brighter than other stars because of different distances of the stars from Earth.
- Interpret daily changes in the amount of daylight across seasons and of the length of shadows at different times of the day.
- Describe an interaction between any two of Earth’s systems (geosphere, biosphere, hydrosphere, and atmosphere).
- Describe the relative amounts of salt water and fresh water on Earth.
- compare ways to protect Earth’s resources and environment.

Student showed a foundational understanding of the EEOs of Colorado’s grade 5 science standards and is academically prepared to successfully engage in the next grade level with appropriate support. Students in the At Target level typically:

- Classify and identify materials based on similarities and differences in their properties.
- Compare the properties of two substances before and after mixing.
- Describe that the force of gravity pulls all objects down toward Earth but that not all objects demonstrate downward movement toward Earth.
- Describe that the energy in animals’ food was once energy from the Sun but that the matter in animal’s food is not from the Sun.
- Describe that nutrients from soil can help a plant grow, but air and water are the sources of matter that make up the new mass that plants gain as they grow.
- Describe the movement of matter between three or more components of a food chain or web.
- Identify that the Sun is a star that appears brighter than other stars because of their different distances from Earth and that distance is proportional to apparent brightness.
- Graph daily changes in the amount of daylight across seasons and of the length of shadows across time and at different times of the day.
- Explain an interaction between any two of Earth’s systems (geosphere, biosphere, hydrosphere, and atmosphere).
- Compare the relative amounts of salt water and fresh water on Earth found in oceans, lakes, rivers, glaciers, groundwater, and polar ice caps.
- Compare ways to protect Earth’s resources and environment and describe why one way may be better than another.

Grade 8 CoAlt Science Performance Level Descriptors

Students demonstrate science concepts and skills aligned to the Grade Level Expectations and Extended Evidence Outcomes contained in the Colorado Academic Standards.

Student showed an initial understanding of the EEOs of Colorado’s middle school science standards and will likely need extensive academic support to successfully engage in the next grade level. Students in the Emerging level typically:

- Identify that a molecule is made up of atoms and that atoms have mass.
- Identify a property that changes because of a chemical change.
- Identify a force as what makes objects move, change direction, or become damaged.
- Identify a change in temperature as evidence of energy transfer.
- Identify a cell as the smallest living part of a living thing and that organs and organisms are made up of cells.
- Identify that offspring have similar characteristics to their parents.
- Identify that the appearance of Earth’s Moon changes, or Earth’s seasons change, because of their relative positions in space.
- Identify that heat energy from Earth’s interior can change and form rocks.
- Identify a change that makes more water vapor, liquid water, or ice.
- Identify that humans use natural resources, can affect the environment, and need to prepare for natural hazards.
- Identify that all solar system objects are affected by gravity.

Student showed a limited understanding of the EEOs of Colorado’s middle school science standards and will likely need moderate academic support to successfully engage in the next grade level. Students in the Approaching Target level typically:

- Identify that the amount of or the mass of atoms does not change in a chemical reaction.
- Identify simple molecules, such as water or oxygen gas.
- Identify a device that releases or absorbs heat energy by chemical processes and a device that either minimizes or maximizes heat energy transfer.
- Identify the relative amounts of kinetic and potential energy in a system.
- Identify that different materials can affect the reflection, absorption, or transmission of a light or sound wave.
- Identify how characteristic animal behaviors and specialized plant structures help the plants and animals survive, and identify examples of competitive, predatory, and mutually beneficial relationships between organisms.
- Identify an example of the cycling of matter and energy among living and nonliving parts of an ecosystem.

- Identify that variations of traits in populations increase some individuals' probability of surviving and reproducing and that natural selection works over many generations.
- Identify two locations of similar or different climates.
- Identify that regional climate is based on the region's landforms and latitude.
- Identify that Earth's resources are limited and unevenly distributed.
- Identify gravity as what keeps Earth and the Moon in their orbits and as what draws and holds together the matter making up Earth and the Moon.

Student showed a foundational understanding of the EEOs of Colorado's middle school science standards and is academically prepared to successfully engage in the next grade level with appropriate support. Students in the At Target level typically:

- Describe the similarities and differences of the properties of a substance before and after a chemical change or a change in state.
- Explain the operation of a device that releases or absorbs thermal energy by chemical processes or a device that minimizes or maximizes thermal energy transfer from one object to another.
- Identify that electric or magnetic fields exist between objects exerting forces on each other even though the objects are not in contact.
- Identify factors that affect the strength of electric or magnetic forces.
- Describe how loudness or brightness is related to the energy in the sound wave.
- Identify that major organs are made up of cells.
- Describe the primary roles of at least three major components of a plant or animal cell.
- Describe how food supports growth and releases energy in an organism.
- Identify that organisms detect, process, and use information via the nervous system.
- Identify similarities and differences among modern organisms and fossilized organisms.
- Identify how the layering of fossils in rock strata reveals their chronological order of appearance.
- Describe the distribution of fossils as evidence of past tectonic plate motions.
- Describe that the motion and interaction of air masses cause changes in weather conditions and to describe how some natural hazards can be predicted, prepared for, and mitigated.
- Describe the cyclic patterns of the Moon's common phases and Earth's seasons.
- Identify at least one similarity and one difference among objects in the solar system.

Student showed a solid understanding of the EEOs of Colorado's middle school science expectations and is well prepared to successfully engage in the next grade level with appropriate support. Students in the Advanced level typically:

- Describe that the number of or the mass of atoms does not change in a chemical reaction, but that the atoms are just rearranged.
- Design a solution to reduce the force of impact in a collision of two objects.
- Demonstrate that when the position of objects interacting at a distance changes, different amounts of potential energy are stored in the system.
- Identify that digitized signals are a reliable way to encode and transmit information.
- Explain how photosynthesis plays a role in the cycling of matter and the flow of energy between plants and animals.
- Explain how food supports growth and releases energy in an organism.
- Explain how the genetic characteristics of a generation produced by asexual or sexual reproduction relate to the previous generation.
- Identify the relationship between genetic variations among individuals and advantages or disadvantages those individuals have for surviving and reproducing.
- Describe how the state of water changes as it moves through the water cycle.
- Describe how a natural resource can be transformed to make a new, synthetic material.
- Identify how a change in environmental conditions, such as resource availability, can affect organisms and populations in an ecosystem.
- Develop a solution to an environmental problem to minimize the impact of the problem.

- Describe the changes in the amount of matter or energy as it travels through an energy pyramid, a food web, or nutrient cycle.
- Describe the distribution of a trait within a population, how organisms with advantageous traits tend to increase in number, and how species with disadvantageous traits can become extinct.
- Describe a change in Earth's climate or a change to Earth's surface, atmosphere, or hydrosphere.
- Identify that the Sun has a life cycle during which its energy output changes and different elements are produced.
- Identify that galaxies move within space.
- Describe relationships between orbiting objects in the solar system.

Student showed a solid understanding of the EEOs of Colorado's high school science expectations and is well prepared to successfully engage in the next grade level with appropriate support. Students in the Advanced level typically:

- Identify properties of groups and families of elements and the uses of commonly found elements.
- Explain or predict the relationship between changes in experimental conditions, the rate of energy transfer, and the amount of product from a chemical reaction.
- Describe the energy released and the composition of nuclei for nuclear fission or nuclear fusion.
- Evaluate designs that minimize the effect of the force on an object during a collision.
- Describe how a change in an electric current can change a magnetic field.
- Describe the process of photosynthesis transforming light into energy for plants.
- Explain how organisms combine the simple elements that make up sugar molecules with other elements to make up proteins necessary for growth and metabolism.
- Compare and contrast the use of oxygen and stored energy in aerobic and anaerobic environments.
- Describe common ancestry in terms of anatomical structures or genes.
- Describe the composition of Earth's layers and the cycling of matter by the convection of Earth's mantle and explain the ages of crystal rock in terms of plate motion.
- Explain relationships between orbiting objects in the solar system.