

New Hampshire Statewide Assessment System

2018–2019

Volume 6 Score Interpretation Guide



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1. NEW HAMPSHIRE SCORE REPORTS

In spring 2019, the following New Hampshire Statewide Assessment System (NH SAS) tests were administered to New Hampshire students: grades 3–8 English language arts (ELA); grades 3–8 mathematics; and grades 5, 8, and 11 science. In this technical report, the term *reading* is used when referring only to the reading test component or items; *writing* is used when referring only to the text-based writing task.

The purpose of the Score Interpretation Guide is to document the features of the New Hampshire Online Reporting System (ORS), which is designed to assist stakeholders in reviewing and downloading the test results and understanding and appropriately using the results of the state assessments. Additionally, this volume describes the score types reported for the spring 2019 assessments, the appropriate uses of those score types, the inferences that can be drawn from them, and features of the score report.

1.1 OVERVIEW OF NEW HAMPSHIRE’S SCORE REPORTS

NH SAS tests were administered statewide in spring 2019. Test scores from each spring 2019 assessment were provided to districts and schools through the New Hampshire ORS almost immediately after tests were graded, starting on March 19, 2019. The ORS provides information on student performance and aggregated summaries at several levels: state, district, school, teacher, and roster.

The ORS (<https://nh.reports.airast.org/>) is a web-based application that provides NH SAS results at various levels. Test results are available for users based on their roles and the privileges they receive based on the authentication granted to them. There are four basic levels of user roles: the state, district, school, and teacher levels. Each user is granted drill-down access to reports in the system based on his or her assigned role. This means that teachers can access data for their roster(s) of students only, schools can access data for the students in their school only, and districts can access data for all schools and students in their district.

The following users have access to the system:

- State users can access all data at the state, district, school, teacher, and student levels.
- District Test Coordinator (DC) users can access all data for their district and the schools and students in their district.
- School Test Coordinator (SC) users can access all data for their school and the students in their school.
- Teacher (TE) users can access all aggregate data for their roster(s) and the students within their roster(s).

Access to reports is password protected, and users can access data at and below their assigned level. For example, an SC user can access the school report of students for his or her school but not for another school.

1.2 OVERALL SCORES AND REPORTING CATEGORIES

Each student receives a single scale score for each subject tested if there is a valid score to report. The validity of a score is determined using *invalidation rules*, which define a set of parameters under which a student’s test may be counted. For ELA and mathematics, a student’s score will be automatically invalidated if he or she fails to respond to at least five test items. Failure to provide a response in the written portion of ELA tests will also result in an invalidated score. For science, a score is invalidated only if the student did not complete at least one item on the test (or the score is manually invalidated). Normally, a student takes a test in the test delivery system (TDS) and then submits it. The TDS then forwards the test for scoring before the ORS reports the scores. However, tests may also be manually invalidated before reaching the ORS if testing irregularities occur (e.g., cheating, unscheduled interruptions, loss of power or Internet).

A student’s score is based on only the operational items on the assessment. A scale score is used to describe how well a student performed on a test and can be an estimate of students’ knowledge and skills measured. The scale score is transformed from a theta score, which is estimated based on item response theory (IRT) models as described in Volume 1 of this technical report. Low scale scores indicate that the student does not possess sufficient knowledge and skills measured by the test. Conversely, high scale scores indicate that the student has proficient knowledge and skills measured by the test. Interpretation of scale scores is more meaningful when the scale scores are used along with performance levels and performance-level descriptors (PLDs).

Based on the scale score, a student will receive an overall performance level. Performance levels are proficiency categories on a test, which students fall into based on their scale scores. For the NH SAS, scale scores are mapped into four performance levels:

- Level 1: Below Proficient
- Level 2: Approaching Proficient
- Level 3: Proficient
- Level 4: Above Proficient

PLDs set out content-area knowledge and skills that students at each performance level are expected to possess. PLDs are determined by comparing a student’s scale score against carefully determined cut scores, which are unique to each grade and subject. Cut score points are listed in Section 2.5: Cut Scores, with additional details included in Volume 3.

Performance levels can be interpreted based on PLDs, which represent a more descriptive analysis of a student’s abilities based on his or her performance level. Generally, students performing on NH SAS at Levels 3 and 4 are considered on track to demonstrate progress toward mastery of the knowledge and skills necessary for college and career readiness.

In addition to an overall score, students will receive reporting category scores. Reporting categories represent distinct groups of knowledge within each grade and subject. For the NH SAS, student performance on each reporting category is reported using three achievement categories:

1. Low
2. At or Approaching
3. On or Above

Unlike the performance levels for the overall test, student performance within each of the reporting categories is evaluated entirely in relation to the reporting category proficiency cut score. Performance-level classifications are computed to classify student performance levels for each of the content-standard subscales. For each subscale, the band is generally defined as a range extending 1.5 Standard Error of Measurement (SEM) below to 1.5 SEM above the proficiency cut score used on the overall test.

Students performing at either *Low* or *On or Above* can be interpreted as student performance clearly below or above the *Proficient* cut score for a specific reporting category. Students performing at *At or Approaching* can be interpreted as student performances that do not provide enough information to tell whether students reached the *Proficient* mark for the specific reporting category. Students are classified as *At or Approaching* if the spread of their SEM (as described in the previous paragraph) lies both above and below the performance level’s proficiency cut score.

Table 1, Table 2, and Table 3 display the reporting categories by grade and subject.

Table 1: Reporting Categories for ELA/Reading

Grade	Reporting Category
3–8	<ol style="list-style-type: none"> 1. Reading Literary Text 2. Reading Informational Text

Table 2: Reporting Categories for Mathematics

Grade	Reporting Category
3–5	<ol style="list-style-type: none"> 1. Operations and Algebraic Thinking 2. Number and Operations in Base Ten and Fractions 3. Measurement, Data, and Geometry 4. Modeling and Problem Solving 5. Use Mathematical Reasoning
6	<ol style="list-style-type: none"> 1. Ratios and Proportional Relationships and Number Systems 2. Expressions and Equations 3. Geometry & Statistics and Probability 4. Modeling and Problem Solving 5. Use Mathematical Reasoning
7	<ol style="list-style-type: none"> 1. Ratios and Proportional Relationships and Number Systems 2. Expressions and Equations 3. Geometry 4. Statistics and Probability 5. Modeling and Problem Solving 6. Use Mathematical Reasoning
8	<ol style="list-style-type: none"> 1. Expressions and Equations and Number Systems 2. Functions 3. Geometry & Statistics and Probability 4. Modeling and Problem Solving 5. Use Mathematical Reasoning

Table 3: Disciplines for Science

Grade	Discipline
5, 8, 11	<ol style="list-style-type: none"> 1. Physical Sciences 2. Life Sciences 3. Earth and Space Sciences

1.3 ONLINE REPORTING SYSTEM

The ORS generates a set of online score reports that describes student performance for students, parents, educators, and other stakeholders. The online score reports are produced after the tests are submitted by the students, hand-scored and machine-scored, and processed into the ORS. In addition to each individual student’s score report, the ORS produces aggregate score reports for teachers, schools, districts, and states. The timely accessibility of aggregate score reports helps users monitor student performance in each subject and grade area, evaluate the effectiveness of instructional strategies, and inform the adoption of strategies to improve student learning and teaching during the school year.

Furthermore, to facilitate comparisons, each aggregate report contains the summary results for the selected aggregate unit, as well as all aggregate units above the selected aggregate. For example, if a school is selected, the summary results of the district to which the school belongs and the summary results of the state are also provided so that the school performance can be compared with the district performance and the state performance. If a teacher is selected, the summary results for the school, district, and state above the teacher are also provided for comparison purposes. Table 4 lists the types of online reports and the levels at which they can be viewed (student, roster, school, district, and state).

1.4 AVAILABLE REPORTS ON THE NEW HAMPSHIRE ONLINE REPORTING SYSTEM

The New Hampshire ORS is hierarchically structured. An authorized user can view reports at his or her own aggregated unit and any lower level of aggregation. For example, a school user can view the reports and data at the school and student levels of his or her school only. DC users can view the reports and data for their districts and the student-level results for all their schools.

Table 4 summarizes the types of score reports that are available in the ORS and the levels at which the reports can be viewed. A description of each report is also provided. Data files are also accessible for districts to download.

For detailed information on available reports and features, educators can refer to the ORS user guide. The 2018–2019 NH SAS *Online Reporting System User Guide* is included in Appendix A.

Table 4: Score Reports Summary

Report	Description	Level of Availability				
		State	District	School	Roster	Student
Summary Performance	Summary of achievement (to date) across grades and subjects or courses for the current administration	✓	✓	✓	✓	

Report	Description	Level of Availability				
		State	District	School	Roster	Student
Aggregate-Level Subject Report	Summary of overall performance for a subject and a grade for all students in the defined level of aggregation	✓	✓	✓	✓	
Aggregate-Level Reporting Category Report	Summary of overall performance on each reporting category for a given subject and grade across all students within the selected level of aggregation	✓	✓	✓	✓	
Aggregate-Level Standard Report	Summary of overall performance on each standard for a given subject and grade across all students within the selected level of aggregation	✓	✓	✓	✓	
Student-Level Subject Report	List of all students who belong to a school, teacher, or roster with their associated subject or course scores for the current administration.			✓	✓	
Student-Level Reporting Category Report	List of all students who belong to a school, teacher, or roster with their associated reporting category performance for the current administration			✓	✓	
Individual Student Report	Detailed information about a selected student's achievement in a specified subject or course, including overall subject and reporting category results					✓
Data Files	Text/CSV files containing overall and reporting category scale scores and performance levels along with demographic information		✓	✓	✓	

1.5 REPORTING BY SUBGROUP

The aggregate score reports provide overall student results by default but can at any time be analyzed by subgroups based on demographic data. When used on aggregate-level reports, an additional level of analysis will be provided by aggregating students based on subgroup. For example, when the “Enrolled Grade” subgroup is selected, the ORS will display aggregate results for all students and students by each enrolled grade. When used on student-level reports, subgroups can instead filter individual results. For example, a user will have the option to select an individual enrolled grade after the “Enrolled Grade” subgroup is selected.

Users can see student assessment results by any subgroup at any time by selecting the desired subgroup from the “Breakdown By” drop-down list. Table 5 presents the subgroup and subgroup categories provided in the ORS.

Table 5: List of Subgroup Categories

Subgroup	Subgroup Category
Enrolled Grade	Grade 02
	Grade 03
	Grade 04
	Grade 05
	Grade 06
	Grade 07
	Grade 08
	Grade 09
	Grade 10
	Grade 11
	Grade 12
	Grade 13
	Post-Secondary

1.6 REPORTS

1.6.1 Summary Performance Report

The home page allows authorized users to log in to the ORS and select “Score Reports,” which contains summaries of student performance across grades and subjects. State personnel can view state summaries, district personnel can view district summaries, school personnel can see school summaries, and teachers can see student summaries. State users can view a summary of students’ performance within each district as well. The Summary Performance Report

- displays summary data separated by grade and subject;
- bases the level of aggregation on a user’s role; and
- reports the number of students tested and percentage of students proficient.

The Summary Performance Report provides summaries of student performance, including

- the number of students tested; and
- the percentage of students proficient.

Figure 1 and Figure 2 present sample Summary Performance Reports at the state and district level.

Figure 1: Sample State Summary Performance Report

New Hampshire Department of Education
Serving New Hampshire's Education Community

Score Reports | Reports & Files | State at a Glance

Inbox | Search Students | Upload Rosters | Add Rosters | View Rosters | This Page: Help | Print | Export

Now viewing: Scores for students who were mine at the end of the selected administration

Home Page Dashboard

Select Test and Year

Test: SAS Summative
Administration: 2018-2019

Scores for students who were mine at the end of the selected administration
 Scores for students who were mine when they tested during the selected administration

Select

New Hampshire

Select a district and then click on a grade and subject to view more information.

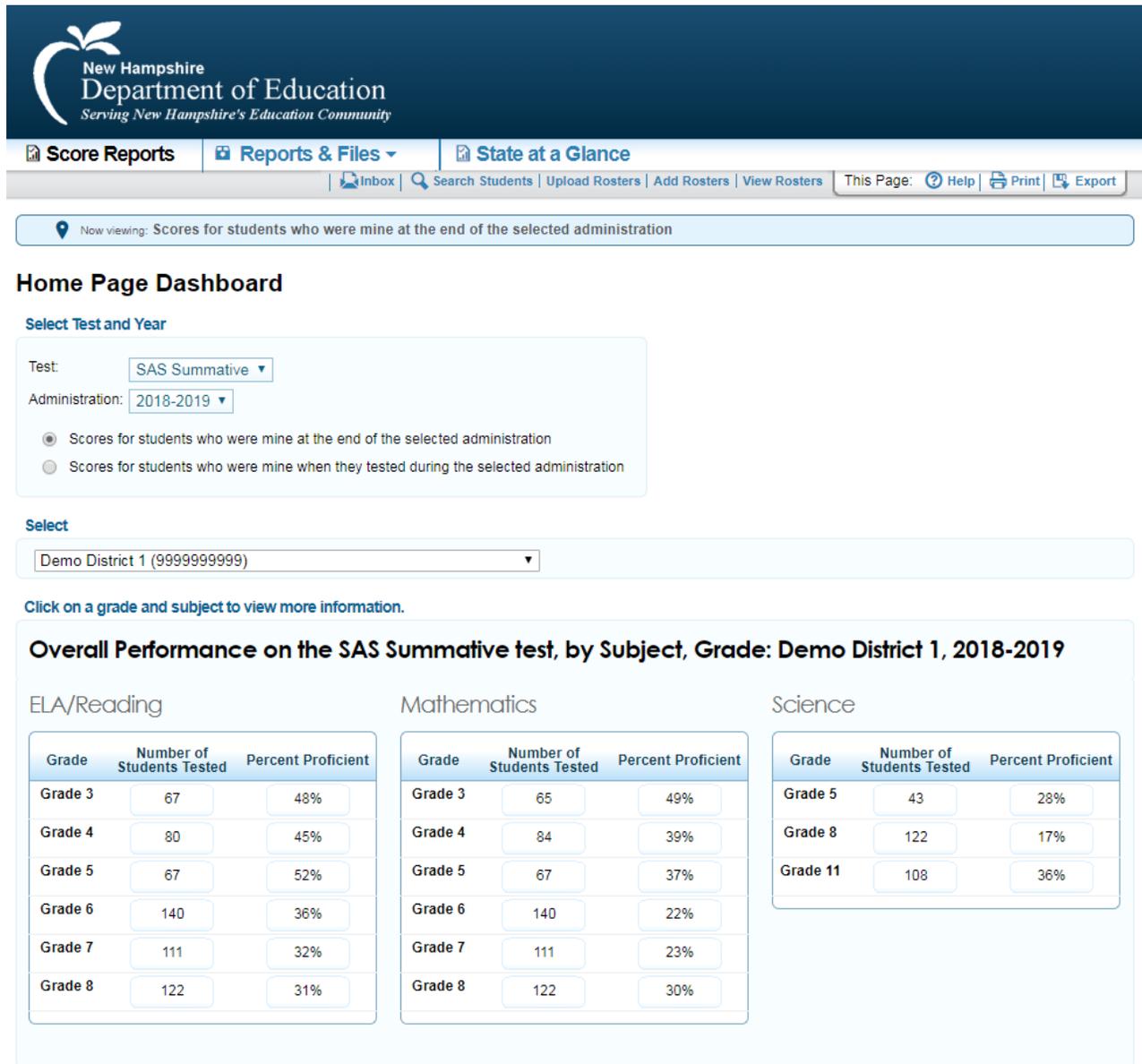
Overall Performance on the SAS Summative test, by Subject, Grade: New Hampshire, 2018-2019

Grade	Number of Students Tested	Percent Proficient
Grade 3	3649	49%
Grade 4	3201	55%
Grade 5	3470	56%
Grade 6	4649	54%
Grade 7	4689	56%
Grade 8	5709	51%

Grade	Number of Students Tested	Percent Proficient
Grade 3	2851	49%
Grade 4	2970	50%
Grade 5	3275	37%
Grade 6	3325	40%
Grade 7	3767	42%
Grade 8	4520	41%

Grade	Number of Students Tested	Percent Proficient
Grade 5	4717	38%
Grade 8	4627	35%
Grade 11	4208	45%

Figure 2: Sample District-Level Summary Performance Report



The District-Level Summary Report is similar to the State Summary Report, except that summary data are displayed for all students in the selected district who have completed the selected test with a valid reported score.

1.6.2 Aggregate-Level Subject Report

Detailed summaries of student performance within a grade and subject area are available within the Aggregate-Level Subject Report. The Aggregate-Level Subject Report presents results for the aggregate unit as well as the results for the state and any higher-level aggregate units. For example, a school Aggregate-Level Subject Report will also contain the summary results of the state and school district so that school performance can be compared with the previously mentioned aggregate levels.

The Aggregate-Level Subject Report provides the aggregate summaries on a specific subject area, including

- the number of students;
- the average scale score and standard error of the average scale score;
- the percentage of students proficient;
- the number of students in each performance level; and
- the percentage of students in each performance level.

The summaries are also presented for overall students and by subgroups. Figure 3 presents an example of an Aggregate-Level Subject Report for grade 6 mathematics at the district level without subgroups. Figure 4 highlights grade 6 ELA at the aggregate level when a user selects an enrolled grade as the subgroup. Figure 5 highlights grade 5 science at the district level without subgroups.

Figure 3: Sample District Aggregate-Level Subject Report for Grade 6 Mathematics

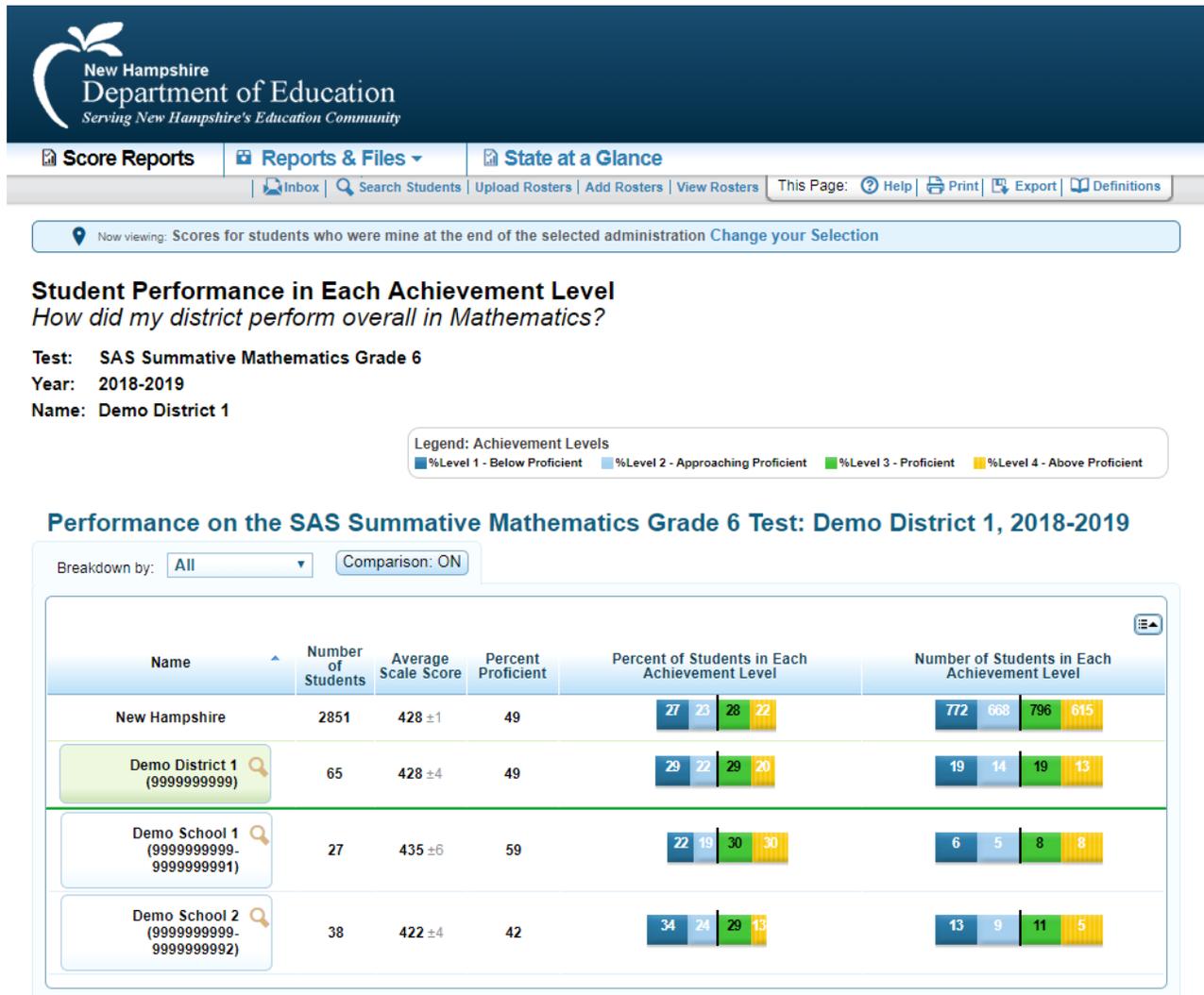


Figure 4: Sample District Aggregate-Level Subject Report for Grade 6 ELA/Reading

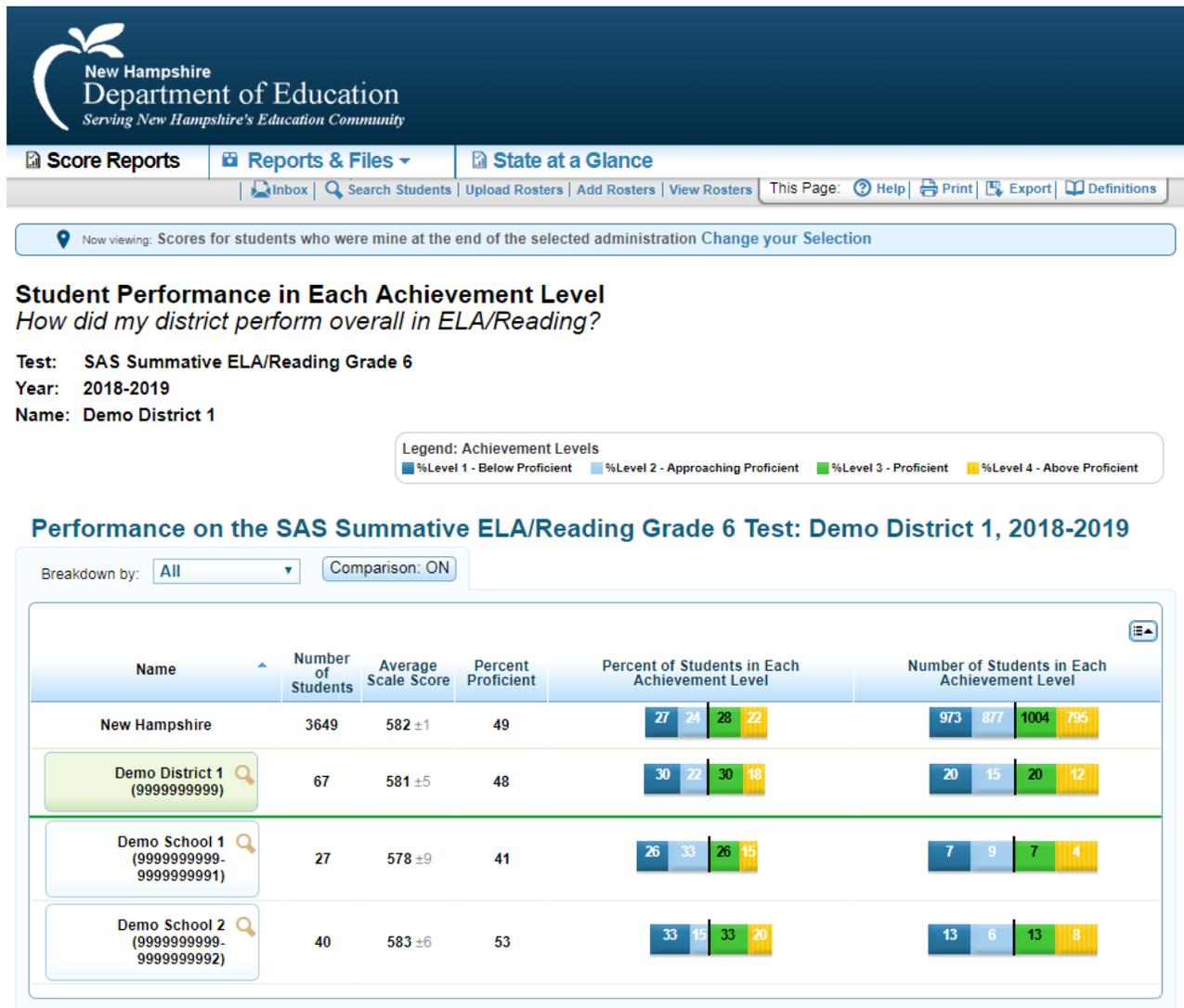
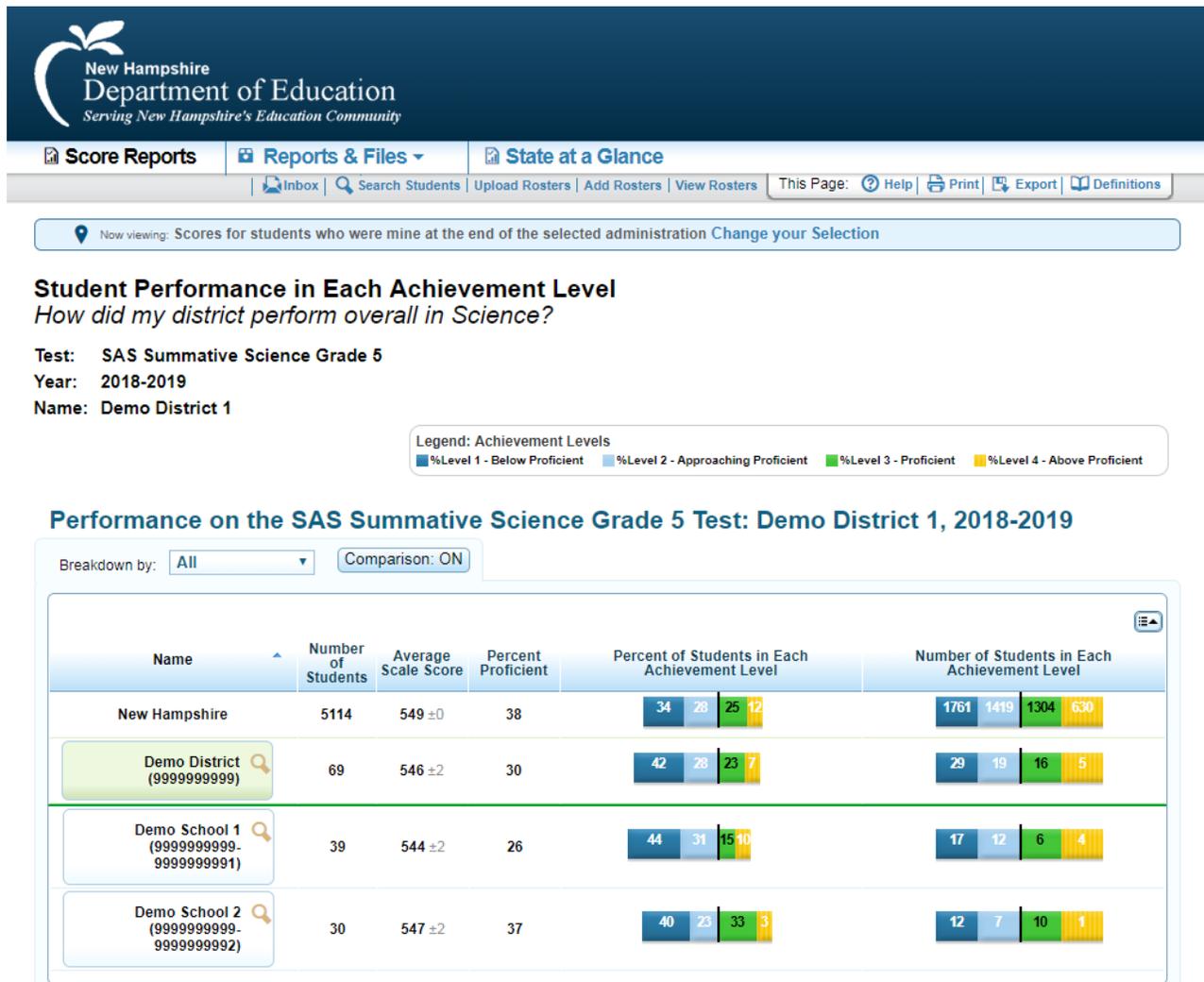


Figure 5: Sample District Aggregate-Level Subject Report for Grade 5 Science



1.6.3 Aggregate-Level Reporting Category Report

The Aggregate-Level Reporting Category Report provides the aggregate summaries on student performance in each reporting category for a grade and subject. The summaries on the Aggregate-Level Reporting Category Report include

- the number of students;
- the average scale score and standard error of the average scale score;
- the percentage proficient;
- for each reporting category, the percentage of students in each achievement category;
- for each science discipline, the average scale score and standard error of the average scale score; and
- for each ELA and mathematics reporting category, the relative strengths and weaknesses.

Similar to the Aggregate-Level Subject Report, this report presents the summary results for the selected aggregate unit as well as the summary results for the state and all aggregate units above the selected aggregate. In addition, summaries can be presented for all students within an aggregate and

by students within a defined subgroup. Figure 6, Figure 7, and Figure 8 present examples of the District Aggregate-Level Reporting Category Report for mathematics, ELA, and science, respectively.

Figure 6: Sample District Aggregate-Level Reporting Category Report for Grade 6 Mathematics

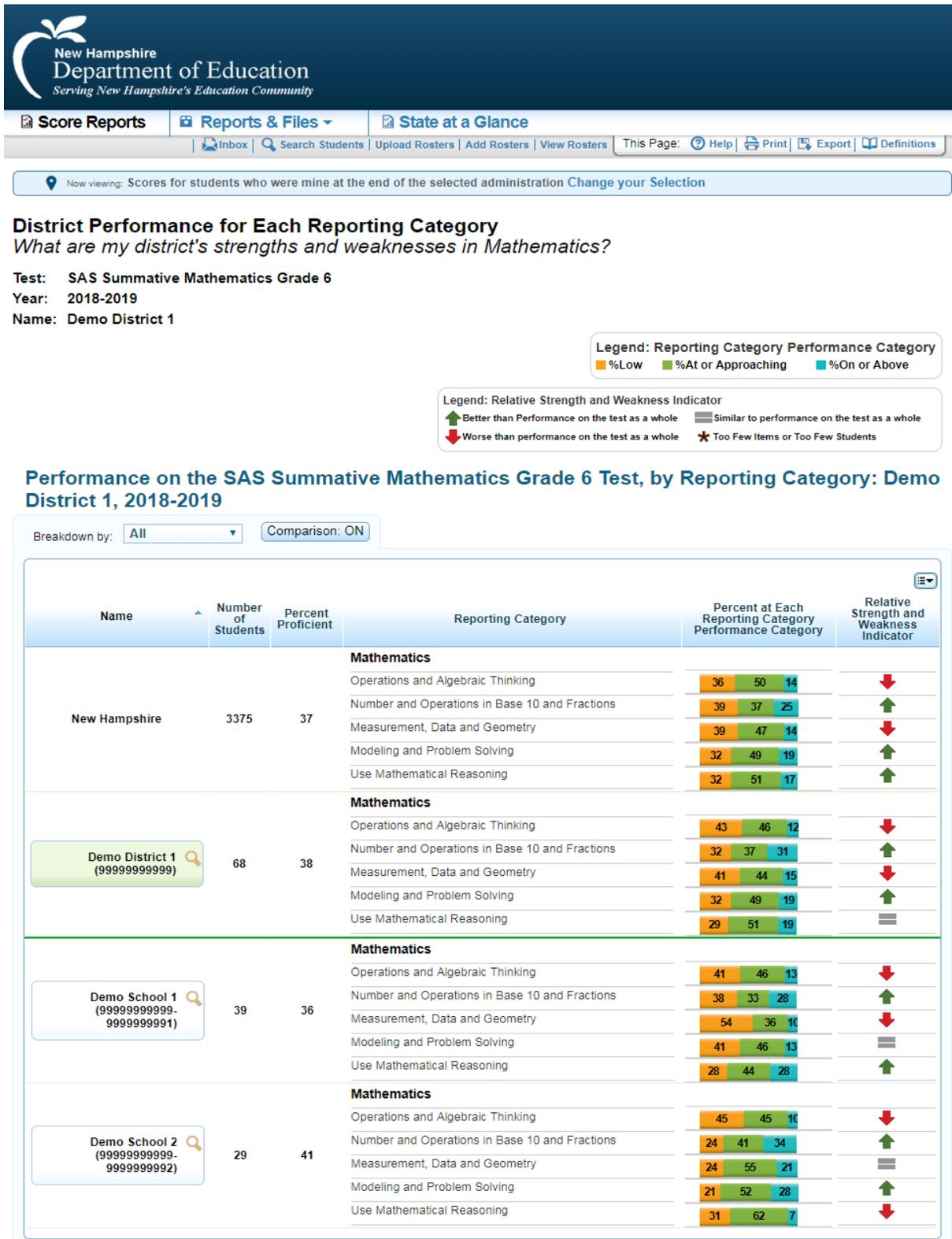


Figure 7: Sample District Aggregate-Level Reporting Category Report for Grade 6 ELA/Reading

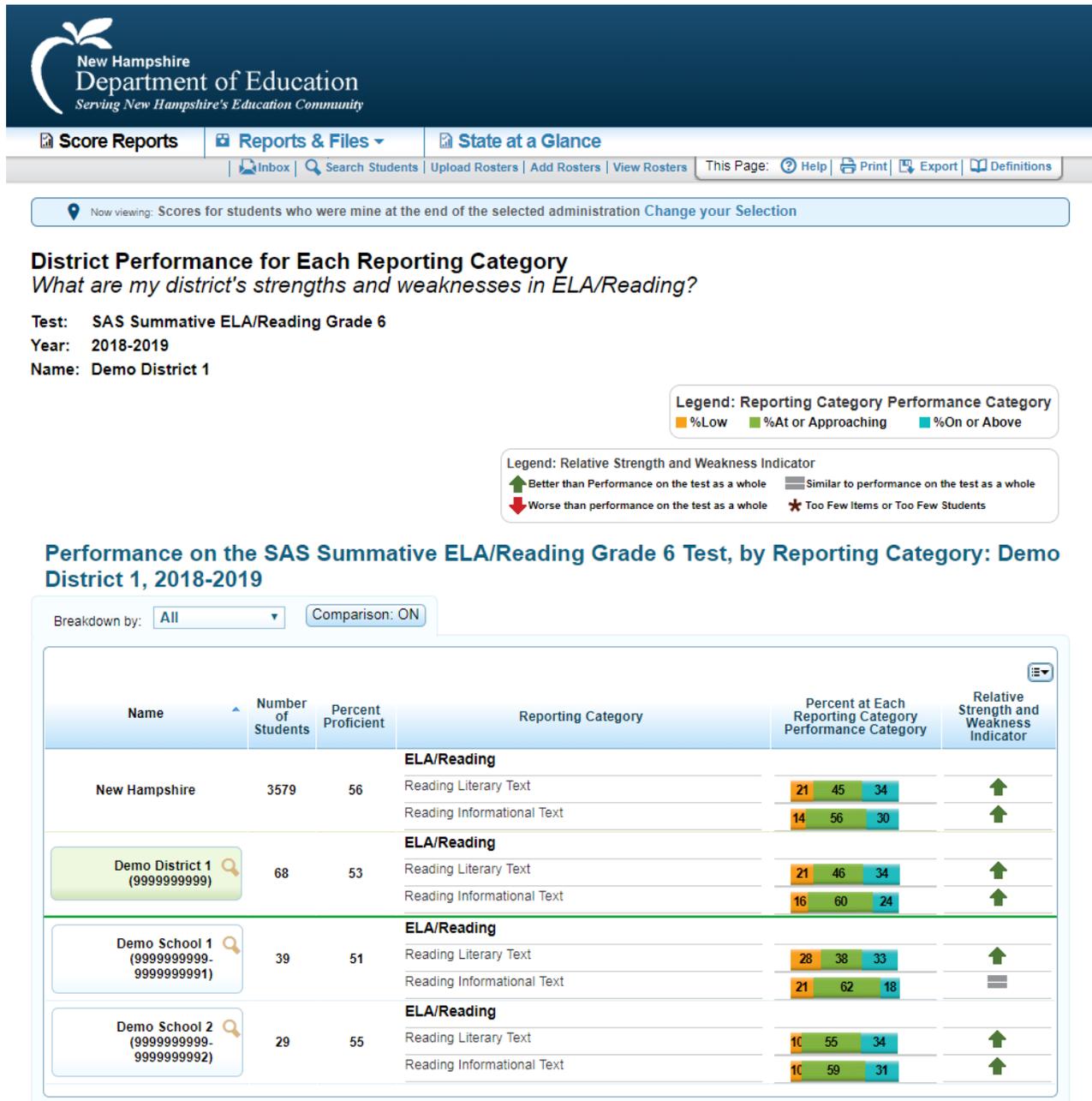
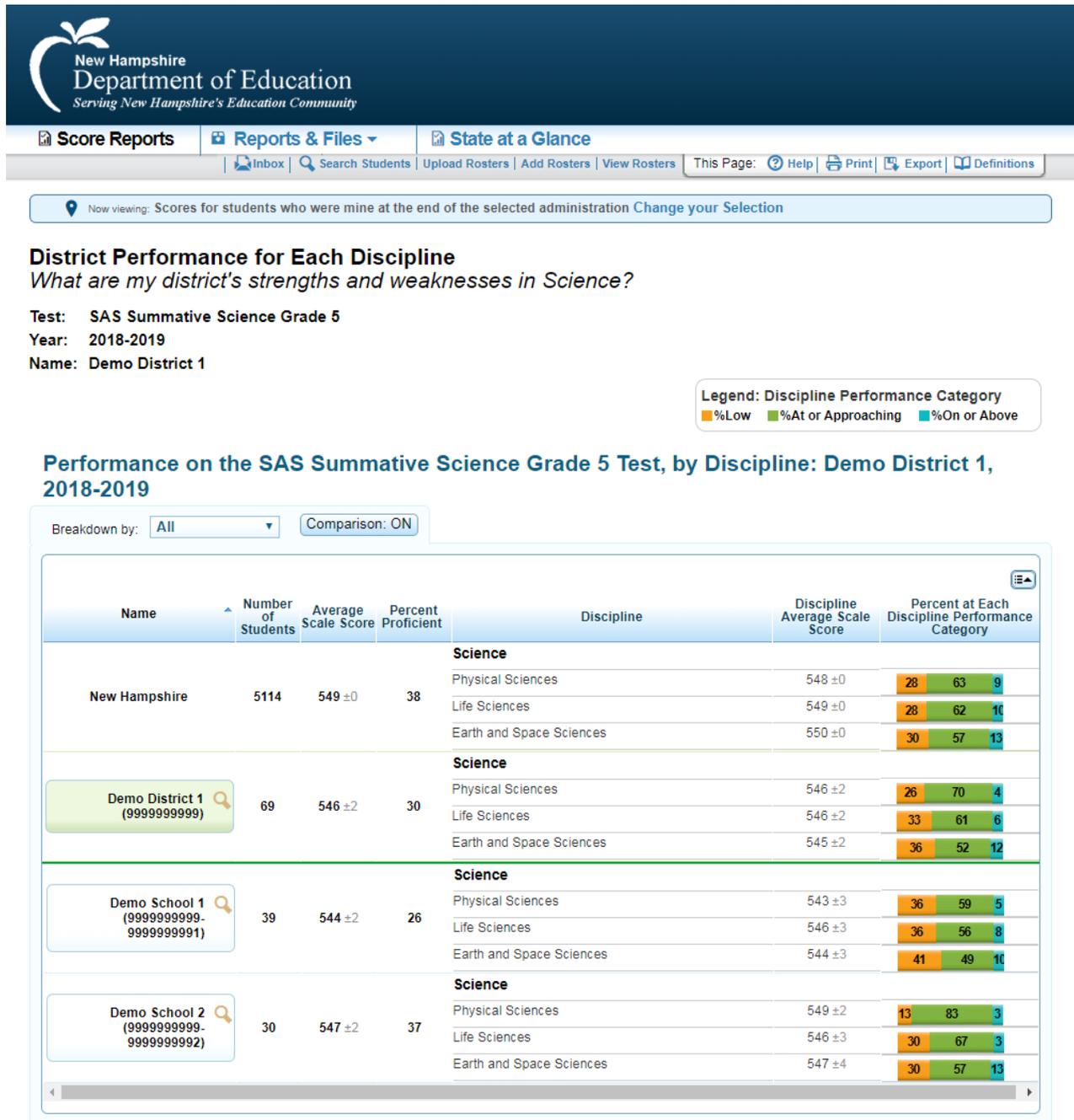


Figure 8: Sample District Aggregate-Level Discipline Report for Grade 5 Science



1.6.4 Aggregate-Level Standards Report

The Aggregate-Level Standards Report lists data on the performance of student groups on each standard of a subject for the current testing window and reports the following measures for the selected level of aggregation:

- Areas of Strongest and Weakest Performance
- Areas Where Performance Indicates Proficiency

For *Areas Where Performance Indicates Proficiency*, a performance indicator produces information on how a group of students in a roster, school, or district performed on the standard compared to the proficiency cut scores. It shows whether performance on this standard for this group was above, no different from, or below what is expected of students at the proficient level. *Areas of Strongest and Weakest Performance* works in a similar manner, but instead reports on specific areas of performance (via standards) relative to the group’s overall performance, rather than compared to proficiency. It shows whether performance on this standard was above, no different from, or below what is expected of students in this group given the students’ overall test performance. These indicators show strengths and weaknesses for a group of students and are provided only at an aggregate level, because they are unstable at the individual level.

Figure 9 and Figure 10 present examples of the Aggregate-Level Standards Report for ELA and mathematics, respectively.

Use Mathematical Reasoning		
Apply and extend previous understandings of numbers to the system of rational numbers		
Standard 6 Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.	—	☹
Standard 7 Understand ordering and absolute value of rational numbers.	—	☹
Apply and extend previous understandings of arithmetic to algebraic expressions		
Standard 3 Apply the properties of operations to generate equivalent expressions. For example, apply the distributive property to the expression $3(2 + x)$ to produce the equivalent expression $6 + 3x$; apply the distributive property to the expression $24x + 18y$ to produce the equivalent expression $6(4x + 3y)$; apply properties of operations to $y + y + y$ to produce the equivalent expression $3y$.	=	✓
Reason about and solve one-variable equations and inequalities		
Standard 5 Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.	+	✓
Solve real-world and mathematical problems involving area, surface area, and volume		
Standard 1 Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.	=	✓
Standard 2 Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas $V = lwh$ and $V = bh$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.	=	✓
Develop understanding of statistical variability		
Standard 3 Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.	+	✓

Figure 11 presents an example of the Aggregate-Level Disciplinary Core Ideas Report for science.

Figure 9: Sample District Aggregate-Level Standards Report for Grade 6 ELA/Reading

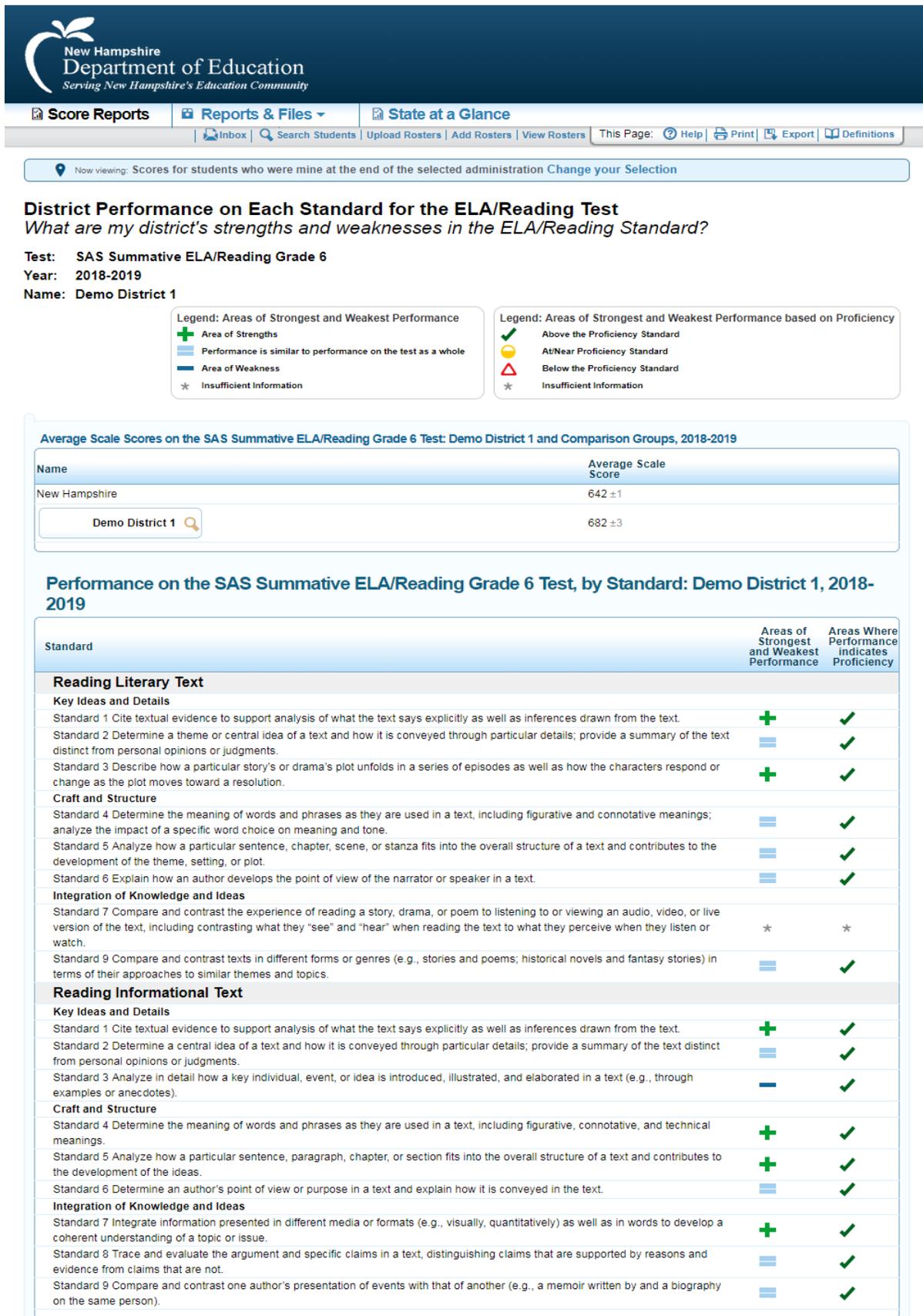


Figure 10: Sample District Aggregate-Level Standards Report for Grade 6 Mathematics

District Performance on Each Standard for the Mathematics Test
What are my district's strengths and weaknesses in the Mathematics Standard?

Test: SAS Summative Mathematics Grade 6
 Year: 2018-2019
 Name: Demo District 1

Legend: Areas of Strongest and Weakest Performance

- + Area of Strengths
- = Performance is similar to performance on the test as a whole
- Area of Weakness
- ☆ Insufficient Information

Legend: Areas of Strongest and Weakest Performance based on Proficiency

- ✔ Above the Proficiency Standard
- ⊖ At/Near Proficiency Standard
- ⚠ Below the Proficiency Standard
- ☆ Insufficient Information

Average Scale Scores on the SAS Summative Mathematics Grade 6 Test: Demo District 1 and Comparison Groups, 2018-2019

Name	Average Scale Score
New Hampshire	503 ±1
Demo District (999999999)	557 ±9

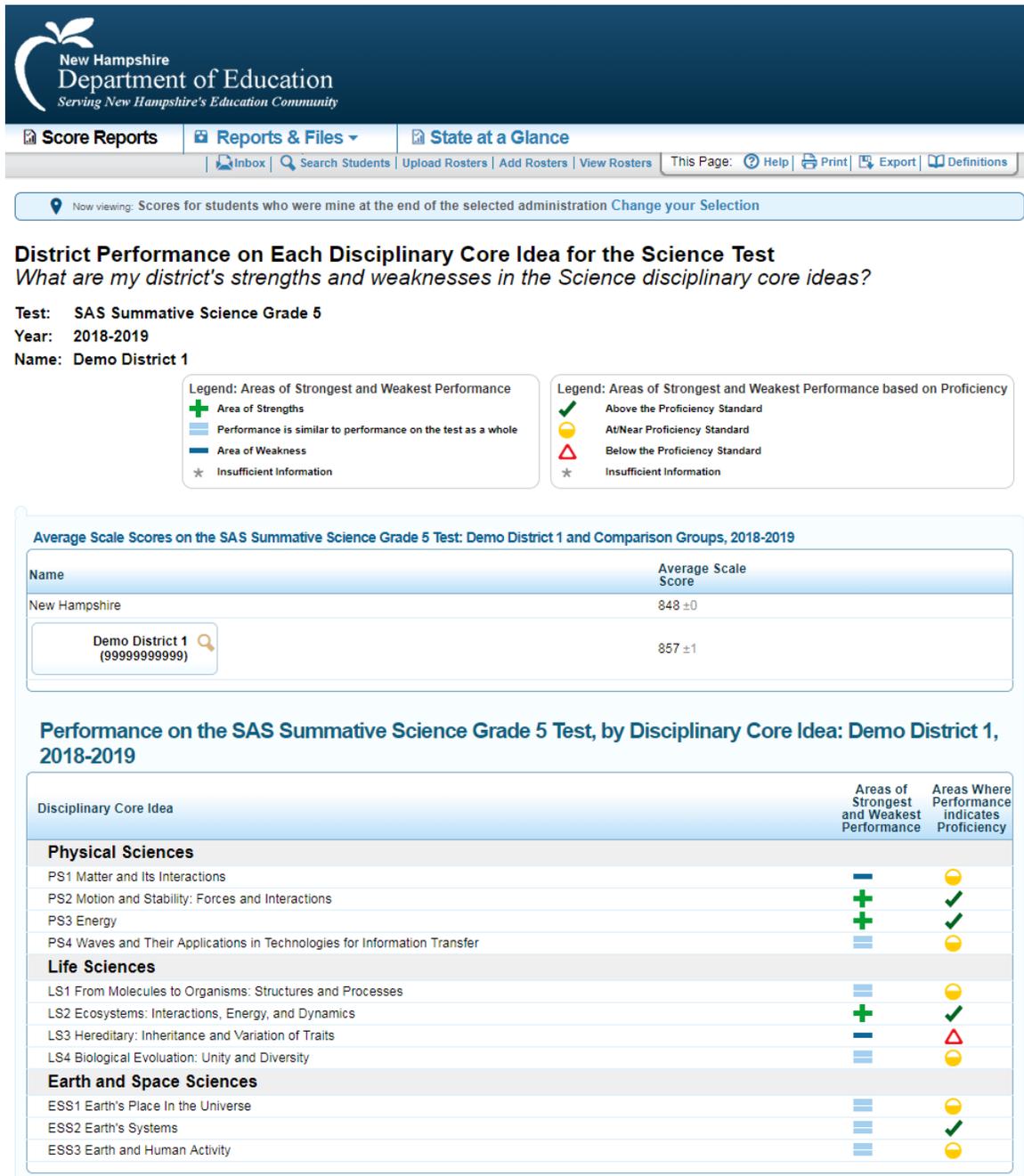
Performance on the SAS Summative Mathematics Grade 6 Test, by Standard: Demo District 1, 2018-2019

Standard	Areas of Strongest and Weakest Performance	Areas Where Performance indicates Proficiency
Ratios and Proportional Relationships and Number System		
Understand ratio concepts and use ratio reasoning to solve problems		
Standard 1 Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. For example, "The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak." "For every vote candidate A received, candidate C received nearly three votes."	+	✔
Standard 2 Understand the concept of a unit rate a/b associated with a ratio a:b with b ≠ 0, and use rate language in the context of a ratio relationship. For example, "This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is 3/4 cup of flour for each cup of sugar." "We paid \$75 for 15 hamburgers, which is a rate of \$5 per hamburger."	-	⊖
Standard 3 Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.	+	✔
Apply and extend previous understandings of multiplication and division to divide fractions by fractions		
Standard 1 Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem. For example, create a story context for (2/3) ÷ (3/4) and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that (2/3) ÷ (3/4) = 8/9 because 3/4 of 8/9 is 2/3. (In general, (a/b) ÷ (c/d) = ad/bc.) How much chocolate will each person get if 3 people share 1/2 lb of chocolate equally? How many 3/4-cup servings are in 2/3 of a cup of yogurt? How wide is a rectangular strip of land with length 3/4 mi and area 1/2 square mi?	+	✔
Compute fluently with multi-digit numbers and find common factors and multiples		
Standard 2 Fluently divide multi-digit numbers using the standard algorithm.	-	⊖
Standard 3 Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.	=	✔
Standard 4 Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1-100 with a common factor as a multiple of a sum of two whole numbers with no common factor. For example, express 36 + 8 as 4(9 + 2).	=	✔
Apply and extend previous understandings of numbers to the system of rational numbers		
Standard 5 Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.	-	⊖
Standard 6 Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.	-	⊖
Standard 7 Understand ordering and absolute value of rational numbers.	-	⊖
Standard 8 Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.	+	✔

Reason about and solve one-variable equations and inequalities		
Standard 5 Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.	+	✓
Standard 6 Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set. (need to differentiate between 6.EE.II.6 and 6.EE.II.8)	+	✓
Standard 7 Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p , q and x are all nonnegative rational numbers.	+	✓
Standard 8 Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions; represent solutions of such inequalities on number line diagrams.	–	✓
Represent and analyze quantitative relationships between dependent and independent variables		
Standard 9 Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation $d = 65t$ to represent the relationship between distance and time.	=	✓
Geometry & Statistics and Probability		
Solve real-world and mathematical problems involving area, surface area, and volume		
Standard 1 Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.	=	✓
Standard 2 Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas $V = lwh$ and $V = bh$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.	=	✓
Standard 3 Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.	–	⊖
Standard 4 Represent three-dimensional figures using nets made up of rectangles and triangles, [and circles] and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.	–	⊖
Develop understanding of statistical variability		
Standard 1 Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. For example, “How old am I?” is not a statistical question, but “How old are the students in my school?” is a statistical question because one anticipates variability in students’ ages.	=	⊖
Standard 2 Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.	=	⊖
Standard 3 Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.	+	✓
Summarize and describe distributions		
Standard 4 Display numerical data in plots on a number line, including dot plots, histograms, and box plots.	–	⊖
Standard 5 Summarize numerical data sets in relation to their context	=	✓
Modeling and Problem Solving		
Understand ratio concepts and use ratio reasoning to solve problems		
Standard 3 Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.	+	✓
Apply and extend previous understandings of multiplication and division to divide fractions by fractions		
Standard 1 Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem. For example, create a story context for $(2/3) \div (3/4)$ and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that $(2/3) \div (3/4) = 8/9$ because $3/4$ of $8/9$ is $2/3$. (In general, $(a/b) \div (c/d) = ad/bc$.) How much chocolate will each person get if 3 people share $1/2$ lb of chocolate equally? How many $3/4$ -cup servings are in $2/3$ of a cup of yogurt? How wide is a rectangular strip of land with length $3/4$ mi and area $1/2$ square mi?.	+	✓
Apply and extend previous understandings of numbers to the system of rational numbers		
Standard 8 Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.	+	✓
Reason about and solve one-variable equations and inequalities		
Standard 6 Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set. (need to differentiate between 6.EE.II.6 and 6.EE.II.8)	+	✓
Standard 7 Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p , q and x are all nonnegative rational numbers.	+	✓
Standard 8 Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions; represent solutions of such inequalities on number line diagrams.	–	✓
Represent and analyze quantitative relationships between dependent and independent variables		
Standard 9 Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation $d = 65t$ to represent the relationship between distance and time.	=	✓
Summarize and describe distributions		
Standard 5 Summarize numerical data sets in relation to their context	=	✓

Use Mathematical Reasoning		
Apply and extend previous understandings of numbers to the system of rational numbers		
Standard 6 Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.	—	☹
Standard 7 Understand ordering and absolute value of rational numbers.	—	☹
Apply and extend previous understandings of arithmetic to algebraic expressions		
Standard 3 Apply the properties of operations to generate equivalent expressions. For example, apply the distributive property to the expression $3(2 + x)$ to produce the equivalent expression $6 + 3x$; apply the distributive property to the expression $24x + 18y$ to produce the equivalent expression $6(4x + 3y)$; apply properties of operations to $y + y + y$ to produce the equivalent expression $3y$.	=	✓
Reason about and solve one-variable equations and inequalities		
Standard 5 Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.	+	✓
Solve real-world and mathematical problems involving area, surface area, and volume		
Standard 1 Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.	=	✓
Standard 2 Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas $V = lwh$ and $V = bh$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.	=	✓
Develop understanding of statistical variability		
Standard 3 Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.	+	✓

Figure 11: Sample District Aggregate-Level Disciplinary Core Ideas Report for Grade 5 Science



1.6.5 Student Roster Subject Report

The Student Roster Subject Report lists all students who belong to the selected aggregate level, such as a school, and reports the following measures for each student:

- Scale score
- Overall subject performance level

Figure 12, Figure 13, and Figure 14 demonstrate examples of the Student Roster Subject Report for mathematics, ELA, and science, respectively.

Figure 12: Sample Student Roster Subject Report for Grade 6 Mathematics

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Student Performance in Each Achievement Level

How did my students perform overall in Mathematics?

Test: SAS Summative Mathematics Grade 6
Year: 2018-2019
Name: Demo Roster

Breakdown by:

Average Scale Scores on the SAS Summative Mathematics Grade 6 Test: Demo Roster and Comparison Groups, 2018-2019

Name	Average Scale Score
New Hampshire	503 ±1
Demo District 1 (999999999)	557 ±9
Demo School 1 (999999999-999999991)	557 ±9
Demo, Roster	560 ±21
Demo Roster	560 ±21

Performance on the SAS Summative Mathematics Grade 6 Test, by Student: Demo Roster, 2018-2019

Name	SSID	Scale Score	Achievement Level
Demo, Student A.	99999991	577 ±12	Level 4 - Above Proficient
Demo, Student B.	99999992	564 ±11	Level 4 - Above Proficient
Demo, Student C.	99999993	587 ±12	Level 4 - Above Proficient
Demo, Student D.	99999994	481 ±16	Level 2 - Approaching Proficient
Demo, Student E.	99999995	593 ±11	Level 4 - Above Proficient

Figure 13: Sample Student Roster Subject Report for Grade 6 ELA/Reading



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Now viewing: Scores for students who were mine at the end of the selected administration [Change your Selection](#)

Student Performance in Each Achievement Level

How did my students perform overall in ELA/Reading?

Test: SAS Summative ELA/Reading Grade 6
Year: 2018-2019
Name: Demo Roster

Breakdown by: All Go

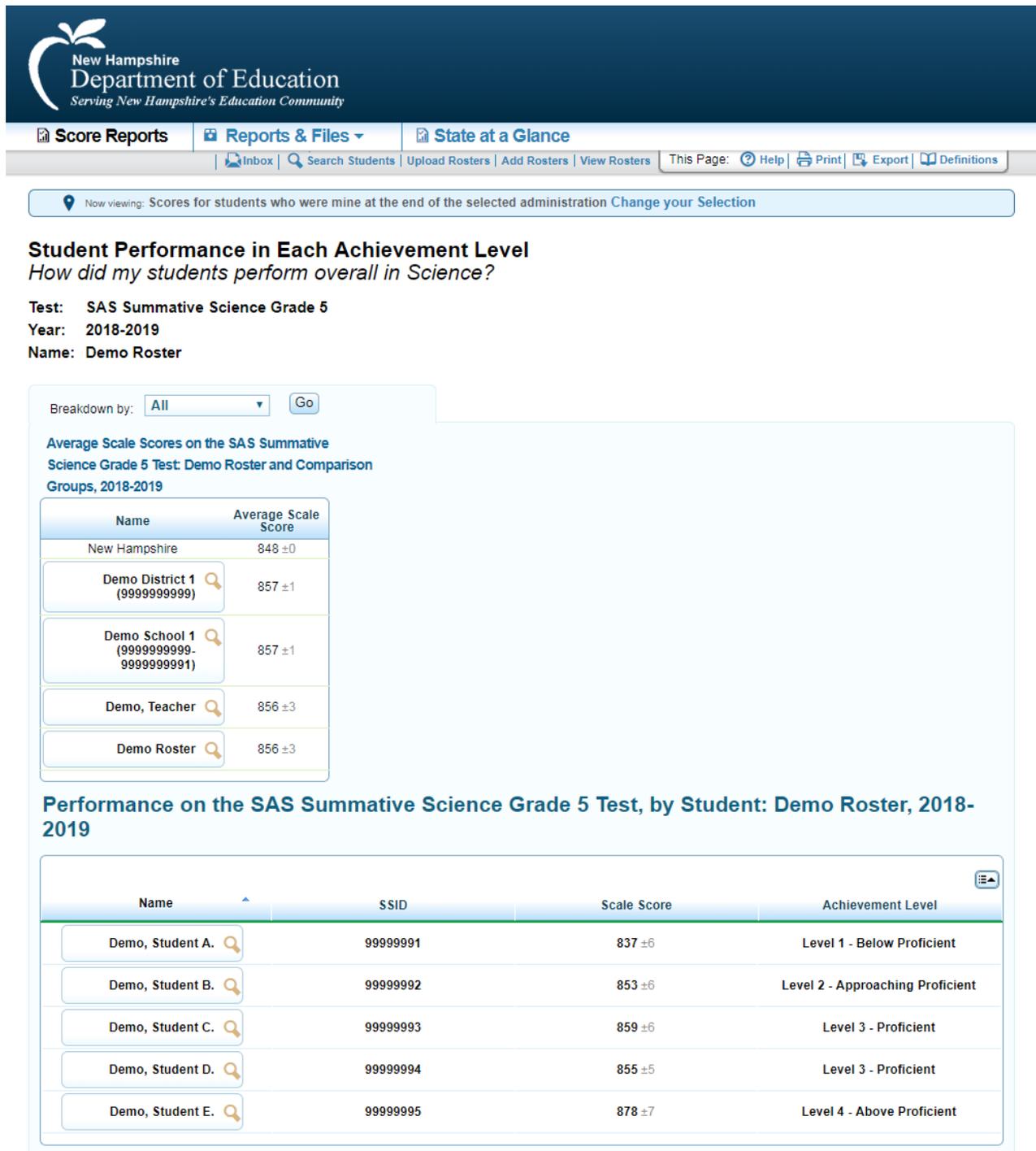
Average Scale Scores on the SAS Summative ELA/Reading Grade 6 Test: Demo Roster and Comparison Groups, 2018-2019

Name	Average Scale Score
New Hampshire	642 ±1
Demo District 1 (999999999)	682 ±3
Demo School 1 (999999999-999999991)	682 ±3
Demo, Teacher	672 ±10
Demo Roster	672 ±10

Performance on the SAS Summative ELA/Reading Grade 6 Test, by Student: Demo Roster, 2018-2019

Name	SSID	Scale Score	Achievement Level
Demo, Student A.	99999991	591 ±13	Level 1 - Below Proficient
Demo, Student B.	99999992	713 ±13	Level 4 - Above Proficient
Demo, Student C.	99999993	716 ±15	Level 4 - Above Proficient
Demo, Student D.	99999994	732 ±14	Level 4 - Above Proficient
Demo, Student E.	99999995	636 ±12	Level 2 - Approaching Proficient

Figure 14: Sample Student Roster Subject Report for Grade 5 Science



1.6.6 Student Roster Reporting Category Report

The Student Roster Reporting Category Report records the following measures for each student:

- Scale score
- Overall subject performance level
- Reporting category achievement category (ELA and mathematics)
- Discipline achievement category (science)

Figure 15 and Figure 16 present examples of the Student Roster Reporting Category Report for ELA and mathematics, respectively. Figure 17 presents an example of the Student Roster Discipline Report for science.

Figure 15: Sample Student Roster Reporting Category Report for Grade 6 ELA/Reading

Student Performance on Each Reporting Category
 How did my students perform on the ELA/Reading test?

Test: SAS Summative ELA/Reading Grade 6
 Year: 2018-2019
 Name: Demo Roster

Legend: Reporting Category Performance Category

Low At or Approaching On or Above

Breakdown by: All Go

Average Scale Scores on the SAS Summative ELA/Reading Grade 6 Test: Demo Roster and Comparison Groups, 2018-2019

Name	Average Scale Score
New Hampshire	642 ±1
Demo District 1 (999999999)	682 ±3
Demo School 1 (999999999-999999991)	682 ±3
Demo, Teacher	672 ±10
Demo Roster	672 ±10

Performance on the SAS Summative ELA/Reading Grade 6 Test, by Student, Reporting Category: Demo Roster, 2018-2019

Name	SSID	Scale Score	Achievement Level	Reading Literary Text	Reading Informational Text
Demo, Student A.	9999991	591 ±13	Level 1 - Below Proficient		
Demo, Student B.	9999992	713 ±13	Level 4 - Above Proficient		
Demo, Student C.	9999993	716 ±15	Level 4 - Above Proficient		
Demo, Student D.	9999994	732 ±14	Level 4 - Above Proficient		
Demo, Student E.	9999995	636 ±12	Level 2 - Approaching Proficient		

Figure 16: Sample Student Roster Reporting Category Report for Grade 6 Mathematics



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Student Performance on Each Reporting Category

How did my students perform on the Mathematics test?

Test: SAS Summative Mathematics Grade 6
Year: 2018-2019
Name: Demo Roster

Legend: Reporting Category Performance Category

⚠ Low ▣ At or Approaching ✔ On or Above

Breakdown by: All Go

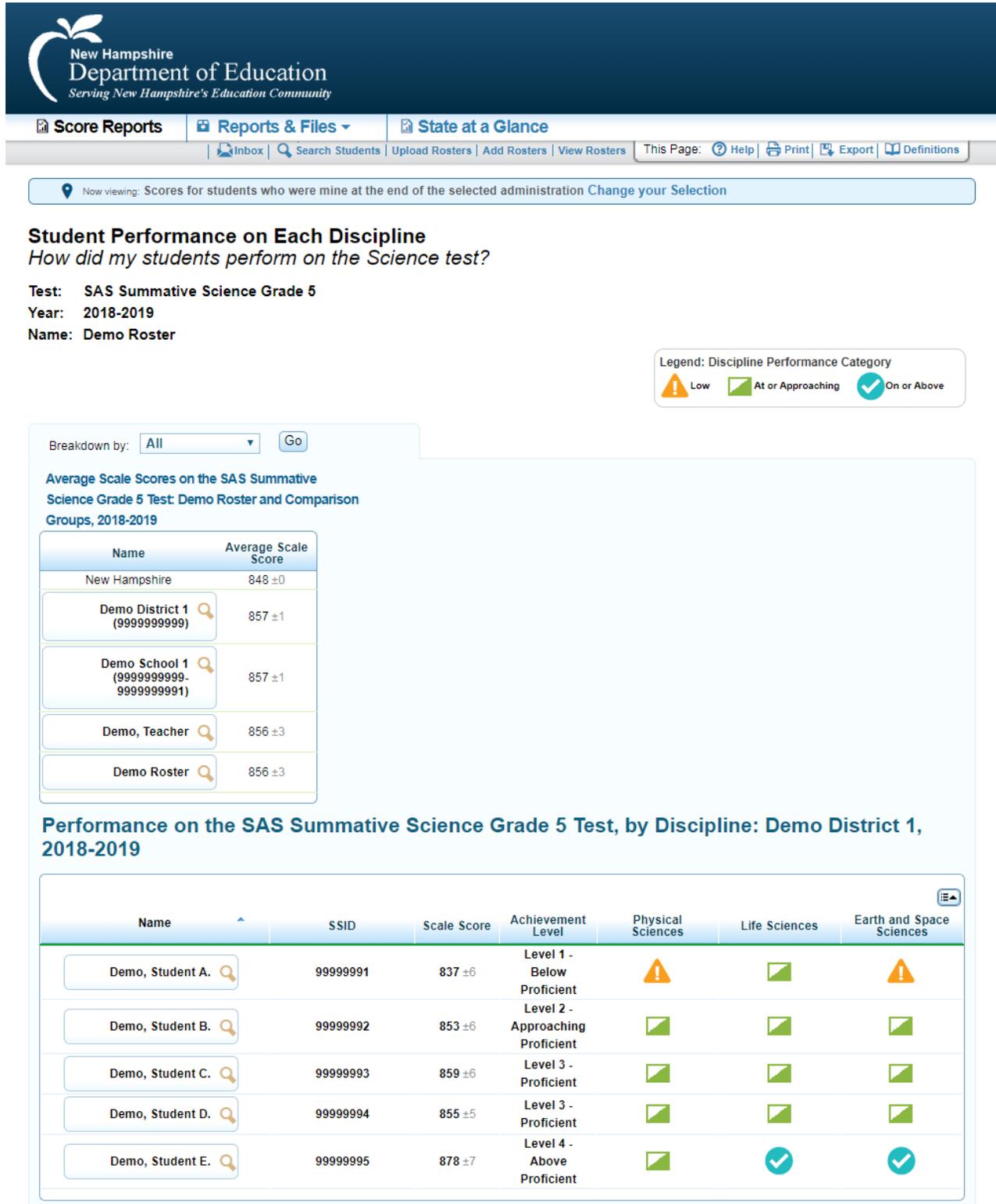
Average Scale Scores on the SAS Summative Mathematics Grade 6 Test: Demo Roster and Comparison Groups, 2018-2019

Name	Average Scale Score
New Hampshire	503 ±1
Demo District 1 (999999999)	557 ±9
Demo School 1 (999999999-999999991)	557 ±9
Demo, Teacher	560 ±21
Demo Roster	560 ±21

Performance on the SAS Summative Mathematics Grade 6 Test, by Student, Reporting Category: Demo Roster, 2018-2019

Name	SSID	Scale Score	Achievement Level	Ratios and Proportional Relationships and Number System	Expressions and Equations	Geometry & Statistics and Probability	Modeling and Problem Solving	Use
Demo, Student A.	99999991	577 ±12	Level 4 - Above Proficient	✔	✔	▣	✔	
Demo, Student B.	99999992	564 ±11	Level 4 - Above Proficient	✔	▣	▣	✔	
Demo, Student C.	99999993	587 ±12	Level 4 - Above Proficient	✔	✔	✔	✔	
Demo, Student D.	99999994	481 ±16	Level 2 - Approaching Proficient	⚠	▣	▣	▣	
Demo, Student E.	99999995	593 ±11	Level 4 - Above Proficient	✔	✔	✔	✔	

Figure 17: Sample Student Roster Discipline Report for Grade 5 Science



1.6.7 Individual Student Report

When a student receives a valid test score, an individual student report (ISR) can be generated in the ORS. The ISR contains

- scale score and SEM;
- overall subject performance level;
- achievement category in each reporting category (ELA and mathematics);
- achievement category in each discipline (science); and
- writing performance descriptors in each dimension (ELA).

Data at the top of the ISR include

- the student’s name;
- the student’s scale score with SEM; and
- the student’s performance level.

The middle section includes

- a barrel chart with the student’s scale score and SEM (using “±”); and
- the PLDs with cut scores at each performance level.

Data at the bottom of the report include

- writing dimension scores (ELA only) along with a performance description for each writing dimension; and
- detailed information on student performance on each reporting category/discipline.
 - *Note:* Bar charts in the reporting category/discipline table show how students performed on each reporting category/discipline (black bar) relative to the reporting category/discipline achievement standard (dashed white line). Green boxes show the score range the student would likely fall within if he or she took the test multiple times.

Figure 18, Figure 19, and Figure 20 present examples of ISRs for grade 6 ELA, grade 6 mathematics, and grade 5 science. For more information about printing ISRs, see Appendix C: New Hampshire Statewide Assessment System, Printing Batch ISRs.

Figure 18: Sample Individual Student Report for Grade 6 ELA/Reading



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Individual Student Report

How did my student perform on the ELA/Reading test?

Test: SAS Summative ELA/Reading Grade 6 i
Year: 2018-2019
Name: Demo, Student A.

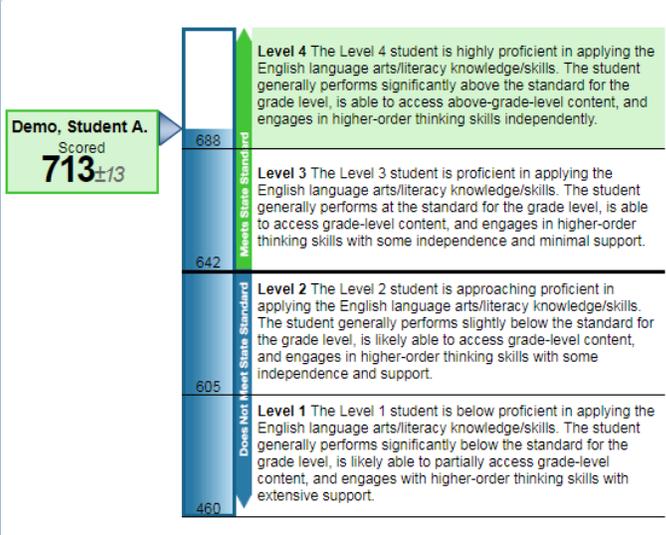
Legend: Reporting Category Performance Category

! Low ■ At or Approaching ✓ On or Above

Overall Performance on the SAS Summative ELA/Reading Grade 6 Test: Demo, Student A., 2018-2019 i

Name	SSID	Scale Score	Achievement Level
Demo, Student A. Q	99999991	713 ±13	Level 4 - Above Proficient

Scale Score and Performance on the SAS Summative ELA/Reading Grade 6 Test: Demo, Student A., 2018-2019 i



Demo, Student A.
Scored **713 ±13**

Information on Standard Error of Measurement

A student's score is best interpreted when recognizing that the student's knowledge and skills fall within a score range and not just a precise number. For example, 500 (+/-30) indicates a score range between 470 and 530.

The table and the graph below indicate student performance on individual reporting categories/disciplines. The black line indicate student's score on each reporting category/discipline. The green rectangle shows the range of likely scores your student would receive if he or she took the test multiple times.

Performance on the SAS Summative ELA/Reading Grade 6 Test, by Reporting Category: Demo, Student A., 2018-2019 i

Reporting Category	Reporting Category Performance	Reporting Category Description
Reading Literary Text	 ✓ On or Above	<p>What These Results Mean Your student can almost always determine the theme and supporting details of a text; describe how characters change; explain how an author develops a point of view; identify how the parts of a story fit into its overall structure; and analyze how texts from different forms, genres, or media approach similar ideas.</p> <p>Next Steps Ask your student to read a story and explain how the narrator develops the characters' points of view in the story. Ask your student to explain the theme of the story; then have him or her compare it with a work from a different form or genre with a similar theme.</p>

Reading Informational Text



On or Above

What These Results Mean
Your student can almost always determine the central idea and supporting details in a text; explain relationships between people or events in a text; identify the author's point of view; evaluate evidence an author uses to support a claim; and compare and contrast the ways two authors describe the same event.

Next Steps
Ask your student to read different types of informational texts and explain how key events, people, or ideas are introduced and developed. Ask your student to compare texts about the same topic and discuss the authors' different interpretations, supporting evidence, and ideas.

Writing Performance on the SAS Summative ELA/Reading Grade 6 Test, Based on the SAS Summative Performance Task Writing Rubric: Demo, Student A., 2018-2019

Essay	Purpose, Focus, and Organization	Evidence and Elaboration	Conventions of Standard English
Informative/Explanatory	The response is adequately sustained and generally focused within the purpose, audience, and task; and it has a clear controlling idea and evident organizational structure with a sense of completeness. The response includes most of the following: Maintained controlling idea, though some loosely related material may be present; Adequate use of a variety of transitional strategies to clarify the relationships between and among ideas; Adequate progression of ideas from beginning to end with a sufficient introduction and conclusion; and Appropriate style and objective tone established (3 out of 4 points)	The response provides adequate support, citing evidence for the controlling idea or main idea that includes the use of sources, facts, and details. The response includes most of the following: Generally integrated and relevant evidence from sources, though references may be general or imprecise; Adequate use of some elaborative techniques; Adequate expression of ideas, employing a mix of precise and general language; Domain-specific vocabulary generally appropriate for the audience and purpose; and Some variation in sentence structure (3 out of 4 points)	The response demonstrates an adequate command of basic conventions. The response may include the following: Some minor errors in usage but no patterns of errors; and Adequate use of punctuation, capitalization, sentence formation, and spelling (2 out of 2 points)

Figure 19: Sample Individual Student Report for Grade 6 Mathematics



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Individual Student Report

How did my student perform on the Mathematics test?

Test: SAS Summative Mathematics Grade 6 i

Year: 2018-2019

Name: Demo, Student A.

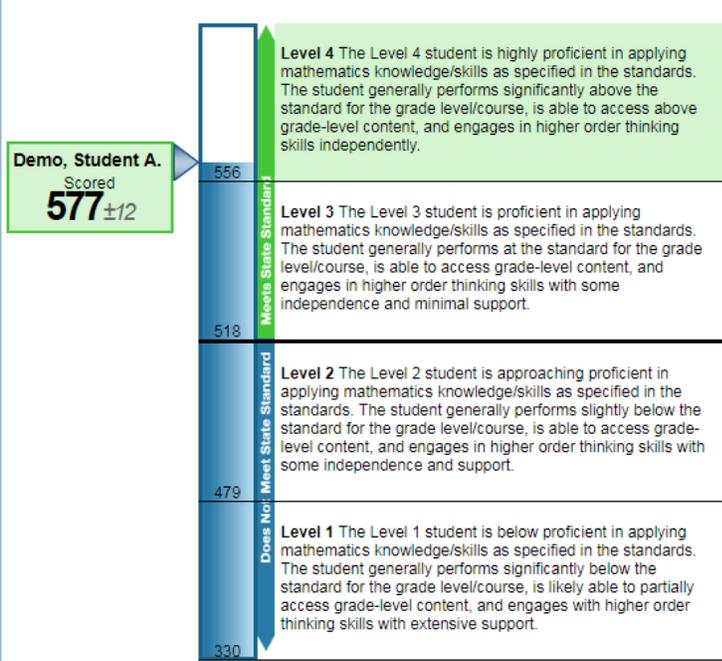
Legend: Reporting Category Performance Category

! Low ▢ At or Approaching ✔ On or Above

Overall Performance on the SAS Summative Mathematics Grade 6 Test: Demo, Student A., 2018-2019 i

Name	S SID	Scale Score	Achievement Level
Demo, Student A. Q	99999991	577 ±12	Level 4 - Above Proficient

Scale Score and Performance on the SAS Summative Mathematics Grade 6 Test: Demo, Student A., 2018-2019 i



Demo, Student A. Scored 577 ±12

Level 4 The Level 4 student is highly proficient in applying mathematics knowledge/skills as specified in the standards. The student generally performs significantly above the standard for the grade level/course, is able to access above grade-level content, and engages in higher order thinking skills independently.

Level 3 The Level 3 student is proficient in applying mathematics knowledge/skills as specified in the standards. The student generally performs at the standard for the grade level/course, is able to access grade-level content, and engages in higher order thinking skills with some independence and minimal support.

Level 2 The Level 2 student is approaching proficient in applying mathematics knowledge/skills as specified in the standards. The student generally performs slightly below the standard for the grade level/course, is able to access grade-level content, and engages in higher order thinking skills with some independence and support.

Level 1 The Level 1 student is below proficient in applying mathematics knowledge/skills as specified in the standards. The student generally performs significantly below the standard for the grade level/course, is likely able to partially access grade-level content, and engages with higher order thinking skills with extensive support.

Information on Standard Error of Measurement

A student's score is best interpreted when recognizing that the student's knowledge and skills fall within a score range and not just a precise number. For example, 500 (+/-30) indicates a score range between 470 and 530.

The table and the graph below indicate student performance on individual reporting categories/disciplines. The black line indicate student's score on each reporting category/discipline. The green rectangle shows the range of likely scores your student would receive if he or she took the test multiple times.

Performance on the SAS Summative Mathematics Grade 6 Test, by Reporting Category: Demo, Student A., 2018-2019 i

Reporting Category	Reporting Category Performance	Reporting Category Description
Ratios and Proportional Relationships and Number System	 <p>Below the Standard Above the Standard</p>	<p>What These Results Mean Your student can almost always apply ratio reasoning, divide by fractions, fluently compute multi-digit numbers, find common factors and multiples, and understand the rational number system.</p> <p>Next Steps With your child, decide which products cost the least per ounce. Find the temperatures of 5 cities (some negative) to analyze on a number line, and examine absolute value as distance.</p>
Expressions and Equations	 <p>Below the Standard Above the Standard</p>	<p>What These Results Mean Your student can almost always interpret algebraic expressions, write and solve algebraic equations and inequalities, and analyze the relationship between variables in a real-world problem.</p> <p>Next Steps With your child, solve real-world story problems using variables while your child asks questions. Is my strategy working? Is my strategy generalizable? Does my answer make sense?</p>
Geometry & Statistics and Probability	 <p>Below the Standard Above the Standard</p>	<p>What These Results Mean Your student can often solve area and volume problems; use nets to find surface area; understand statistical questions, distribution, and variability; and display and describe data sets.</p> <p>Next Steps With your child, sketch nets made of rectangles and triangles to represent household objects and estimate their surface areas. Discuss statistical questions your child could ask classmates.</p>
Modeling and Problem Solving	 <p>Below the Standard Above the Standard</p>	<p>What These Results Mean Your student can almost always solve complex, real-world problems; apply prior knowledge and problem-solving strategies; and construct mathematical models to interpret and solve problems.</p> <p>Next Steps With your child, solve multi-step problems using different mathematical models and discuss the advantages of each model.</p>
Use Mathematical Reasoning	 <p>Below the Standard Above the Standard</p>	<p>What These Results Mean Your student can often explain mathematical concepts, interpret well-posed word problems, construct viable arguments to support his or her reasoning, and critique the others' reasoning.</p> <p>Next Steps With your child, practice explaining the mathematics setup in multi-step word problems and the solution processes in detail.</p>

Figure 20: Sample Individual Student Report for Grade 5 Science



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Individual Student Report

How did my student perform on the Science test?

Test: SAS Summative Science Grade 5 i

Year: 2018-2019

Name: Demo, Student A.

Legend: Discipline Performance Category

⚠ Low
 ✔ At or Approaching
 ✔ On or Above

Overall Performance on the SAS Summative Science Grade 5 Test: Demo, Student A., 2018-2019 i

Name	SSID	Scale Score	Achievement Level
Demo, Student A. 🔍	99999991	567 ±6	Level 4 - Above Proficient

Scale Score and Performance on the SAS Summative Science Grade 5 Test: Demo, Student A., 2018-2019 i

Demo, Student A. Scored 567 ±6

Level 4 Level 4: Above proficient learners demonstrate mastery in applying more complex science and engineering practices, disciplinary core ideas, and crosscutting concepts, as specified in state standards, to local and global phenomena, becoming scientifically literate citizens who are on track for college and career readiness.

Level 3 Level 3: Proficient learners demonstrate an ability to apply science and engineering practices, disciplinary core ideas, and crosscutting concepts, as specified in state standards, to local and global phenomena, becoming scientifically literate citizens who are on track for college and career readiness.

Level 2 Level 2: Approaching Proficient learners demonstrate limited ability to apply science and engineering practices, disciplinary core ideas, and crosscutting concepts, as specified in state standards, to local and global phenomena. Students may require support to become scientifically literate citizens who are on track for college and career readiness.

Level 1 Level 1: Below Proficient learners demonstrate minimal ability to apply science and engineering practices, disciplinary core ideas, and crosscutting concepts, as specified in state standards, to local and global phenomena. Students may require significant support to become scientifically literate citizens who are on track for college and career readiness.

Information on Standard Error of Measurement

A student's score is best interpreted when recognizing that that the student's knowledge and skills fall within a score range and not just a precise number. For example, 500 (+/-30) indicates a score range between 470 and 530.

The Next Steps section suggests terms to research applicable science topics online. Sites ending in .gov, .edu, and (sometimes) .org often provide good information. Check that the sites sites identify authors whose credentials reflect relevant expertise and provide information rather than opinions.

The table and the graph below indicate student performance on individual reporting categories/disciplines. The black line indicate student's score on each reporting. The green rectangle shows the range of likely scores your student would receive if he or she took the test multiple times.

Performance on the SAS Summative Science Grade 5 Test, by Discipline: Demo, Student A., 2018-2019 i		
Discipline	Discipline Performance	Discipline Description
Physical Sciences	 Below the Standard Above the Standard	<p>What These Results Mean Your student can sometimes conduct experiments to explain the structure of matter, signs of chemical change, and how forces affect the motion of objects; use evidence to explain speed and energy transfer; and model particles of matter and light waves.</p> <p>Next Steps With your child, conduct simple experiments that demonstrate chemical changes such as in common reactions like food cooking. Discuss how particles rearrange when a chemical reaction occurs. Search "virtual lab chemical changes" online to support the discussion. Push objects to see how motion changes when different forces are applied.</p>
Life Sciences	 Below the Standard Above the Standard	<p>What These Results Mean Your student can sometimes model life cycles and movement of matter in ecosystems; use evidence to explain that organisms need structures to live; and interpret data to show that individuals inherit traits, populations have many different traits, and some organisms thrive in specific environments.</p> <p>Next Steps With your child, select a familiar ecosystem. Discuss how matter moves in a cycle through the environment, producers, consumers, and decomposers. Search "flow of energy and matter in ecosystems" online to inform the discussion. Select one organism and analyze its role in its ecosystem and its life cycle.</p>
Earth and Space Sciences	 Below the Standard Above the Standard	<p>What These Results Mean Your student can almost always display data to show the results of Earth's movements around the sun; graph global distribution of fresh and salt water; model interactions of the geosphere, biosphere, hydrosphere, and atmosphere; and use evidence to analyze solutions to hazards caused by weather.</p> <p>Next Steps With your child, search "seasons interactive" online. Display data graphically to show how Earth's movement around the sun affects seasons and global temperature. Draw a picture or write a paragraph about how a drop of water travels through the geosphere, biosphere, hydrosphere, and atmosphere.</p>

1.6.8 Interpretive Guide

When printing ISRs, users have the option to print a supplemental “interpretive guide” (called an “Addendum” when printing a Simple ISR), which is intended as a stand-alone document (see Figure 21) to help teachers, administrators, parents, and students better understand the data presented in the ISR.

Figure 21: Supplemental Interpretive Guide

UNDERSTANDING YOUR STUDENT'S SCORES

SAMPLE STUDENT REPORT

New Hampshire
Department of Education
Serving New Hampshire's Education Community

1 Individual Student Report
How did my student perform on the ELA/Reading test?
Test: SAS Summative ELA/Reading Grade 4
Year: 2017-2018
Name: Demo, Student A.

2 Overall Performance on the SAS Summative ELA/Reading Grade 4 Test: Demo, Student A., 2017-2018

Name	SSID	Scale Score	Achievement Level
Demo, Student A.	99991122	640	Level 3 - Proficient

3 Scale Score and Performance on the SAS Summative ELA/Reading Grade 4 Test: Demo, Student A., 2017-2018

4 Performance on the SAS Summative ELA/Reading Grade 4 Test, by Reporting Category: Demo, Student A., 2017-2018

Reporting Category	Reporting Category Performance	Reporting Category Description
Reading Literary Text		On or Above This section will be populated after the standard setting during the summer of 2018.
Reading Informational Text		At or Approaching This section will be populated after the standard setting during the summer of 2018.

1 Subject Area and Grade Level
This heading tells you which subject and grade level the score report covers.

2 Summary of Test Performance
An overview that includes your student's name, student identification number, scale score, and overall achievement level.

3 Your Student's Scale Score and Overall Performance
Your student's scale score and where it falls on the four achievement levels.

- Achievement Levels 4 and 3 indicate Above Proficient and Proficient.
- Achievement Levels 2 and 1 indicate Approaching Proficient and Below Proficient.
- The small number to the right of your student's score, following the (±) sign, represents the score range that your student would likely fall within if they took the same test multiple times with exactly the same level of knowledge and preparation.

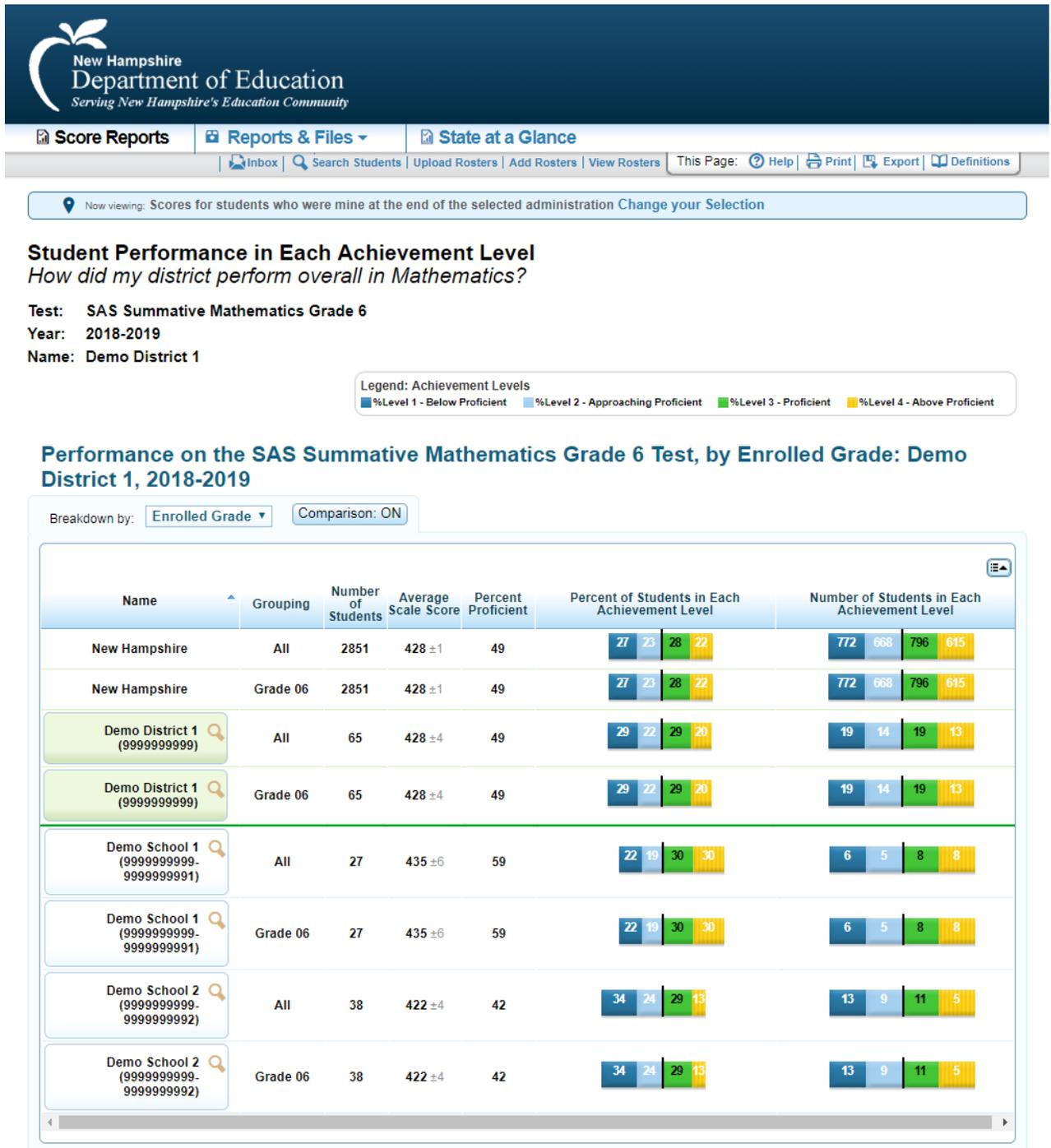
4 Student Reporting Category Performance
Your student's performance on Reporting Categories (content areas) within this subject area.

- Reporting Category performance is reported as: Low (▲), At or Approaching (▬), or On or Above (✓).
- Bar charts show how your student performed on each reporting category (black bar), relative to the reporting category achievement standard (dashed white line). Green boxes show the score range that your student would likely fall within if they took the test multiple times.

1.6.9 Reports by Subgroup

At the aggregate level, student performance can be broken down by demographic sub-groups, such as enrolled grade (Figure 22).

Figure 22: Sample District Aggregate-Level Subject Report for Grade 6 Mathematics, by Enrolled Grade



1.6.10 Data File

ORS users have the option to quickly generate a comprehensive data file of their students’ scores. Data files (see Figure 23), which can be downloaded in Microsoft Excel or CSV format, contain a wide variety of data, including scale and reporting category scores, demographic data, and performance levels. Data files can be a useful resource for further analysis and can be generated at the district, school, teacher, or roster level.

Figure 23: Data File

I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W
Section 5C	Economic	Enrolled C	Enrolled S	Enrolled S	Enrolled C	Enrolled C	ELA/Litera	ELA/Litera	Standard	ELA/Litera	ELA/Litera	Reading Li	Reading Li	Reading Li
N	Y	3	3	3	3	3	1	574	10	2	595L	Below Sta	420	63
N	Y	3	3	3	3	3	1	497	23	1	215L	At/Near S	504	63
N	Y	3	3	3	3	3	1	521	16	1	335L	Below Sta	420	63
N	Y	3	3	3	3	3	1	524	22	1	350L	Below Sta	420	63
N	Y	3	3	3	3	3	1	525	16	1	355L	At/Near S	558	32
Y	Y	3	3	3	3	3	1	420	62	1	BR165L	At/Near S	525	63
N	Y	3	3	3	3	3	1	612	10	3	785L	Above Sta	632	15
N	Y	3	3	3	3	3	1	540	14	1	430L	At/Near S	602	17
N	N	3	3	3	3	3	1	542	14	1	440L	Above Sta	609	15
N	N	3	3	3	3	3	1	613	9	3	790L	Above Sta	624	14
N	N	3	3	3	3	3	1	614	9	3	795L	Above Sta	635	14
N	Y	3	3	3	3	3	1	585	12	3	650L	At/Near S	604	16
N	N	3	3	3	3	3	1	554	12	1	500L	At/Near S	556	27
N	Y	3	3	3	3	3	1	569	12	2	570L	Above Sta	611	16
N	N	3	3	3	3	3	1	605	10	3	750L	Above Sta	613	15
N	N	3	3	3	3	3	1	589	11	3	670L	Above Sta	611	15
N	Y	3	3	3	3	3	1	589	10	3	670L	At/Near S	606	17
N	N	3	3	3	3	3	1	597	10	3	710L	Above Sta	616	15

2. INTERPRETATION OF REPORTED SCORES

A student’s performance on a test is reported as both a scale score and a performance level for the overall test, then as a performance level for each reporting category. Students’ scores and performance levels are summarized at the aggregate levels. This section describes how to interpret these scores.

2.1 SCALE SCORES

A *scale score* is the observed score on any test and describes how well a student performed on a test. It can be interpreted as an estimate of a student’s knowledge and skills as measured by his or her performance on the test. A scale score is the student’s overall numeric score. Such scores fall on a continuous scale that increases across grade levels. NH SAS scale scores are based on a vertical scale, which means that scores from different grades can be compared as long as they are for the same tested subject. The item response theory (IRT) vertical scale is formed by linking tests across grades using common items, and a statistical relationship is then determined. A vertical linking study provides the relationship among adjacent grade levels, allowing for meaningful comparisons across grades and, by extension, tracking growth over time as a student or cohort advances through each grade level (see Section 6.4 in Volume 1 for more information).

Scale scores can be used to illustrate students’ current level of achievement, and they are most useful when used to measure students’ growth over time. Low scale scores can indicate that the student does not possess a sufficient sum of the knowledge and skills measured by the test. Conversely, high

scale scores can indicate that the student has attained proficiency in the knowledge and skills measured by the test. When combined across a student population, scale scores can also describe school- and district-level changes in performance and reveal gaps in achievement among different groups of students. In addition, scale scores can be averaged across groups of students, allowing educators to make group comparisons. Interpretation of scale scores is more meaningful when the scale scores are analyzed in conjunction with performance levels and performance-level descriptors (PLDs). However, the utility of scale scores is limited when comparing smaller differences among scores (or averaged group scores), particularly when the difference among scores is within the Standard Error of Measurement (SEM). Furthermore, the scale scores of individual students should be cautiously interpreted when comparing two scale scores, because small differences in scores may not reflect real differences in achievement.

2.2 STANDARD ERROR OF MEASUREMENT

A student's score is best interpreted when recognizing that his or her knowledge and skills fall within a score range and are not just precise numbers. A scale score is an estimate of the true score. If a student were to take a similar test several times, the resulting scale scores would vary across administrations, sometimes being a little higher, sometimes a little lower, and sometimes the same. The SEM represents a more precise scale score, or the range in which the student would likely score if a similar test were administered several times. The SEM can be interpreted as the degree of uncertainty of a student's score based on a statistical analysis of his or her answers on a test. When interpreting scale scores, it is recommended to always consider the range of scale scores incorporating the SEM of the scale score.

The “±” next to the student's scale score provides information about the certainty, or confidence, of the score's interpretation. The boundaries of the score band are one SEM above and below the student's observed scale score, representing a range of score values that is likely to contain the true score. For example, 680 ± 10 indicates that if a student were tested again, it is likely that he or she would receive a score between 670 and 690.

2.3 PERFORMANCE LEVELS

Performance levels are proficiency categories on a test, which students fall into based on their scale scores. For the NH SAS, scale scores are mapped onto four performance levels (*Below Proficient*, *Approaching Proficient*, *Proficient*, *Above Proficient*) using performance standards (or cut scores; see Section 2.5: Cut Scores). PLDs describe content area knowledge and skills that students at each performance level are expected to possess. Thus, performance levels can be interpreted on the basis of PLDs. Students performing on the NH SAS at Levels 3 and 4 are considered on track to demonstrate progress toward mastery of the knowledge and skills necessary for college and career readiness. Because performance levels are for the classification of the students into a small number of groups, such as those comprising four or five students, and based on the cut scores, they have limited utility for measuring growth. Thus, the performance level is an indicator of whether a student has mastered the required skill for a given level.

PLDs are available on the New Hampshire Department of Education website at <https://nh.portal.airast.org/resources/general-information-resources/>.

2.4 ACHIEVEMENT CATEGORY FOR REPORTING CATEGORIES

Students' performance in each reporting category is reported as one of three achievement categories: *Low*, *At or Approaching*, and *On or Above*. Students performing at *Low* or *On or Above* can be interpreted as student performances clearly below or above the *Proficient* cut score for a specific reporting category. Students performing at *At or Approaching* can be interpreted as student performances that do not provide enough information to tell whether students reached the *Proficient* mark for the specific reporting category. Performance levels for the reporting category are limited in their diagnostic ability based on the degree of the calculated SEM of the student's scale score for the tested grade and subject.

2.5 CUT SCORES

For all grades and subjects within the NH SAS, scale scores are mapped onto four performance levels (*Below Proficient*, *Approaching Proficient*, *Proficient*, *Above Proficient*). For each performance level, there is a minimum and maximum scale score that defines the range of scale scores students within each performance level have achieved. Collectively, these minimum and maximum scale scores constitute the *cut scores*, which are the cutoff points for each performance level. Table 6, Table 7, and Table 8 show the ELA, mathematics, and science cut scores for all grades.

Table 6: NH SAS ELA/Reading Proficiency Cut Scores

Grade	Below Proficient	Approaching Proficient	Proficient	Above Proficient
3	420–556	557–586	587–615	616–750
4	430–579	580–604	605–634	635–790
5	450–593	594–620	621–663	664–810
6	460–604	605–641	642–687	688–830
7	470–607	608–643	644–696	697–850
8	480–624	625–660	661–710	711–870

Table 7: NH SAS Mathematics Proficiency Cut Scores

Grade	Below Proficient	Approaching Proficient	Proficient	Above Proficient
3	300–409	410–430	431–454	455–550
4	310–430	431–459	460–491	492–610
5	320–459	460–494	495–521	522–660
6	330–478	479–517	518–555	556–720

Grade	Below Proficient	Approaching Proficient	Proficient	Above Proficient
7	340–506	507–551	552–586	587–750
8	350–538	539–590	591–624	625–830

Table 8: NH SAS Science Proficiency Cut Scores

Grade	Below Proficient	Approaching Proficient	Proficient	Above Proficient
5	500–543	544–553	554–565	566–600
8	800–844	845–853	854–869	870–900
11	1100–1145	1146–1152	1153–1175	1176–1200

2.6 AGGREGATED SCORES

Students' scale scores are aggregated at roster, teacher, school, district, and state levels to represent how a group of students performed on a test. When students' scale scores are aggregated, the scores can be interpreted as an estimate of the knowledge and skills that a group of students possesses. This interpretation makes aggregated scores a powerful tool when comparing student performance across different groups, whether it be at a similar level of aggregation (e.g., school to school) or an analysis of a subgroup (e.g., comparing a teacher's roster to the school's roster).

Given that student scale scores are estimates, the aggregated scale scores are also estimates and are subject to uncertainty, as expressed using the calculated SEM for an aggregate average scale score. In addition to the aggregated scale scores, the percentage of students in each performance level is reported at the aggregate level to represent how well a group of students performed overall and by reporting category.

2.7 WRITING PERFORMANCE

ELA reports include descriptions of a student's performance on the writing portion that are based on the performance task writing rubric for each criterion. Essay responses are scored on three dimensions: Statement of Purpose/Focus and Organization, Evidence/Elaboration, and Conventions/Editing, as shown in Table 9. Each of these dimensions is independently scored and treated as a separate item in the computation of ELA subject-area and writing domain scores.

If a condition code appears for one or more criteria, the student's written response could not be scored on those criteria. Nonscorable responses include responses that are blank, insufficient, written in a nonscorable language, off topic, or off purpose. The New Hampshire Department of Education published an AutoScore FAQ, included in Appendix B, to help explain the writing scoring system.

Table 9: Writing Scoring Dimensions

Dimension	Possible Scores
Statement of Purpose/Focus and Organization	1–4 points
Evidence/Elaboration	1–4 points
Conventions/Editing	0–2 points

2.8 RELATIVE STRENGTHS AND WEAKNESSES

For standard performance, relative strengths and weaknesses at each standard are reported for aggregate levels only (e.g., classroom, school, or district). Because an individual student responds to too few items within a standard to generate reliable data, the standard performance is produced by aggregating all items within a standard across students at an aggregate level. Standard reports include data on both *Performance Relative to the Test as a Whole* and *Performance Relative to Proficiency* for each standard. The difference between these two data reports is similar to the difference between norm-referenced data and standards-based data.

The *Performance Relative to the Test as a Whole* data for a standard show how a group of students performed in each standard relative to their performance on the total test. This is a norm-referenced report, with group performance in each standard being compared to the same group’s overall test performance. Unlike performance levels provided for the total test, these data are not an indication of students’ achievement in the standard.

The *Performance Relative to Proficiency* data for a standard show how a group of students performed in each standard relative to the expected performance for proficiency. For summative tests, this is the expected level of performance necessary to achieve Level 3 performance. This is a standards-based report with the group performance in each standard being compared to the performance standard for that standard. Similar to the performance levels provided for the total test, these data indicate students’ achievement in the standard with respect to the standards.

The *Performance Relative to the Test as a Whole* data for each standard are computed within a group; therefore, it is not appropriate to compare these data between groups. However, because the *Performance Relative to Proficiency* data for each standard are comparable to the standards-based expectations, performance across groups can be compared.

2.9 APPROPRIATE USES FOR SCORES AND REPORTS

Assessment results can provide information on individual students’ achievement. Overall, assessment results demonstrate what a student knows and can do in certain subject areas, and these scores give further information on whether a student is on track to master the knowledge and skills necessary for college and career readiness. Additionally, assessment results can be used to identify a student’s relative strengths and weaknesses in certain content areas. For example, achievement levels for reporting categories can be used to identify an individual student’s relative strengths and weaknesses among reporting categories within a content area.

Assessment results on student achievement can be used to help teachers or schools make decisions about how to support students’ learning. Aggregate score reports on the teacher and school levels provide information about students’ strengths and weaknesses and can be used to improve teaching

and student learning. For example, a group of students may have performed well overall, but not as well in several reporting categories. In such a case, teachers or schools can identify the strengths and weaknesses of their students through the group performance by reporting category and can then promote instruction in specific areas where student performance is below overall performance. Furthermore, by narrowing the student performance result by subgroup, teachers and schools can determine what strategies may need to be implemented to improve teaching and student learning, particularly for students in disadvantaged sub-groups. For example, teachers might see student assessment results by enrolled grade and observe that a particular group of students is struggling with literary response and analysis in reading. Teachers can then provide additional instructions for these students to enhance their achievement of the benchmarks for literary response and analysis.

In addition, assessment results can be used to compare students' performance among different students and different groups. Teachers can evaluate how their students perform compared with other students in schools and districts by overall scores and reporting category. Because all students are administered the same item sets in each test, scale scores are comparable across groups. Furthermore, scale scores can be used to measure the growth of individual students over time if data are available. The scale score in NH SAS is a vertical scale, which means scales are vertically linked across grades, and scores across grades are on the same scale. Therefore, scale scores are comparable across grades so that scale scores from one grade can be compared with scores from other grades.

Although assessment results provide valuable information to understand students' performance, these scores and reports should be interpreted with caution. Scale scores are estimates of true scores and, hence, do not represent a precise measure of student performance. A student's scale score is associated with measurement error; thus, users need to consider SEM when using student scores to make decisions about student achievement. Moreover, although student scores may be used to help make important decisions about students' placement and retention or teachers' instructional planning and implementation, the assessment results should not be used as the only source of information. Given that assessment results measured by a test provide limited information, other data on student achievement, such as classroom assessment and teacher evaluation, should be considered when making decisions on student learning. Finally, when student performance is compared across groups, analyses need to account for group size. The smaller the group size, the larger the SEM related to these aggregate data; thus, their interpretation requires more caution.

3. SUMMARY

New Hampshire Statewide Assessment System results are reported online via the New Hampshire Online Reporting System (ORS). The results are released after the testing window has closed and standard setting has been completed. Starting with the 2018–2019 school year, the system can report results on tests as they are completed.

The reporting system is interactive. When educators or administrators log in, they see a summary of data about students for whom they are responsible (a principal would see the students in his or her school; a teacher would see students in his or her class). They can then drill-down through various levels of aggregation all the way to individual student reports. The system allows them to tailor the content more precisely, moving from subject area through reporting categories and even to standards-level reports for aggregates. Aggregate reports are available at every level, and authorized users can print or download them or the data on which they are based. Individual Student Reports (ISRs) can be produced individually or batched as PDF reports (see Appendix C for details).

All authorized users can, at any time, download files and data about students for whom they are responsible. The various reports may be used to inform stakeholders about student performance and instructional strategies.