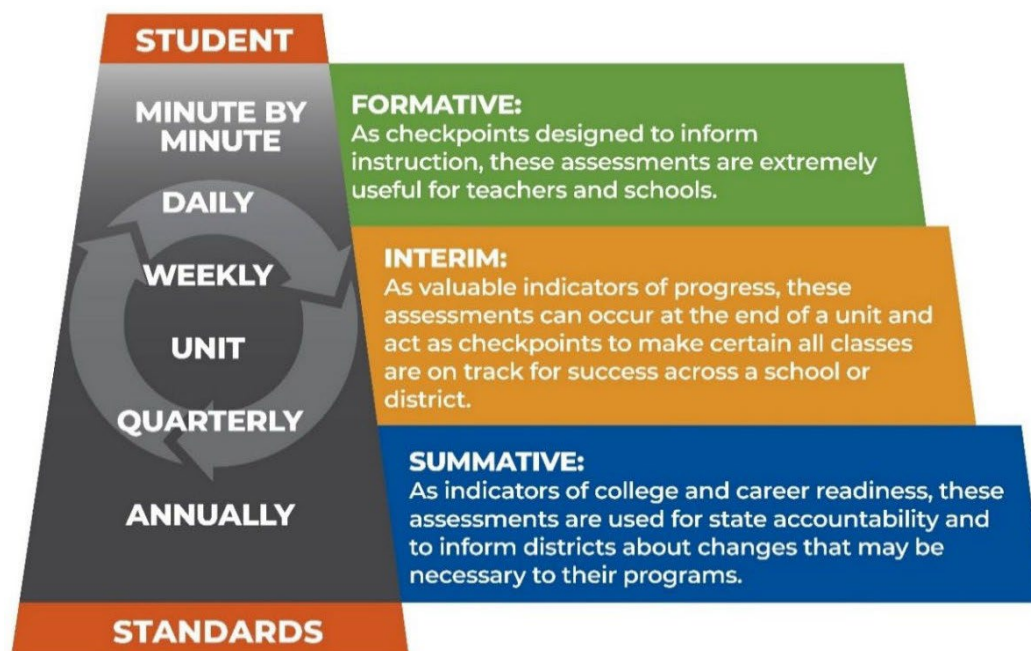


# Using OSTP Data to Monitor COVID Recovery: Key Questions for Educators

## About State Summative Assessments

Oklahoma believes that classroom, district, and state assessments should work together in a coherent system to produce multiple pieces of evidence at different points in time. Doing so provides us with timely and actionable information that helps us understand what students know and are able to do relative to the Oklahoma Academic Standards (OAS).



State summative assessments sample from across the breadth and depth of the OAS to determine levels of proficiency on grade-level knowledge and skills for all students. Doing so provides users with performance-related data that typically helps us understand **system-level** decisions about:

- How groups of students are learning standards;
- How district or school curriculum might be working; and
- Where additional professional development may be helpful (e.g., content specific, best practices, curriculum, etc.).

Performance-related data from spring 2022 state summative assessments help us to understand how well students did against end-of-grade expectations. This is important to consider when examining students' recovery from pandemic-related instructional changes and the impacts of learning interruptions.





# Using spring 2022 state assessment data to monitor recovery

Students and educators have faced disruptions throughout the SY 2019–2020 and 2020–2021 academic school years. Spring 2021 results reflected the pandemic-related challenges, and those results serve as a baseline that represents a new, post-pandemic reality. When connected with **local data**, spring 2022 results provide an honest appraisal of where students are today and help explain the impacts of local interventions and strategies on student learning. Doing so provides vital insights about student performance that helps educators corroborate local learning observations, monitor recovery efforts, and plan targeted next steps.

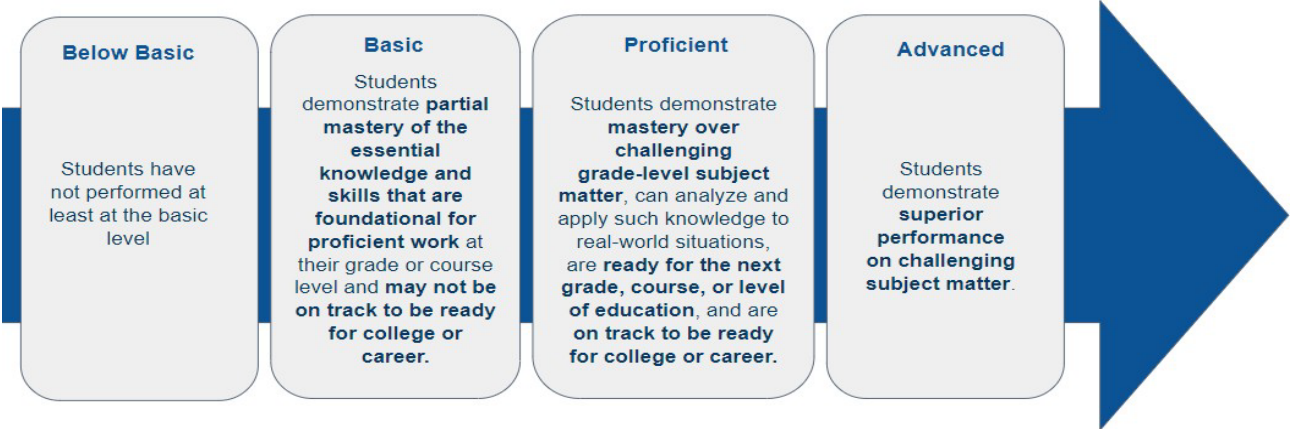
We ask that you work with your [administrators](#) to first develop a shared understanding of changes in school-wide enrollment and assessment participation rates, which will help inform changes in spring 2022 assessment performance compared to spring 2021 data. With this context, we then encourage you to use this [resource document](#) to assist you in reviewing your class’s assessment score results in the [OSTP Data Portal](#).

## Performance-Related Data in the OSTP Data Portal

### What information about student performance is provided by state summative assessments?

Performance-related data in the OSTP Data Portal provide three levels of information about performance: **Performance Levels**, **Oklahoma Performance Index Scores (OPI)**, and **Reporting Category Performance information**.

**Performance Levels** provide a broad view of whether a student, curricular program, or group of students is meeting grade-level expectations outlined in our OAS. The range of scores for each performance level band varies by grade and subject as shown in [Appendix A](#).



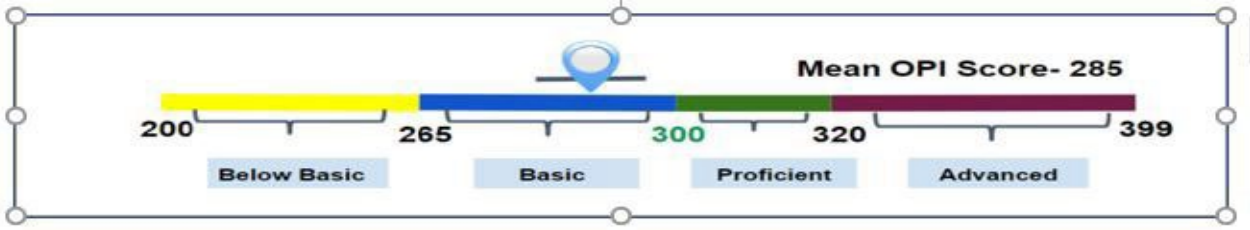


**Oklahoma Performance Index Scores (OPIs)** supplement performance-level data by pinpointing performance relative to the [performance level cut-points](#). OPIs range from 200-399 where 300 is always proficient. A student’s OPI score is used to place them in one of four performance levels (Advanced, Proficient, Basic, or Below Basic).

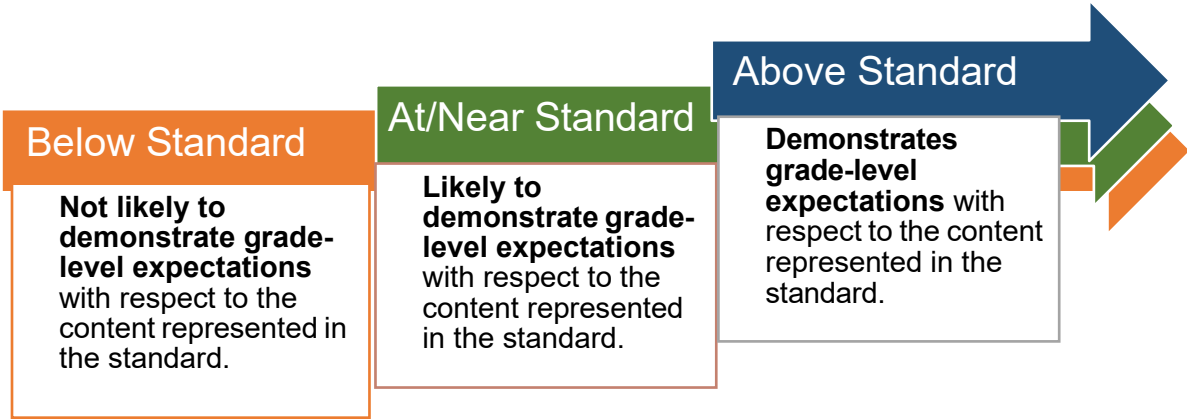
Grade/Content Tested	Form	Scaled Score Range	Performance Level
Grade 5 ELA	Spring	200 – 270	Below Basic
		271 – 299	Basic
		300 – 322	Proficient
		323 – 399	Advanced

← OPI- 289

OPI scores are obtained by converting raw scores onto a common scale to account for differences in complexity across test forms. Doing so allows comparisons to be made between test takers. Average or mean OPI scores allow for comparison of student groups.

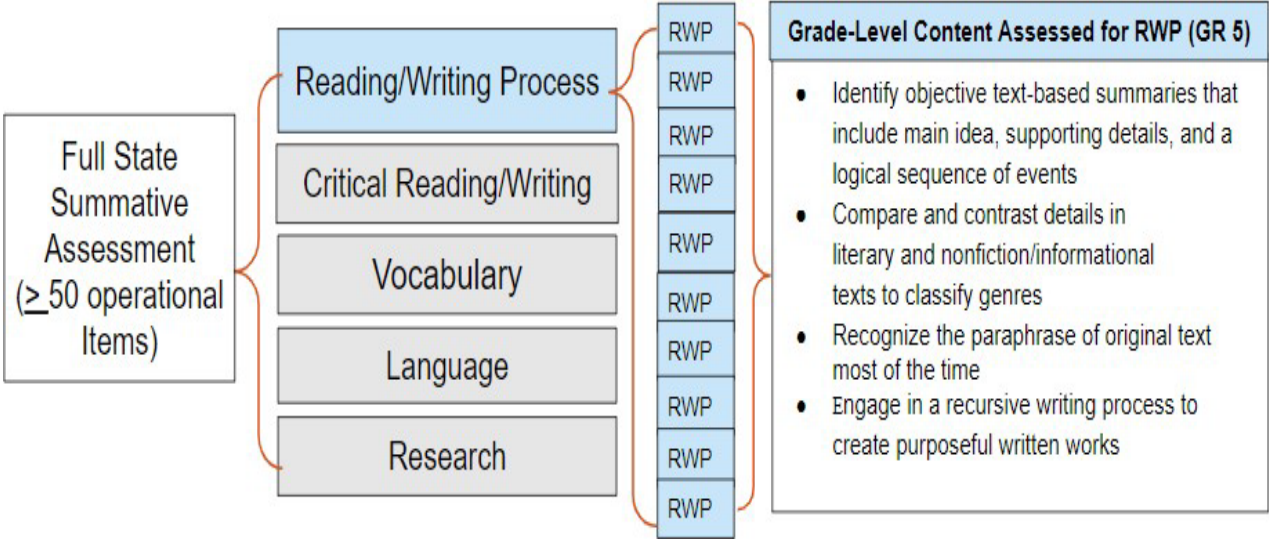


**Reporting Category Performance** provides an additional piece of information that when connected with your local assessment data, helps educators understand where students are demonstrating grade-level expectations and where they may need extra support. Reporting Category Performance indicates the likelihood that a student or group of students demonstrated grade-level expectations within content-specific categories (e.g., critical reading and writing for ELA).





Performance in each Reporting Category is determined by a student’s performance on a subset of content-specific items. Subsets range from 6 to 25 items.



Alignment between the standards and the grade-level expectations being assessed can be found In [Appendix B for ELA](#), [Appendix C for mathematics](#), and [Appendix D for science](#).



## Assessment Data in the OSTP Data Portal

### How can I access and use data in the OSTP Data Portal?

Performance related data displayed in the OSTP data portal can be aggregated and disaggregated to compare performance across student groups to help answer the following questions:

- How did students perform relative to grade-level expectations?
- In which area(s) did students make progress?
- In which area(s) might students have struggled?
- How well did the interventions, strategies, and resources we implemented in SY 2021– 2022 work?
- How does state summative assessment performance compare with our local observations?
- Where might we need to scaffold?
- Where might we need to consider curricular changes?

To access your site’s data, go to <https://oklahoma.cognia.org/>.



Login with your Username and Password



Reporting

Click **Reporting**.

*Note: Usernames and Passwords are assigned through your district.*

**Note:** Access to the data in the OSTP Data Portal is granted at the site level. Because student-level data is displayed, please follow student data privacy and FERPA guidelines when deciding who should have access.

To view a single grade level, choose **Group Summary Performance Levels**. To view multiple grade levels, choose **Group Summary PL: All**.

**Note:** you will need district access to view grade level/s data beyond your school site.



OKLAHOMA  
Education

Oklahoma State Department of Education  
Key Questions for Educators



## Assessment Performance Single Grade Level

### How did my students perform in SY 2022?

Program: OSTP

Report: **Group Summary: Performance Levels**

Admin:  2022  2021  2019  2018  2017

Grade:  Grade 03  Grade 04  Grade 05  Grade 06  Grade 07  Grade 08

Release:  Final

To view performance data for a single grade, choose the **Group Summary Performance Levels** and then check the grade you wish to view.

The **Group Summary Performance Level** and **Group Summary Performance PL: All Grades** reports display performance related data for each subject and/or grade.

Options Save Download Print Table Chart **Transpose**

Administration	Total N	Valid N	Mean OPI	% in Each Performance Level				At or Above Proficient	Below Proficient	Valid N	Reading/Writing Process		
				Below Basic	Basic	Proficient	Advanced				Below Standard	At/Near Standard	Above Standard
				%	%	%	%				%	%	%
2022	2,239	2,098	263	61	27	9	3	12	88	2,098	78	12	10



Use the **Transpose** feature to display the data vertically so that you can compare across reporting categories, subjects, and /or grade levels.


Group	Subject	Administration	Total N	Valid N	Mean OPI	% in Each Performance Level				% in Each Reporting Category Performance Level		
						Below Basic	Basic	Proficient	Advanced	Below Standard	At/Near Standard	Above Standard
						%	%	%	%	%	%	%
Cyber Elem A (101)	ELA	2022	2,239	2,098	263	61	27	9	3			
Cyber Elem A (101)	Reading/Writing Process	2022		2,098						78	12	10
Cyber Elem A (101)	Critical Reading/Writing	2022		2,098						78	16	6
Cyber Elem A (101)	Vocabulary	2022		2,098						75	19	6
Cyber Elem A (101)	Language	2022		2,098						67	18	15
Cyber Elem A (101)	Research	2022		2,098						65	24	11
Cyber Elem A (101)	Writing Composite Score	2022		2,098						73	22	5
Cyber Elem A (101)	Mathematics	2022	2,226	2,091	253	67	25	6	2			
Cyber Elem A (101)	Number & Operations	2022		2,091						87	8	5
Cyber Elem A (101)	Algebraic Reasoning	2022		2,091						82	15	2
Cyber Elem A (101)	Geometry & Measurement	2022		2,091						79	15	5
Cyber Elem A (101)	Data & Probability	2022		2,091						79	17	3

### What are these data telling me?

- **Total N:** the number of students enrolled at the time of testing.
- **Valid N:** the number of students who tested and had a valid score.
- **Mean OPI:** the average Performance Index Score for a group of students. OPIs range from 200-399, where 300 is always proficient.
- **% in Each Performance Level:** shows where students are relative to end-of-year expectations.
- **% in Each Reporting Category:** shows where students are likely or unlikely to demonstrate grade-level expectations in a subject-specific category (e.g., reading and writing process). **Reminder:** *students scoring **At/Near or Above Standard** are likely to demonstrate grade-level expectations based on their performance on the state summative test.*



## How did different student groups perform?

Use the  **Options** feature to **Disaggregate** by student group. Click on the student group/s you wish to display and then click Update.

This will update the display so that you can compare performance across student groups.

**Note:** You can choose more than one student group.

Group Summary: Performance Levels: OSTP, Cyber Elem A (101), 2022, Grade 05, Final

Group	Administration	Total N	Valid N	Mean OPI	% in Each Performance Level				At or Above Proficient	Below Proficient	Reading/Writing Process			
					Below Basic	Basic	Proficient	Advanced			Valid N	Below Standard	At/Near Standard	Above Standard
					%	%	%	%	%	%		%	%	%
<b>Cyber Elem A (101)</b>	2022	2,239	2,098	263	61	27	9	3	12	88	2,098	78	12	10
American Indian/Alaskan Native	2022	71	68	262	62	35	1	1	3	97	68	84	12	4
Black/African American	2022	457	439	254	72	22	5	1	6	94	439	86	9	5
Asian	2022	35	33	279	36	36	27	0	27	73	33	55	18	27
Hispanic/Latino	2022	1,108	1,026	260	66	26	6	2	8	92	1,026	82	11	7
White	2022	347	335	281	36	34	21	9	30	70	335	58	18	24
Native Hawaiian/Other Pacific Islander	2022	15	13	246	85	15	0	0	0	100	13	100	0	0
Two or more Races	2022	179	174	265	59	25	13	3	16	84	174	74	14	11
No Ethnicity Info. Provided	2022	27	10	247	90	10	0	0	0	100	10	100	0	0
Economically Disadvantaged	2022	1,900	1,771	259	66	25	7	2	8	92	1,771	82	10	8
Not Economically Disadvantaged	2022	339	327	282	35	34	22	8	31	69	327	58	21	21



**What improvement, decline, or stabilization did we see in spring 2022 compared to spring 2021 (performance)?**

Program: OSTP

Report: Group Summary: Performance Levels

Admin:  2022  2021  2019  2018  2017

Grade:  Grade 03  Grade 04  Grade 05  Grade 06

Release:  Final

To compare performance for a single grade, use the **Group Summary Performance Levels**, click the **Grade**, and then click **2022** and **2021**.

This will allow you to compare 2022 performance-related data to 2021 data, which can help you determine how well interventions, strategies and resources supported students.

Group Summary: Performance Levels: OSTP, Cyber Elem A (101), Grade 05, Final

Group	Subject	Administration	Total N	Valid N	Mean OPI	% in Each Performance Level				% in Each Reporting Category Performance Level		
						Below Basic	Basic	Proficient	Advanced	Below Standard	At/Near Standard	Above Standard
						%	%	%	%	%	%	%
Cyber Elem A (101)	ELA	2021	2,140	2,024	262	60	28	10	2			
Cyber Elem A (101)	ELA	2022	2,239	2,098	263	61	27	9	3			
Cyber Elem A (101)	Reading/Writing Process	2021		2,024						77	18	5
Cyber Elem A (101)	Reading/Writing Process	2022		2,098						78	12	10
Cyber Elem A (101)	Critical Reading/Writing	2021		2,024						81	13	6
Cyber Elem A (101)	Critical Reading/Writing	2022		2,098						78	16	6
Cyber Elem A (101)	Vocabulary	2021		2,024						70	20	10
Cyber Elem A (101)	Vocabulary	2022		2,098						75	19	6
Cyber Elem A (101)	Language	2021		2,024						69	27	4
Cyber Elem A (101)	Language	2022		2,098						67	18	15
Cyber Elem A (101)	Research	2021		2,024						74	22	4
Cyber Elem A (101)	Research	2022		2,098						65	24	11

For example, using the data in the table for Cyber Elementary, we see that:

- There were about 100 more students expected to test in SY 2022 (Total N = 2,239) than there were in SY 2021 (Total N = 2,140).
- The overall mean in ELA stayed about the same (262 compared to 263).
- Students showed about a 10% improvement in research (74% Below Standard in 2021 and 65% Below Standard in 2022)
- Students showed stability in Reading/Writing Process and Language.
- Students showed a decline in Critical Reading and Language.

**Note:** Compare the **Total N** and **Valid N** between years to think about **who tested and who did not test in each group** before comparing performance. If you had fewer than 95% participation in spring 2021, your data may not be representative of the students at your site.



If you are a District User, you can also review the Reporting Categories across multiple grades using the **Group Summary PL: All Grades** report.

Program: OSTP

Report: Group Summary PL: All Grades

Admin/Grade

Grade 03 Grade 04 Grade 05 Grade 06 Grade 07 Grade 08 Grade 10

2022  
2021

This will show performance for all grades. Doing so allows you to connect local assessment data to ask questions about vertical alignment.

Subject	Administration	Grade	Total N	Valid N	% in Each Performance Level				% in Each Reporting Category Performance Level			
					Below Basic	Basic	Proficient	Advanced	Below Standard	At/Near Standard	Above Standard	
					%	%	%	%	%	%	%	
ELA	2021	Grade 03	168	167	53	30	16	1				
ELA	2021	Grade 04	176	176	48	29	21	2				
ELA	2021	Grade 05	153	149	32	48	18	2				
ELA	2021	Grade 06	183	183	30	44	23	2				
ELA	2021	Grade 07	184	178	52	31	12	4				
ELA	2021	Grade 08	168	165	34	42	19	5				
Reading/Writing Process	2021	Grade 03		167						65	20	15
Reading/Writing Process	2021	Grade 04		176						60	26	14
Reading/Writing Process	2021	Grade 05		149						64	26	11
Reading/Writing Process	2021	Grade 06		183						60	25	15
Reading/Writing Process	2021	Grade 07		178						65	23	12
Reading/Writing Process	2021	Grade 08		165						55	35	10
Critical Reading/Writing	2021	Grade 03		167						68	20	11
Critical Reading/Writing	2021	Grade 04		176						57	32	11
Critical Reading/Writing	2021	Grade 05		149						63	26	11
Critical Reading/Writing	2021	Grade 06		183						58	36	6



## Key Questions for English Language Arts (ELA) Scores

- **Overall**, how did students perform in SY 2021–2022 in ELA? (Consider performance levels and mean OPI scores by student groups and grade levels.) [Appendix A](#) shows performance level cut-points for each grade level.
  
- Which English language arts (ELA) standard/s had the **lowest percentage** of students scoring **Below Standard**? Which grade levels?
  
- In looking at the ELA grade-level expectations shown in [Appendix B](#): what evidence does our local assessment provide as to how well students are demonstrating the grade-level expectations assessed for these standard(s)?
  
- Which ELA standard/s had the **highest percentage** of students scoring **Below Standard**? Which grade levels?





- In looking at the ELA grade-level expectations shown in [Appendix B](#): what evidence does our local assessment provide as to how well students are demonstrating the grade-level expectations assessed for these standard/s?
  
- If we had representative participation in SY 2020–2021, in which ELA standard(s) did we see improvements in SY 2021–2022?
  
- If we had representative participation in SY 2020–2021, in which ELA standard(s) did we not see improvements in SY 2021–2022?
  
- Based on the performance data in the OSTP Data portal and our local assessments, which ELA standard/s might we need to support this year? How will we scaffold this?
  
- Based on our ELA performance data what adjustments to our vertical alignment should we make? (*Consider using the vertical ELA progressions found here: <https://sde.ok.gov/ela-standards>*)





## Key Questions for Mathematics Scores

- Overall, how did students perform in SY 2021–2022 in mathematics? (Consider performance levels and mean OPI scores by student groups and grade levels.) [Appendix A](#) shows performance level cut-points for each grade level.
  
- Which mathematics strand/s had the **lowest percentage** of students scoring **Below Standard**? Which grade levels?
  
- In looking at the mathematics grade-level expectations shown in [Appendix C](#): what evidence does our local assessment provide as to how well students are demonstrating the grade-level expectations assessed for this strand?
  
- Which mathematics strand/s had the **highest percentage** of students scoring **Below Standard**? Which grade levels?





- In looking at the mathematics grade-level expectations shown in [Appendix C](#): what evidence does our local assessment provide as to how well students are demonstrating the grade-level expectations assessed for this strand?
  
- If we had representative participation in SY 2020–2021, in which mathematics strand(s) did we see improvements in SY 2021–2022?
  
- If we had representative participation in SY 2020–2021, in which mathematics strand(s) did we not see improvements in SY 2021–2022?
  
- Based on the mathematics performance data in the OSTP Data portal and our local assessments, which mathematics strand/s might we need to support this year? How will we scaffold this?
  
- Based on our mathematics performance data and local assessments, what adjustments to our vertical alignment should we make? (*Consider using the vertical math progressions found here: [https://sde.ok.gov/sites/ok.gov.sde/files/OAS-Math-Final%20Version\\_3.pdf](https://sde.ok.gov/sites/ok.gov.sde/files/OAS-Math-Final%20Version_3.pdf)- Appendix B.1).*)





## Key Questions for Science Scores

- Overall, how did students perform in SY 2021–2022 in science? (Consider performance levels and mean OPI scores by student groups and grade levels.) [Appendix A](#) shows performance level cut-points for each grade level.
  
- Which science domain(s) had the **lowest percentage** of students scoring **Below Standard**? Which grade levels?
  
- In looking at the science grade-level expectations shown in [Appendix D](#): what evidence does our local assessment provide as to how well students are demonstrating the grade-level expectations for this domain(s)?
  
- Which science domain(s) had the **highest percentage** of students scoring **Below Standard**? Which grade levels?





- In looking at the science grade-level expectations shown in [Appendix D](#), what evidence does our local assessment provide as to how well students are demonstrating grade-level expectations assessed for this domain(s)?
  
- Based on the performance data in the OSTP Data portal and our local assessments, which science domain(s) might we need to support this year? How will we scaffold?
  
- Based on our science performance data and local assessments, what adjustments to vertical alignment might we need to consider? (*Consider using the science vertical progressions found here:*  
<http://okscienceframework.pbworks.com/w/page/144126720/2020%20Science%20Practices>)

## Connecting Supports

### [Ready Together website-](#)

- Ready Together Brief- [How can students be supported through accelerated learning in mathematics?](#)
- Ready Together Brief- [How can students be supported through accelerated learning in English language arts?](#)
- [Curriculum Frameworks](#)- the frameworks are sets of curricular resources developed by Oklahoma teachers to help educators translate the [Oklahoma Academic Standards](#) into classroom practice. They illustrate what is expected of students at each grade level by examining the intent of each standard and providing instructional options to support student learning.
- [Test and Item Specifications by Grade Level and Subject](#)- defines the content and format of the assessment and the assessment items for item writers/reviewers and indicates the alignment of items with the Oklahoma Academic Standards.







# Appendix A: Performance Level Cut-Points

Grade/Content Tested	Form	Scaled Score Range	Performance Level
Grade 3 ELA	Spring	200 – 276	Below Basic
		277 – 299	Basic
		300 – 328	Proficient
		329 – 399	Advanced
Grade 3 Math	Spring	200 – 273	Below Basic
		274 – 299	Basic
		300 – 320	Proficient
		321 – 399	Advanced
Grade 4 ELA	Spring	200 – 274	Below Basic
		275 – 299	Basic
		300 – 330	Proficient
		331 – 399	Advanced
Grade 4 Math	Spring	200 – 272	Below Basic
		273 – 299	Basic
		300 – 321	Proficient
		322 – 399	Advanced
Grade 5 ELA	Spring	200 – 270	Below Basic
		271 – 299	Basic
		300 – 322	Proficient
		323 – 399	Advanced
Grade 5 Math	Spring	200 – 265	Below Basic
		266 – 299	Basic
		300 – 320	Proficient
		321 – 399	Advanced
Grade 5 Science	Spring	200 – 271	Below Basic
		272 – 299	Basic
		300 – 329	Proficient
		330 – 399	Advanced



Grade 6 ELA	Spring	200 – 268	Below Basic
		269 – 299	Basic
		300 – 329	Proficient
		330 – 399	Advanced
Grade 6 Math	Spring	200 – 266	Below Basic
		267 – 299	Basic
		300 – 329	Proficient
		330 – 399	Advanced
Grade 7 ELA	Spring	200 – 272	Below Basic
		273 – 299	Basic
		300 – 322	Proficient
		323 – 399	Advanced
Grade 7 Math	Spring	200 – 278	Below Basic
		279 – 299	Basic
		300 – 328	Proficient
		329 – 399	Advanced
Grade 8 ELA	Spring	200 – 268	Below Basic
		269 – 299	Basic
		300 – 321	Proficient
		322 – 399	Advanced
Grade 8 Math	Spring	200 – 276	Below Basic
		277 – 299	Basic
		300 – 315	Proficient
		316 – 399	Advanced
Grade 8 Science	Spring	200 – 283	Below Basic
		284 – 299	Basic
		300 – 327	Proficient
		328 – 399	Advanced





Grade Content Tested	Scaled Score Range	Performance Level
HS (Grade 11) ELA	200-257	Below Basic
	261-297	Basic
	300-340	Proficient
	344-399	Advanced
HS (Grade 11) Math	200-246	Below Basic
	258-297	Basic
	300-338	Proficient
	346-399	Advanced
HS (Grade 11) Science	200-277	Below Basic
	278-299	Basic
	300-326	Proficient
	327-399	Advanced

For more information on the Scaled Score Ranges for ELA and Math, please see the SAT/ACT Conversion Tables document found [here](#):

**Note:** HS (Grade 11) ELA and Math Scores can be found in the Accountability Reporting application in Single Sign-On on the Student Assessment tab. See Administrator's Toolkit

## Appendix B: ELA Standards and Grade-Level Expectations

Information in the table shows the alignment between the ELA standard(s) and the grade-level expectations being assessed. Students scoring **At/Near or Above Standard** are likely to demonstrate grade-level expectations for the given ELA standard.

ELA Grade 3	
Reading and Writing Process	Grade-Level Expectations
<p>Students will use a variety of recursive reading and writing processes.</p> <ul style="list-style-type: none"> <li>• <b>Reading</b>—Students will read and comprehend increasingly complex literary and informational texts.</li> <li>• <b>Writing</b>—Students will develop and strengthen writing by engaging in a recursive process that includes prewriting, drafting, revising, editing, and publishing.</li> </ul>	<p>Students performing <b>At/Near or Above Standard</b> are likely able to use a variety of recursive processes to</p> <ul style="list-style-type: none"> <li>➢ choose the best summary of the text</li> <li>➢ identify the main idea and key details</li> <li>➢ compare and contrast details to classify genres</li> <li>➢ engage in a recursive writing process to create organized written works</li> </ul>
Critical Reading and Writing	Grade-Level Expectations
<p>Students will apply critical thinking skills to reading and writing.</p> <ul style="list-style-type: none"> <li>• <b>Reading</b>—Students will comprehend, interpret, evaluate, and respond to a variety of complex texts of all literary and informational genres from a variety of historical, cultural, ethnic, and global perspectives.</li> <li>• <b>Writing</b>—Students will write for varied purposes and audiences in all modes, using fully developed ideas, strong organization, well-chosen words, fluent sentences, and appropriate voice.</li> </ul>	<p>Students performing <b>At/Near or Above Standard</b> are likely able to apply critical thinking skills to</p> <ul style="list-style-type: none"> <li>➢ identify literary elements, literary devices, and author’s purpose</li> <li>➢ distinguish fact from opinion</li> <li>➢ infer whether a text is written in first or third person point of view</li> <li>➢ create written works for specific purposes and audiences using details that support the writing task</li> </ul>
Vocabulary	Grade-Level Expectations
<p>Students will expand their working vocabularies to effectively communicate and understand texts.</p> <ul style="list-style-type: none"> <li>• <b>Reading</b>—Students will expand academic, domain-appropriate, grade-level vocabularies through reading, word study, and class discussion.</li> <li>• <b>Writing</b>—Students will apply knowledge of vocabularies to communicate by using descriptive, academic, and domain-appropriate abstract and concrete words in their writing.</li> </ul>	<p>Students performing <b>At/Near or Above Standard</b> are likely able to</p> <ul style="list-style-type: none"> <li>➢ use vocabulary knowledge and resources to interpret text through word parts, word relationships, and context clues</li> <li>➢ use appropriate vocabulary to write clearly and effectively</li> </ul>
Language	Grade-Level Expectations
<p>Students will apply knowledge of grammar and rhetorical style to reading and writing.</p> <ul style="list-style-type: none"> <li>• <b>Reading</b>—Students will apply knowledge of grammar and rhetorical style to analyze and evaluate a variety of texts.</li> <li>• <b>Writing</b>—Students will demonstrate command of Standard English grammar, mechanics, and usage through writing and other modes of communication.</li> </ul>	<p>Students performing <b>At/Near or Above Standard</b> are likely able to apply knowledge of grammar and rhetorical style to</p> <ul style="list-style-type: none"> <li>➢ identify and apply appropriate use of grammar and mechanics to provide clarity and enhance communication</li> </ul>
Research	Grade-Level Expectations
<p>Students will engage in inquiry to acquire, refine, and share knowledge.</p> <ul style="list-style-type: none"> <li>• <b>Reading</b>—Students will comprehend, evaluate, and synthesize resources to acquire and refine knowledge.</li> <li>• <b>Writing</b>—Students will summarize and paraphrase, integrate evidence, and cite sources to create reports, projects, papers, texts, and presentations for multiple purposes.</li> </ul>	<p>Students performing <b>At/Near or Above Standard</b> are likely able to engage in inquiry to</p> <ul style="list-style-type: none"> <li>➢ generate a question on a specific topic and locate and use information, including graphic features, to understand the text</li> <li>➢ summarize and present information in an organized way</li> </ul>

## ELA Grade 4

Reading and Writing Process	Grade Level Expectations
<p>Students will use a variety of recursive reading and writing processes.</p> <ul style="list-style-type: none"> <li>• <b>Reading</b>—Students will read and comprehend increasingly complex literary and informational texts.</li> <li>• <b>Writing</b>—Students will develop and strengthen writing by engaging in a recursive process that includes prewriting, drafting, revising, editing, and publishing.</li> </ul>	<p>Students performing <b>At/Near</b> or <b>Above Standard</b> are likely able to use a variety of recursive processes to</p> <ul style="list-style-type: none"> <li>➤ choose the best summary of the text</li> <li>➤ recognize the paraphrase of original text most of the time</li> <li>➤ identify the details that support the main idea</li> <li>➤ compare and contrast details in literary and nonfiction/informational texts to classify genres</li> <li>➤ engage in a recursive writing process to create purposeful written works</li> </ul>
Critical Reading and Writing	Grade-Level Expectations
<p>Students will apply critical thinking skills to reading and writing.</p> <ul style="list-style-type: none"> <li>• <b>Reading</b>—Students will comprehend, interpret, evaluate, and respond to a variety of complex texts of all literary and informational genres from a variety of historical, cultural, ethnic, and global perspectives.</li> <li>• <b>Writing</b>—Students will write for varied purposes and audiences in all modes, using fully developed ideas, strong organization, well-chosen words, fluent sentences, and appropriate voice.</li> </ul>	<p>Students performing <b>At/Near</b> or <b>Above Standard</b> are likely able to apply critical thinking skills to</p> <ul style="list-style-type: none"> <li>➤ identify and describe literary elements, literary devices, author’s purpose, accuracy of facts, and text structure in various texts</li> <li>➤ infer meaning from a text including author’s purpose and points of view</li> <li>➤ select and apply the organizational structure that best fits the mode, purpose, and audience</li> </ul>
Vocabulary	Grade-Level Expectations
<p>Students will expand their working vocabularies to effectively communicate and understand texts.</p> <ul style="list-style-type: none"> <li>• <b>Reading</b>—Students will expand academic, domain-appropriate, grade-level vocabularies through reading, word study, and class discussion.</li> <li>• <b>Writing</b>—Students will apply knowledge of vocabularies to communicate by using descriptive, academic, and domain-appropriate abstract and concrete words in their writing.</li> </ul>	<p>Students performing <b>At/Near</b> or <b>Above Standard</b> are likely able to</p> <ul style="list-style-type: none"> <li>➤ use vocabulary knowledge and resources to interpret text through word parts, word relationships, and context clues</li> <li>➤ use appropriate vocabulary to write clearly and effectively</li> </ul>
Language	Grade-Level Expectations
<p>Students will apply knowledge of grammar and rhetorical style to reading and writing.</p> <ul style="list-style-type: none"> <li>• <b>Reading</b>—Students will apply knowledge of grammar and rhetorical style to analyze and evaluate a variety of texts.</li> <li>• <b>Writing</b>—Students will demonstrate command of Standard English grammar, mechanics, and usage through writing and other modes of communication</li> </ul>	<p>Students performing <b>At/Near</b> or <b>Above Standard</b> are likely able to apply knowledge of grammar and rhetorical style to</p> <ul style="list-style-type: none"> <li>➤ identify and apply appropriate use of grammar and mechanics to provide clarity and enhance communication</li> </ul>
Research	Grade-Level Expectations
<p>Students will engage in inquiry to acquire, refine, and share knowledge.</p> <ul style="list-style-type: none"> <li>• <b>Reading</b>—Students will comprehend, evaluate, and synthesize resources to acquire and refine knowledge.</li> <li>• <b>Writing</b>—Students will summarize and paraphrase, integrate evidence, and cite sources to create reports, projects, papers, texts, and presentations for multiple purposes.</li> </ul>	<p>Students performing <b>At/Near</b> or <b>Above Standard</b> are likely able to engage in inquiry to</p> <ul style="list-style-type: none"> <li>➤ generate a viable research question on a specific topic and adequately locate and use information, including graphic features, to interpret the text</li> <li>➤ organize relevant and reliable information in order to present findings</li> </ul>



## ELA Grade 5

Reading and Writing Process	Grade-Level Expectations
<p>Students will use a variety of recursive reading and writing processes.</p> <ul style="list-style-type: none"> <li>• <b>Reading</b>— Students will read and comprehend increasingly complex literary and informational texts.</li> <li>• <b>Writing</b>— Students will develop and strengthen writing by engaging in a recursive process that includes prewriting, drafting, revising, editing, and publishing.</li> </ul>	<p>Students performing <b>At/Near or Above Standard</b> are likely able to use a variety of recursive processes to</p> <ul style="list-style-type: none"> <li>➤ identify objective text-based summaries that include main idea, supporting details, and a logical sequence of events</li> <li>➤ compare and contrast details in literary and nonfiction/informational texts to classify genres</li> <li>➤ recognize the paraphrase of original text most of the time</li> <li>➤ engage in a recursive writing process to create purposeful written works</li> </ul>
Critical Reading and Writing	Grade-Level Expectations
<p>Students will apply critical thinking skills to reading and writing.</p> <ul style="list-style-type: none"> <li>• <b>Reading</b>— Students will comprehend, interpret, evaluate, and respond to a variety of complex texts of all literary and informational genres from a variety of historical, cultural, ethnic, and global perspectives.</li> <li>• <b>Writing</b>— Students will write for varied purposes and audiences in all modes, using fully developed ideas, strong organization, well-chosen words, fluent sentences, and appropriate voice.</li> </ul>	<p>Students performing <b>At/Near or Above Standard</b> are likely able to apply critical thinking skills to</p> <ul style="list-style-type: none"> <li>➤ explain how literary elements, literary devices, author’s purpose, point of view, accuracy of facts, and text structure contribute to the meaning of the text</li> <li>➤ compare and contrast texts and ideas within and between texts</li> <li>➤ select and apply the organizational structure that best fits the mode, purpose, and audience</li> </ul>
Vocabulary	Grade-Level Expectations
<p>Students will expand their working vocabularies to effectively communicate and understand texts.</p> <ul style="list-style-type: none"> <li>• <b>Reading</b>— Students will expand academic, domain-appropriate, grade-level vocabularies through reading, word study, and class discussion.</li> <li>• <b>Writing</b>— Students will apply knowledge of vocabularies to communicate by using descriptive, academic, and domain-appropriate abstract and concrete words in their writing.</li> </ul>	<p>Students performing <b>At/Near or Above Standard</b> are likely able to</p> <ul style="list-style-type: none"> <li>➤ use vocabulary knowledge and resources to interpret text through word parts, word relationships, and context clues</li> <li>➤ use appropriate vocabulary to write clearly and effectively</li> </ul>
Language	Grade-Level Expectations
<p>Students will apply knowledge of grammar and rhetorical style to reading and writing.</p> <ul style="list-style-type: none"> <li>• <b>Reading</b>— Students will apply knowledge of grammar and rhetorical style to analyze and evaluate a variety of texts.</li> <li>• <b>Writing</b>— Students will demonstrate command of Standard English grammar, mechanics, and usage through writing and other modes of communication.</li> </ul>	<p>Students performing <b>At/Near or Above Standard</b> are likely able to apply knowledge of grammar and rhetorical style to</p> <ul style="list-style-type: none"> <li>➤ identify and apply appropriate use of grammar and mechanics to provide clarity and enhance communication</li> </ul>
Research	Grade-Level Expectations
<p>Students will engage in inquiry to acquire, refine, and share knowledge.</p> <ul style="list-style-type: none"> <li>• <b>Reading</b>— Students will comprehend, evaluate, and synthesize resources to acquire and refine knowledge.</li> <li>• <b>Writing</b>— Students will summarize and paraphrase, integrate evidence, and cite sources to create reports, projects, papers, texts, and presentations for multiple purposes.</li> </ul>	<p>Students performing <b>At/Near or Above Standard</b> are likely able to engage in inquiry to</p> <ul style="list-style-type: none"> <li>➤ locate, record, and organize relevant and reliable information on a topic in order to present findings</li> </ul>



## ELA Grade 6

Reading and Writing Process	Grade-Level Expectations
<p>Students will use a variety of recursive reading and writing processes.</p> <ul style="list-style-type: none"> <li>• <b>Reading</b>— Students will read and comprehend increasingly complex literary and informational texts.</li> <li>• <b>Writing</b>— Students will develop and strengthen writing by engaging in a recursive process that includes prewriting, drafting, revising, editing, and publishing.</li> </ul>	<p>Students performing <b>At/Near</b> or <b>Above Standard</b> are likely able to</p> <ul style="list-style-type: none"> <li>➤ comprehend, interpret, evaluate, and respond to a variety of complex texts of all literary and informational genres</li> <li>➤ create an objective summary including main idea and supporting details</li> <li>➤ paraphrase main ideas with supporting details in a text</li> <li>➤ engage in a recursive writing process</li> </ul>
Critical Reading and Writing	Grade-Level Expectations
<p>Students will apply critical thinking skills to reading and writing.</p> <ul style="list-style-type: none"> <li>• <b>Reading</b>— Students will comprehend, interpret, evaluate, and respond to a variety of complex texts of all literary and informational genres from a variety of historical, cultural, ethnic, and global perspectives.</li> <li>• <b>Writing</b>— Students will write for varied purposes and audiences in all modes, using fully developed ideas, strong organization, well-chosen words, fluent sentences, and appropriate voice.</li> </ul>	<p>Students performing <b>At/Near</b> or <b>Above Standard</b> are likely able to apply critical thinking skills to</p> <ul style="list-style-type: none"> <li>➤ compare and contrast stated or implied purposes of authors' writing</li> <li>➤ evaluate literary devices, points of view, and perspectives</li> <li>➤ analyze how authors use key literary elements to contribute to the meaning of the text</li> <li>➤ categorize facts included in an argument</li> <li>➤ analyze textual evidence to support inferences and understanding within and between texts</li> <li>➤ use fully developed ideas, strong organization, and appropriate voice when writing</li> <li>➤ compose narrative, informative, and argumentative responses for varied purposes and audiences</li> <li>➤ introduce a claim and organize reasons and evidence in argumentative writing</li> </ul>
Vocabulary	Grade-Level Expectations
<p>Students will expand their working vocabularies to effectively communicate and understand texts.</p> <ul style="list-style-type: none"> <li>• <b>Reading</b>— Students will expand academic, domain-appropriate, grade-level vocabularies through reading, word study, and class discussion.</li> <li>• <b>Writing</b>— Students will apply knowledge of vocabularies to communicate by using descriptive, academic, and domain-appropriate abstract and concrete words in their writing.</li> </ul>	<p>Students performing <b>At/Near</b> or <b>Above Standard</b> are likely able to</p> <ul style="list-style-type: none"> <li>➤ use context clues, word parts, and reference tools to determine or clarify the meaning of words</li> <li>➤ infer the relationships among words with multiple meanings</li> <li>➤ select vocabulary to communicate ideas in writing and to create a specific effect according to a purpose</li> <li>➤ use well-chosen words and appropriate voice when writing</li> </ul>
Language	Grade-Level Expectations
<p>Students will apply knowledge of grammar and rhetorical style to reading and writing.</p> <ul style="list-style-type: none"> <li>• <b>Reading</b>— Students will apply knowledge of grammar and rhetorical style to analyze and evaluate a variety of texts.</li> <li>• <b>Writing</b>— Students will demonstrate command of Standard English grammar, mechanics, and usage through writing and other modes of communication.</li> </ul>	<p>Students performing <b>At/Near</b> or <b>Above Standard</b> are likely able to</p> <ul style="list-style-type: none"> <li>➤ demonstrate a command of Standard English grammar, mechanics, and usage</li> <li>➤ apply knowledge of grammar and rhetorical style to analyze and evaluate a variety of texts in reading and writing</li> <li>➤ develop fluent sentences when writing</li> </ul>
Research	Grade-Level Expectations
<p>Students will engage in inquiry to acquire, refine, and share knowledge.</p> <ul style="list-style-type: none"> <li>• <b>Reading</b>— Students will comprehend, evaluate, and synthesize resources to acquire and refine knowledge.</li> <li>• <b>Writing</b>— Students will summarize and paraphrase, integrate evidence, and cite sources to create reports, projects, papers, texts, and presentations for multiple purposes.</li> </ul>	<p>Students performing <b>At/Near</b> or <b>Above Standard</b> are likely to</p> <ul style="list-style-type: none"> <li>➤ record and organize information from various sources</li> <li>➤ comprehend, evaluate, and synthesize resources</li> <li>➤ recognize viable research questions to find information on a topic</li> <li>➤ summarize and integrate information following a citation style with guidance and support summarize and present information in a report</li> </ul>



## ELA Grade 7

Reading and Writing Process	Grade-Level Expectations
<p>Students will use a variety of recursive reading and writing processes.</p> <ul style="list-style-type: none"> <li>• <b>Reading</b>— Students will read and comprehend increasingly complex literary and informational texts.</li> <li>• <b>Writing</b>— Students will develop and strengthen writing by engaging in a recursive process that includes prewriting, drafting, revising, editing, and publishing.</li> </ul>	<p>Students performing <b>At/Near</b> or <b>Above Standard</b> are likely able to</p> <ul style="list-style-type: none"> <li>➤ read and comprehend increasingly complex literary and informational texts</li> <li>➤ create an objective summary including main idea and supporting details</li> <li>➤ paraphrase main ideas with supporting details in a text</li> <li>➤ engage in a recursive writing process</li> <li>➤ summarize and paraphrase, integrate evidence, and well-chosen words to create written works for multiple purposes</li> </ul>
Critical Reading and Writing	Grade-Level Expectations
<p>Students will apply critical thinking skills to reading and writing.</p> <ul style="list-style-type: none"> <li>• <b>Reading</b>—Students will comprehend, interpret, evaluate, and respond to a variety of complex texts of all literary and informational genres from a variety of historical, cultural, ethnic, and global perspectives.</li> <li>• <b>Writing</b>— Students will write for varied purposes and audiences in all modes, using fully developed ideas, strong organization, well-chosen words, fluent sentences, and appropriate voice.</li> </ul>	<p>Students performing <b>At/Near</b> or <b>Above Standard</b> are likely able to</p> <ul style="list-style-type: none"> <li>➤ compare and contrast stated or implied purposes of authors' writing</li> <li>➤ evaluate literary devices, points of view, and perspectives</li> <li>➤ analyze how authors use key literary elements to contribute to the meaning of the text</li> <li>➤ distinguish factual claims from opinions</li> <li>➤ analyze and evaluate textual evidence to support inferences and draw simple, logical conclusions between and across multiple texts</li> <li>➤ use fully developed ideas, strong organization, and appropriate voice when writing</li> <li>➤ compose narrative, informative, and argumentative responses for varied purposes and audiences</li> <li>➤ in argumentative writing, introduce a claim and organize reasons and evidence</li> </ul>
Vocabulary	Grade-Level Expectations
<p>Students will expand their working vocabularies to effectively communicate and understand texts.</p> <ul style="list-style-type: none"> <li>• <b>Reading</b>—Students will expand academic, domain-appropriate, grade-level vocabularies through reading, word study, and class discussion.</li> <li>• <b>Writing</b>—Students will apply knowledge of vocabularies to communicate by using descriptive, academic, and domain-appropriate abstract and concrete words in their writing.</li> </ul>	<p>Students performing <b>At/Near</b> or <b>Above Standard</b> are likely able to</p> <ul style="list-style-type: none"> <li>➤ use context clues, word parts, and reference tools to determine or clarify the meaning of words</li> <li>➤ select vocabulary to communicate ideas in writing and to create a specific effect according to a purpose</li> <li>➤ infer the relationships among words with multiple meanings</li> <li>➤ use well-chosen words and appropriate voice when writing</li> </ul>
Language	Grade-Level Expectations
<p>Students will apply knowledge of grammar and rhetorical style to reading and writing.</p> <ul style="list-style-type: none"> <li>• <b>Reading</b>—Students will apply knowledge of grammar and rhetorical style to analyze and evaluate a variety of texts.</li> <li>• <b>Writing</b>—Students will demonstrate command of Standard English grammar, mechanics, and usage through writing and other modes of communication.</li> </ul>	<p>Students performing <b>At/Near</b> or <b>Above Standard</b> are likely able to</p> <ul style="list-style-type: none"> <li>➤ apply knowledge of grammar and rhetorical style to analyze and evaluate a variety of texts in reading and writing</li> <li>➤ demonstrate a command of Standard English grammar, mechanics, and usage</li> <li>➤ develop fluent sentences when writing</li> </ul>
Research	Grade-Level Expectations
<p>Students will engage in inquiry to acquire, refine, and share knowledge.</p> <ul style="list-style-type: none"> <li>• <b>Reading</b>—Students will comprehend, evaluate, and synthesize resources to acquire and refine knowledge.</li> <li>• <b>Writing</b>—Students will summarize and paraphrase, integrate evidence, and cite sources to create reports, projects, papers, texts, and presentations for multiple purposes.</li> </ul>	<p>Students performing <b>At/Near</b> or <b>Above Standard</b> are likely able to</p> <ul style="list-style-type: none"> <li>➤ recognize viable research questions and well-developed thesis statements to find information on a specific topic</li> <li>➤ comprehend, evaluate, and synthesize resources summarize and paraphrase, integrate evidence, and cite sources to create written works for multiple purposes</li> </ul>





## ELA Grade 8

Reading and Writing Process	Grade-Level Expectations
<p>Students will use a variety of recursive reading and writing processes.</p> <ul style="list-style-type: none"> <li>• <b>Reading</b>— Students will read and comprehend increasingly complex literary and informational texts.</li> <li>• <b>Writing</b>— Students will develop and strengthen writing by engaging in a recursive process that includes prewriting, drafting, revising, editing, and publishing.</li> </ul>	<p>Students performing <b>At/Near</b> or <b>Above Standard</b> are likely able to use a variety of recursive processes to</p> <ul style="list-style-type: none"> <li>➤ read, comprehend, interpret, evaluate, and respond to literary and informational texts</li> <li>➤ comprehend, evaluate, and synthesize resources</li> <li>➤ summarize and paraphrase to create written works for multiple purposes</li> <li>➤ engage in a recursive writing process</li> </ul>
Critical Reading and Writing	Grade-Level Expectations
<p>Students will apply critical thinking skills to reading and writing.</p> <ul style="list-style-type: none"> <li>• <b>Reading</b>—Students will comprehend, interpret, evaluate, and respond to a variety of complex texts of all literary and informational genres from a variety of historical, cultural, ethnic, and global perspectives.</li> <li>• <b>Writing</b>— Students will write for varied purposes and audiences in all modes, using fully developed ideas, strong organization, well-chosen words, fluent sentences, and appropriate voice.</li> </ul>	<p>Students performing <b>At/Near</b> or <b>Above Standard</b> are likely able to apply critical thinking skills to</p> <ul style="list-style-type: none"> <li>➤ evaluate literary devices, points of view, and perspectives</li> <li>➤ analyze how authors use key literary elements to contribute to the meaning of the text</li> <li>➤ analyze and evaluate textual evidence to support inferences and conclusions between and across multiple texts</li> <li>➤ use fully developed ideas, strong organization, and appropriate voice when writing</li> <li>➤ compose narrative, informative, and argumentative responses for varied purposes and audiences</li> <li>➤ in argumentative writing, introduce a claim, recognize a claim from an opposing viewpoint, and organize reasons and evidence</li> </ul>
Vocabulary	Grade-Level Expectations
<p>Students will expand their working vocabularies to effectively communicate and understand texts.</p> <ul style="list-style-type: none"> <li>• <b>Reading</b>—Students will expand academic, domain-appropriate, grade-level vocabularies through reading, word study, and class discussion.</li> <li>• <b>Writing</b>—Students will apply knowledge of vocabularies to communicate by using descriptive, academic, and domain-appropriate abstract and concrete words in their writing.</li> </ul>	<p>Students performing <b>At/Near</b> or <b>Above Standard</b> are likely able to</p> <ul style="list-style-type: none"> <li>➤ select vocabulary to communicate ideas in writing and to create a specific effect according to a purpose</li> <li>➤ use context clues, word parts, and reference tools to determine or clarify the meaning of words</li> <li>➤ infer the relationships among words with multiple meanings</li> <li>➤ use well-chosen words and appropriate voice when writing</li> </ul>
Language	Grade-Level Expectations
<p>Students will apply knowledge of grammar and rhetorical style to reading and writing.</p> <ul style="list-style-type: none"> <li>• <b>Reading</b>— Students will apply knowledge of grammar and rhetorical style to analyze and evaluate a variety of texts</li> <li>• <b>Writing</b>— Students will demonstrate command of Standard English grammar, mechanics, and usage through writing and other modes of communication.</li> </ul>	<p>Students performing <b>At/Near</b> or <b>Above Standard</b> are likely able to apply knowledge of grammar and rhetorical style to</p> <ul style="list-style-type: none"> <li>➤ apply knowledge of grammar and rhetorical style to analyze and evaluate a variety of texts in reading and writing</li> <li>➤ demonstrate a command of Standard English grammar, mechanics, and usage</li> <li>➤ develop fluent sentences and use appropriate voice</li> </ul>
Research	Grade-Level Expectations
<p>Students will engage in inquiry to acquire, refine, and share knowledge.</p> <ul style="list-style-type: none"> <li>• <b>Reading</b>—Students will comprehend, evaluate, and synthesize resources to acquire and refine knowledge.</li> <li>• <b>Writing</b>—Students will summarize and paraphrase, integrate evidence, and cite sources to create reports, projects, papers, texts, and presentations for multiple purposes</li> </ul>	<p>Students performing <b>At/Near</b> or <b>Above Standard</b> are likely able to engage in inquiry to</p> <ul style="list-style-type: none"> <li>➤ recognize viable research questions and well-developed thesis statements and use them to find information on a specific topic</li> <li>➤ comprehend, evaluate, and synthesize resources</li> <li>➤ summarize and paraphrase, integrate evidence, and cite sources to create written works for multiple purposes</li> </ul>



## Appendix C: Math Strands and Grade-Level Expectations

Information in the table shows the alignment between the Math Strand, standard(s), and grade-level expectations being assessed. Students scoring **At/Near or Above Standard** are likely to demonstrate grade-level expectations for the given ELA standard.

Grade 3 Mathematics	
Number & Operations	Grade-Level Expectations
<p><b>3.N.1</b> Compare and represent whole numbers up to 100,000 with an emphasis on place value and equality.</p> <p><b>3.N.2</b> Add and subtract multi-digit whole numbers; multiply with factors up to 10; represent multiplication and division in various ways; solve real-world and mathematical problems through the representation of related operations.</p> <p><b>3.N.3</b> Understand meanings and uses of fractions in real world and mathematical situations.</p> <p><b>3.N.4</b> Determine the value of a set of coins or bills.</p>	<p>Students performing <b>At/Near or Above Standard</b> are likely able to employ problem-solving strategies of identifying and using appropriate information to</p> <ul style="list-style-type: none"> <li>➤ represent, compare, and order whole numbers</li> <li>➤ complete addition, subtraction, and multiplication problems</li> <li>➤ recognize the relationship between multiplication and division</li> <li>➤ read and write fractions</li> <li>➤ construct and compare fractions using models</li> <li>➤ determine the value of a set of coins or bills</li> <li>➤ select the fewest number of coins for a given amount of money</li> </ul>
Algebraic Reasoning & Algebra	Grade-Level Expectations
<p><b>3.A.1</b> Describe and create representations of numerical and geometric patterns.</p> <p><b>3.A.2</b> Use number sentences involving multiplication and unknowns to represent and solve real-world and mathematical problems.</p>	<p>Students performing <b>At/Near or Above Standard</b> are likely able to employ problem-solving strategies of identifying and using appropriate information to</p> <ul style="list-style-type: none"> <li>➤ determine rules to describe basic patterns</li> <li>➤ determine unknowns in equations and apply number properties</li> </ul>
Geometry & Measurement	Grade-Level Expectations
<p><b>3.GM.1</b> Use geometric attributes to describe and create shapes in various contexts.</p> <p><b>3.GM.2</b> Understand measurable attributes of real-world and mathematical objects using various tools.</p> <p><b>3.GM.3</b> Solve problems by telling time to the nearest 5 minutes.</p>	<p>Students performing <b>At/Near or Above Standard</b> are likely able to employ problem-solving strategies of identifying and using appropriate information to</p> <ul style="list-style-type: none"> <li>➤ classify angles</li> <li>➤ sort three-dimensional figures</li> <li>➤ determine the perimeter of polygons</li> <li>➤ determine the area of two-dimensional figures</li> <li>➤ choose an appropriate instrument to measure an object</li> <li>➤ read and analyze length, temperature, and time</li> </ul>
Data & Probability	Grade-Level Expectations
<p><b>3.D.1</b> Summarize, construct, and analyze data.</p>	<p>Students performing <b>At/Near or Above Standard</b> are likely able to employ problem-solving strategies of identifying and using appropriate information to</p> <ul style="list-style-type: none"> <li>➤ summarize a data set</li> <li>➤ analyze the data to solve problems</li> </ul>



## Grade 4 Mathematics

Number & Operations	Grade-Level Expectations
<p><b>4.N.1</b> Solve real-world and mathematical problems using multiplication and division.</p> <p><b>4.N.2</b> Represent and compare fractions and decimals in real-world and mathematical situations; use place value to understand how decimals represent quantities.</p> <p><b>4.N.3</b> Determine the value of coins in order to solve monetary transactions.</p>	<p>Students performing <b>At/Near or Above Standard</b> are likely able to employ problem-solving strategies of identifying and using appropriate information to</p> <ul style="list-style-type: none"> <li>➤ estimate and solve mathematical problems</li> <li>➤ use models to determine equivalent fractions, compare and order whole numbers and fractions</li> <li>➤ add, subtract, and decompose fractions</li> <li>➤ read and write decimals</li> <li>➤ compare and order whole numbers and decimals</li> <li>➤ make connections between decimals and fractions</li> <li>➤ determine change using whole dollars and coins</li> </ul>
Algebraic Reasoning & Algebra	Grade-Level Expectations
<p><b>4.A.1</b> Use multiple representations of patterns to solve real-world and mathematical problems.</p> <p><b>4.A.2</b> Use multiplication and division with unknowns to create number sentences representing a given problem situation.</p>	<p>Students performing <b>At/Near or Above Standard</b> are likely able to employ problem-solving strategies of identifying and using appropriate information to</p> <ul style="list-style-type: none"> <li>➤ determine rules and extend patterns</li> <li>➤ determine unknown values in mathematical problems</li> </ul>
Geometry & Measurement	Grade-Level Expectations
<p><b>4.GM.1</b> Name, describe, classify and construct polygons, and three-dimensional figures.</p> <p><b>4.GM.2</b> Understand angle, length, and area as measurable attributes of real-world and mathematical objects. Use various tools to measure angles, length, area, and volume.</p> <p><b>4.GM.3</b> Determine elapsed time and convert between units of time.</p>	<p>Students performing <b>At/Near or Above Standard</b> are likely able to employ problem-solving strategies of identifying and using appropriate information to</p> <ul style="list-style-type: none"> <li>➤ describe and classify quadrilaterals</li> <li>➤ describe parts of geometrical figures and identify similarities in three-dimensional figures</li> <li>➤ decompose and determine the area of polygons</li> <li>➤ identify appropriate units and tools to measure</li> <li>➤ solve measurement problems</li> </ul>
Data & Probability	Grade-Level Expectations
<p><b>4.D.1</b> Collect, organize, and analyze data.</p>	<p>Students performing <b>At/Near or Above Standard</b> are likely able to employ problem-solving strategies of identifying and using appropriate information to</p> <ul style="list-style-type: none"> <li>➤ represent data sets and solve problems involving the data</li> </ul>



## Grade 5 Mathematics

Number & Operations	Grade-Level Expectations
<p><b>5.N.1</b> Divide multi-digit numbers and solve real-world and mathematical problems using arithmetic.</p> <p><b>5.N.2</b> Read, write, represent, and compare fractions and decimals; recognize and write equivalent fractions; convert between fractions and decimals; use fractions and decimals in real-world and mathematical situations.</p> <p><b>5.N.3</b> Add and subtract fractions with like and unlike denominators, mixed numbers and decimals to solve real-world and mathematical problems.</p>	<p>Students performing <b>At/Near or Above Standard</b> are likely able to employ problem-solving strategies of identifying and using appropriate information to</p> <ul style="list-style-type: none"> <li>➤ estimate and solve division problems with remainders, including those represented by fractions or decimals</li> <li>➤ generate equivalent decimals and fractions</li> <li>➤ represent whole numbers or decimals</li> <li>➤ compare fractions and decimals, including mixed numbers</li> <li>➤ estimate, add, and subtract decimals and fractions</li> </ul>
Algebraic Reasoning & Algebra	Grade-Level Expectations
<p><b>5.A.1</b> Describe and graph patterns of change created through numerical patterns.</p> <p><b>5.A.2</b> Understand and interpret expressions, equations, and inequalities involving variables and whole numbers, and use them to represent and evaluate real-world and mathematical problems.</p>	<p>Students performing <b>At/Near or Above Standard</b> are likely able to employ problem-solving strategies of identifying and using appropriate information to</p> <ul style="list-style-type: none"> <li>➤ describe patterns of change and graph these patterns as ordered pairs on a coordinate plane</li> <li>➤ evaluate expressions, equations, and inequalities</li> </ul>
Geometry & Measurement	Grade-Level Expectations
<p><b>5.GM.1</b> Describe, classify, and draw representations of two- and three-dimensional figures.</p> <p><b>5.GM.2</b> Understand how the volume of rectangular prisms and surface area of shapes with polygonal faces are determined by the dimensions of the object and that shapes with varying dimensions can have equivalent values of surface area or volume.</p> <p><b>5.GM.3</b> Understand angle and length as measurable attributes of real-world and mathematical objects. Use various tools to measure angles and lengths.</p>	<p>Students performing <b>At/Near or Above Standard</b> are likely able to employ problem-solving strategies of identifying and using appropriate information to</p> <ul style="list-style-type: none"> <li>➤ describe and classify geometric figures</li> <li>➤ solve volume, perimeter, and simple surface area problems</li> <li>➤ determine reasonable values for the perimeter of shapes with curves</li> <li>➤ read and analyze the measure of angles and compare angles</li> <li>➤ choose an appropriate instrument to measure objects and analyze the length of objects</li> <li>➤ recognize relationships within a measurement system</li> </ul>
Data & Probability	Grade-Level Expectations
<p><b>5.D.1</b> Display and analyze data to find the range and measures of central tendency (mean, median, and mode).</p>	<p>Students performing <b>At/Near or Above Standard</b> subscores are likely able to employ problem-solving strategies of identifying and using appropriate information to</p> <ul style="list-style-type: none"> <li>➤ determine the mean, median, mode, and range of a data set and analyze simple graphs</li> </ul>



## Grade 6 Mathematics

Number & Operations	Grade-Level Expectations
<p><b>6.N.1</b> Read, write, and represent integers and rational numbers expressed as fractions, decimals, percents, and ratios; write positive integers as products of factors; use these representations in real-world and mathematical situations.</p> <p><b>6.N.2</b> Add and subtract integers in order to solve real-world and mathematical problems.</p> <p><b>6.N.3</b> Understand the concept of ratio and its relationship to fractions and percents and to the multiplication and division of whole numbers. Use ratios to solve real-world and mathematical problems.</p> <p><b>6.N.4</b> Multiply and divide decimals, fractions, and mixed numbers; solve real-world and mathematical problems with rational numbers.</p>	<p>Students performing <b>At/Near or Above Standard</b> are likely able to</p> <ul style="list-style-type: none"> <li>➤ read, order, represent, and explain rational numbers expressed as fractions, decimals, percents, and ratios</li> <li>➤ write positive integers as products of factors</li> <li>➤ estimate, illustrate, and simplify the addition and subtraction of integers and assess the reasonableness of an answer</li> <li>➤ identify and compare quantities and find equivalent fractions and percents</li> <li>➤ solve ratio and unit rate problems</li> <li>➤ calculate, estimate, and illustrate the multiplication and division of non-negative rational numbers</li> </ul>
Algebraic Reasoning & Algebra	Grade-Level Expectations
<p><b>6.A.1</b> Recognize and represent relationships between varying quantities; translate from one representation to another; use patterns, tables, graphs and rules to solve real-world and mathematical problems.</p> <p><b>6.A.2</b> Use properties of arithmetic to generate equivalent numerical expressions and evaluate expressions involving positive rational numbers.</p> <p><b>6.A.3</b> Use equations and inequalities to represent real-world and mathematical problems and use the idea of maintaining equality to solve equations. Interpret solutions in the original context.</p>	<p>Students performing <b>At/Near or Above Standard</b> are likely able to</p> <ul style="list-style-type: none"> <li>➤ graph ordered pairs and represent reflective relationships between varying quantities</li> <li>➤ evaluate the validity of the value of a variable</li> <li>➤ evaluate the value of a variable in expressions, equations, and inequalities</li> <li>➤ generate expressions, equations, and inequalities</li> <li>➤ solve, graph, and interpret the solution of an equation assessing the reasonableness of the solution</li> </ul>
Geometry & Measurement	Grade-Level Expectations
<p><b>6.GM.1</b> Calculate area of squares, parallelograms, and triangles to solve real-world and mathematical problems.</p> <p><b>6.GM.2</b> Understand and use relationships between angles in geometric figures.</p> <p><b>6.GM.3</b> - Choose appropriate units of measurement and use ratios to convert within measurement systems to solve real-world and mathematical problems.</p> <p><b>6.GM.4</b> Use translations, reflections, and rotations to establish congruency and understand symmetries.</p>	<p>Students performing <b>At/Near or Above Standard</b> are likely able to</p> <ul style="list-style-type: none"> <li>➤ determine the area of polygons and composite figures</li> <li>➤ identify angle relationships by name</li> <li>➤ use relationships between angles and the triangle sum theorem to solve problems</li> <li>➤ estimate and solve problems requiring unit conversion</li> <li>➤ identify, predict, and display the effect of transformations</li> <li>➤ analyze lines of symmetry</li> <li>➤ use the distance between points and transformations to solve problems involving congruent figures</li> </ul>
Data & Probability	Grade-Level Expectations
<p><b>6.D.1</b> Display and analyze data.</p> <p><b>6.D.2</b> Use probability to solve real-world and mathematical problems; represent probabilities using fractions and decimals.</p>	<p>Students performing <b>At/Near or Above Standard</b> are likely able to</p> <ul style="list-style-type: none"> <li>➤ calculate measures of central tendency</li> <li>➤ explain and justify which measure of central tendency provides the most descriptive information for a data set</li> <li>➤ create and analyze box-and-whisker plots</li> <li>➤ determine the sample space of simple experiments and identify possible outcomes</li> <li>➤ explain and compare possible outcomes of simple experiments</li> </ul>

## Grade 7 Mathematics

Number & Operations	Grade-Level Expectations
<p><b>7.N.1</b> Read, write, represent, and compare rational numbers, expressed as integers, fractions, and decimals.</p> <p><b>7.N.2</b> Calculate with integers and rational numbers, with and without positive integer exponents, to solve real-world and mathematical problems; explain the relationship between absolute value of a rational number and the distance of that number from zero.</p>	<p>Students performing <b>At/Near or Above Standard</b> are likely able to:</p> <ul style="list-style-type: none"> <li>➤ recognize, compare, and order rational numbers</li> <li>➤ create equivalent representations of rational numbers</li> <li>➤ calculate, model, and estimate solutions of problems involving rational numbers and exponents assessing the reasonableness of solutions</li> <li>➤ calculate the absolute value of a rational number</li> </ul>
Algebraic Reasoning & Algebra	Grade-Level Expectations
<p><b>7.A.1</b> Understand the concept of proportionality in real world and mathematical situations, and distinguish between proportional and other relationships.</p> <p><b>7.A.2</b> Recognize proportional relationships in real world and mathematical situations; represent these and other relationships with tables, verbal descriptions, symbols, and graphs; solve problems involving proportional relationships and interpret results in the original context.</p> <p><b>7.A.3</b> Represent and solve linear equations and inequalities.</p> <p><b>7.A.4</b> Use order of operations and properties of operations to generate equivalent numerical and algebraic expressions containing rational numbers and grouping symbols; evaluate such expressions.</p>	<p>Students performing <b>At/Near or Above Standard</b> are likely able to:</p> <ul style="list-style-type: none"> <li>➤ describe and identify a proportional relationship and identify the constant of proportionality</li> <li>➤ represent proportional relationships in a variety of ways</li> <li>➤ differentiate between proportional and inversely proportional relationships</li> <li>➤ represent proportional relationships in a variety of ways</li> <li>➤ solve problems involving proportional relationships and assess the reasonableness of solutions</li> <li>➤ identify and solve problems involving ratios and unit rates</li> <li>➤ generate and evaluate equivalent expressions with justification of steps</li> <li>➤ represent, solve, and write equations</li> <li>➤ represent, write, solve, and graph simple inequalities</li> </ul>
Geometry & Measurement	Grade-Level Expectations
<p><b>7.GM.1</b> Develop and understand the concept of surface area and volume of rectangular prisms.</p> <p><b>7.GM.2</b> Determine the area of trapezoids and area and perimeter of composite figures.</p> <p><b>7.GM.3</b> Use reasoning with proportions and ratios to determine measurements, justify formulas, and solve real-world and mathematical problems involving circles and related geometric figures.</p> <p><b>7.GM.4</b> Analyze the effect of dilations, translations, and reflections on the attributes of two-dimensional figures on and off the coordinate plane.</p>	<p>Students performing <b>At/Near or Above Standard</b> are likely able to:</p> <ul style="list-style-type: none"> <li>➤ determine the surface area and volume of rectangular prisms</li> <li>➤ calculate the area and perimeter of trapezoids</li> <li>➤ calculate the circumference and area of circles</li> <li>➤ describe and apply the effect of dilations and transformations</li> </ul>
Data & Probability	Grade-Level Expectations
<p><b>7.D.1</b> Display and analyze data in a variety of ways.</p> <p><b>7.D.2</b> Calculate probabilities and reason about probabilities using proportions to solve real-world and mathematical problems.</p>	<p>Students performing <b>At/Near or Above Standard</b> are likely able to:</p> <ul style="list-style-type: none"> <li>➤ calculate the measures of central tendencies and range and determine appropriate data displays</li> <li>➤ calculate and interpret theoretical probability drawing conclusions</li> </ul>



## Grade 8 Mathematics

Grade 8 Mathematics	
Number & Operations	Grade-Level Expectations
<p><b>PA.N.1</b> Read, write, compare, classify, and represent real numbers and use them to solve problems in various contexts.</p>	<p>Students performing <b>At/Near or Above Standard</b> are likely able to</p> <ul style="list-style-type: none"> <li>➤ identify, compare, and classify real numbers</li> <li>➤ explain operational closure of rational and irrational numbers</li> <li>➤ generate, simplify, and evaluate equivalent expressions, including expressions in scientific notation</li> </ul>
Algebraic Reasoning & Algebra	Grade-Level Expectations
<p><b>PA.A.1</b> Understand the concept of function in real-world and mathematical situations, and distinguish between linear and nonlinear functions.</p> <p><b>PA.A.2</b> Recognize linear functions in real-world and mathematical situations; represent linear functions and other functions with tables, verbal descriptions, symbols, and graphs; solve problems involving linear functions and interpret results in the original context.</p> <p><b>PA.A.3</b> Generate equivalent numerical and algebraic expressions and use algebraic properties to evaluate expressions.</p> <p><b>PA.A.4</b> Represent real world and mathematical problems using equations and inequalities involving linear expressions. Solve and graph equations and inequalities symbolically and graphically. Interpret solutions in the original context.</p>	<p>Students performing <b>At/Near or Above Standard</b> are likely able to</p> <ul style="list-style-type: none"> <li>➤ describe, analyze, and represent linear functions with two variables and translate between representations</li> <li>➤ distinguish between a linear and nonlinear function</li> <li>➤ identify independent and dependent variables</li> <li>➤ identify the effect on the graph of a linear function when characteristics are changed</li> <li>➤ solve and graph equations and inequalities</li> </ul>
Geometry & Measurement	Grade-Level Expectations
<p><b>PA.GM.1</b> Solve problems involving right triangles using the Pythagorean Theorem.</p> <p><b>PA.GM.2</b> Calculate surface area and volume of three-dimensional figures.</p>	<p>Students performing <b>At/Near or Above Standard</b> are likely able to</p> <ul style="list-style-type: none"> <li>➤ use and apply the Pythagorean Theorem</li> <li>➤ calculate the surface area and volume of solids</li> </ul>
Data & Probability	Grade-Level Expectations
<p><b>PA.D.1</b> Display and interpret data in a variety of ways, including using scatterplots and approximate lines of best fit. Use line of best fit and average rate of change to make predictions and draw conclusions about data.</p> <p><b>PA.D.2</b> Calculate experimental probabilities and reason about probabilities to solve real-world and mathematical problems.</p>	<p>Students performing <b>At/Near or Above Standard</b> are likely able to</p> <ul style="list-style-type: none"> <li>➤ describe the impact on central tendencies of a data set with an outlier and when inserting or deleting a data point</li> <li>➤ interpret a scatterplot, determine the rate of change, and use a line of best fit to make predictions</li> <li>➤ identify sample spaces, and classify events as independent or dependent</li> <li>➤ calculate, interpret, and predict experimental probability and generalize samples to populations</li> </ul>



## Appendix D: Science Domain and Grade-Level Expectations

Information in the table shows the alignment between the Science Domain, standard(s), and grade-level expectations being assessed. Students scoring **At/Near or Above Standard** are likely to demonstrate grade-level expectations for the given ELA standard.

Grade 5 Science	
Physical Science	Grade-Level Expectations
<p><b>5-PS1-1</b> Develop a model to describe that matter is made of particles too small to be seen.</p> <p><b>5-PS1-2</b> Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved.</p> <p><b>5-PS1-3</b> Make observations and measurements to identify materials based on their properties.</p> <p><b>5-PS1-4</b> Conduct an investigation to determine whether the mixing of two or more substances results in new substances.</p>	<p>Students performing <b>At/Near or Above Standard</b> are likely able to</p> <ul style="list-style-type: none"> <li>➤ apply scale, proportion, quantity, and/or patterns when performing computational thinking to data as it pertains to conservation of matter</li> <li>➤ observe and measure phenomenon to identify patterns that classify materials based on properties</li> <li>➤ describe cause and effect relationships when mixing substances within an investigation framework.</li> </ul>
Life Science	Grade-Level Expectations
<p><b>5-LS1-1</b> Support an argument that plants get the materials they need for growth chiefly from air and water.</p> <p><b>5-LS2-1</b> Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.</p> <p><b>5-LS2-2</b> Use models to explain factors that upset the stability of local ecosystems.</p> <p><b>5-PS3-1</b> Use models to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun.</p>	<p>Students performing <b>At/Near or Above Standard</b> are likely able to</p> <ul style="list-style-type: none"> <li>➤ describe, use and/or develop basic models at various scales to explain the movement of matter and energy between organisms and ecosystem to explain the outcomes of these interactions.</li> <li>➤ use evidence, data, and/or models to engage in argument to explain how plants use matter (chiefly air and water) to grow</li> </ul>
Earth & Space Science	Grade-Level Expectations
<p><b>5-ESS1-1</b> Support an argument that differences in the apparent brightness of the sun compared to other stars is due to their relative distances from Earth.</p> <p><b>5-ESS1-2</b> Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.</p> <p><b>5-ESS2-1</b> Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.</p> <p><b>5-ESS2-2</b> Describe and graph the amounts and percentages of water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.</p> <p><b>5-PS2-1</b> Support an argument that the gravitational force exerted by the Earth is directed down.</p>	<p>Students performing <b>At/Near or Above Standard</b> are likely able to</p> <ul style="list-style-type: none"> <li>➤ describe, use and/or develop basic models at various scales to explain the movement of matter and energy between Earth's systems and to explain the outcomes of these interactions.</li> <li>➤ apply scale, proportion, quantity, and/or patterns when performing computational thinking to data as it pertains to distribution of water on Earth and Earth's relationship with the sun, moon, and stars</li> <li>➤ use evidence, data, and/or models to engage in argument to explain the cause-and-effect relationships between an object and Earth's gravity,</li> <li>➤ use evidence, data, and/or models to engage in argument as to how scale and proportion affect the apparent brightness of the sun and other stars</li> </ul>



## Grade 8 Science

Physical Science	Grade-Level Expectations
<p><b>MS-PS1-5</b> Develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved.</p> <p><b>MS-PS1-6</b> Undertake a design project to construct, test, and modify a device that either releases or absorbs thermal energy by chemical processes.</p> <p><b>MS-PS2-1</b> Apply Newton’s Third Law to design a solution to a problem involving the motion of two colliding objects.</p> <p><b>MS-PS2-2</b> Plan an investigation to provide evidence that the change in an object’s motion depends on the sum of the forces on the object and the mass of the object.</p> <p><b>MS-PS4-1</b> Use mathematical representations to describe a simple model for waves that includes how the amplitude of a wave is related to the energy in a wave.</p> <p><b>MS-PS4-2</b> Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials.</p>	<p>Students performing <b>At/Near or Above Standard</b> are likely able to</p> <ul style="list-style-type: none"> <li>➤ make predictions about, describe, develop, or use a given model involving <b>conservation of matter</b> in <b>chemical reactions</b></li> <li>➤ use patterns make predictions about, describe, develop, or use a given model about the <b>structure and function of waves</b></li> <li>➤ identify, describe, or explain how to plan or perform investigations about <b>stability and change</b> of <b>forces and motion</b></li> <li>➤ use, describe, or explain a design solution, or identify evidence of <b>relationships</b> within a <b>design solution</b> in <b>various systems</b> involving <b>energy transfer in chemical reactions or forces in collisions</b></li> </ul>
Life Science	Grade- Level Expectations
<p><b>MS-LS1-7</b> Develop a model to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism.</p> <p><b>MS-LS4-1</b> Analyze and interpret data for patterns in the fossil record that document the existence, diversity, extinction, and change of life forms throughout the history of life on Earth under the assumption that natural laws operate today as in the past.</p> <p><b>MS-LS4-2</b> Apply scientific ideas to construct an explanation for the anatomical similarities and differences among modern organisms and between modern and fossil organisms to infer ancestral relationships.</p>	<p>Students performing <b>At/Near or Above Standard</b> are likely able to</p> <ul style="list-style-type: none"> <li>➤ use, describe, explain, or identify evidence of <b>relationships in various systems</b> involving <b>energy transfer</b></li> <li>➤ analyze data to identify and apply patterns in data about <b>common ancestry, the diversity of organisms, and the geologic history of Earth</b></li> <li>➤ construct explanations by identifying, describing, or comparing patterns in evidence of anatomy and common ancestry of organisms</li> </ul>
Earth & Space Science	Grade-Level Expectations
<p><b>MS-ESS1-4</b> Construct a scientific explanation based on evidence from rock strata for how the geologic time scale is used to organize Earth’s geologic history.</p> <p><b>MS-ESS2-1</b> Develop a model to describe the cycling of Earth’s materials and the flow of energy that drives this process.</p> <p><b>MS-ESS2-2</b> Construct an explanation based on evidence for how geoscience processes have changed Earth’s surface at varying time and spatial scales.</p> <p><b>MS-ESS2-3</b> Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions.</p> <p><b>MS-ESS3-1</b> Construct a scientific explanation based on evidence for how the uneven distributions of Earth’s mineral, energy, and groundwater resources are the result of past and current geoscience processes.</p> <p><b>MS-ESS3-2</b> Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.</p> <p><b>MS-ESS3-4</b> Construct an argument supported by evidence for how increases in human population and per capita consumption of natural resources impact Earth’s systems</p>	<p>Students performing <b>At/Near or Above Standard</b> are likely able to</p> <ul style="list-style-type: none"> <li>➤ make predictions about, describe, develop, or use a given model involving <b>stability and change at varying scales in Earth’s systems</b></li> <li>➤ identify and apply patterns in data about the geologic history of Earth, or natural hazards to explain <b>cause and effect relationships</b></li> <li>➤ use the concept of patterns in <b>cause-and-effect relationships or the concept of scale and proportion to construct explanations by identifying, describing, or comparing evidence or aspects of Earth systems including geologic history, materials and processes, natural resources or human impacts on those systems</b></li> </ul>

