

# OSTP Mathematics Data Interpretation Guidebook



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## Introduction

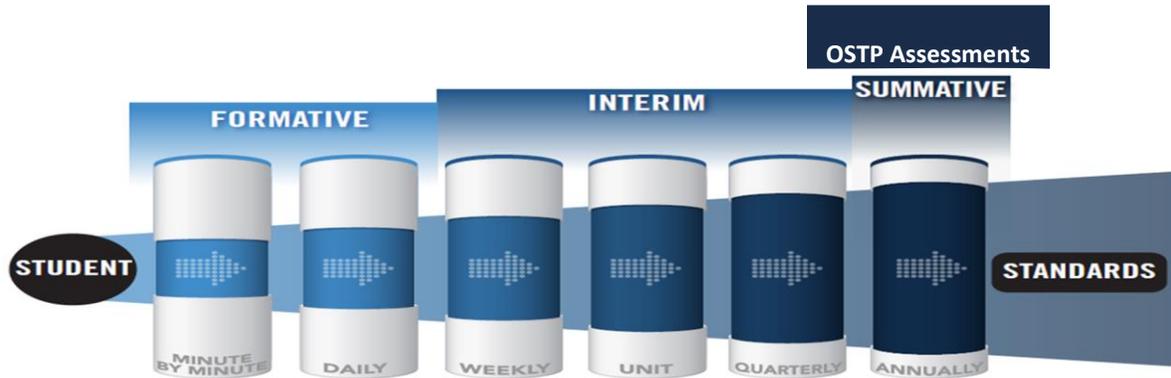
The Oklahoma State Department of Education (OSDE) believes that **all students can grow and all schools can improve**. The OSDE is committed to ensuring that the Oklahoma School Testing Program (OSTP) is both effective and meaningful to families, districts, educators, and members of the community. Assessments within the OSTP are:



It is important to note that, while the OSTP assessments do not capture everything our students are capable of or learn in school, the OSTP assessments are a reliable way to objectively measure student performance across the state. Statewide data allows educators and community leaders to see gaps in learning among student groups as compared to other students across the state. These assessments also provide evidence that can inform school and district leaders and local educators on the instructional changes needed to strengthen student outcomes in their district.

# About the Oklahoma School Testing Program (OSTP)

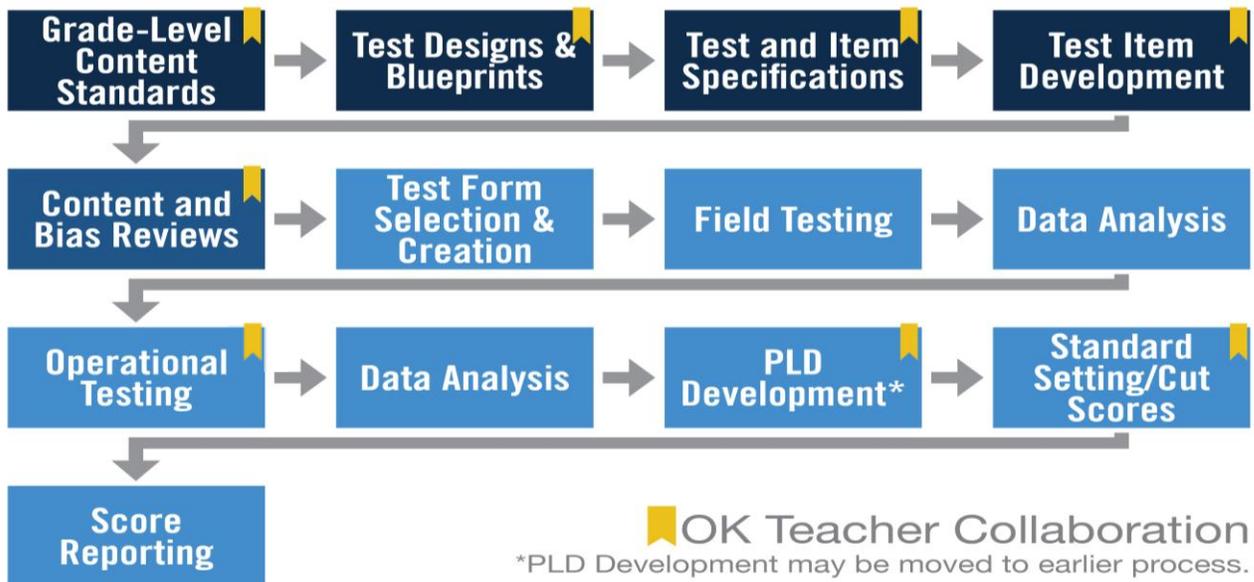
Oklahoma recognizes that a **robust assessment system** is tied closely to students' learning and teachers' instructional practices by valuing and promoting **local, classroom-based formative assessments** that help make **student learning visible**. At the same time, that system should provide a **strong summative assessment** program that fits as a component within a multifaceted state, district and school accountability system. [Oklahoma ESSA Plan pp 48-49](#)



The OSTP consists of Oklahoma’s grade-level and College- and Career-Ready Assessments (CCRA) in English Language Arts (ELA), math, science, and U.S. History. The OSTP assessments tell how students are growing in the knowledge, skills, and abilities outlined in the Oklahoma Academic Standards (OAS). OSTP results support state and federal accountability and allow the public to know how their local schools are performing compared to others around the state.

Development of the OSTP is an extensive, ongoing process that ensures our state assessments are valid and appropriate measures of student knowledge, skills, and abilities. The OSDE works with groups of Oklahoma educators and the testing vendors to develop the OSTP.

## OSTP Development Process



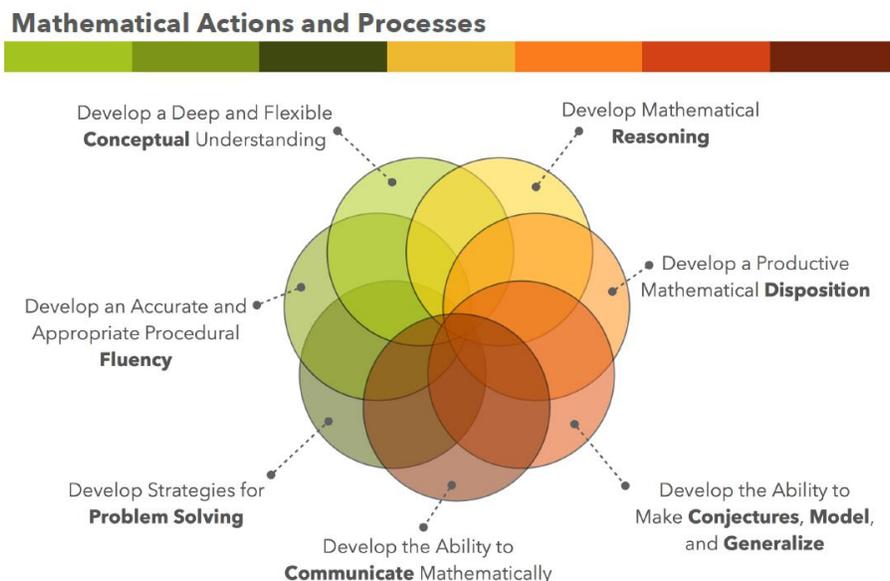
## About OSTP Data

Data from the OSTP serve as a single measure of students’ knowledge, skills, and abilities of the OAS. The OSTP assessments are aligned to the standards so that teachers are able to teach the standards and do not have to “teach to the test.”

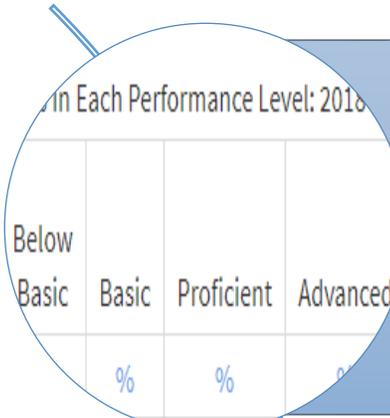
The [Oklahoma Academic Standards for Mathematics](#) are developed around four main content strands. Each strand provides the focus to deliver a clear, comprehensive, coherent, and developmentally appropriate set of standards for grades K-12 to guide curricular decisions.

Math Content Strand	About this Strand
<b>Number and Operations (N)</b>	This strand provides focus on the importance of a students’ understanding of numbers, ways of representing numbers, relationships among numbers, relationships among number systems, and meanings of operations and how they relate to one another. An emphasis is placed on the development of estimation so students can determine the reasonableness of solutions and answers. Further, it requires that students should be able to compute efficiently and proficiently.
<b>Algebraic Reasoning and Algebra (A)</b>	This strand provides focus for the PK-7 and Pre-Algebra standards around the notion that algebra is more than moving symbols around. It is about understanding patterns, relations and functions, representing and analyzing mathematical situations and structures using algebraic symbols, using mathematical models to represent and understand quantitative relationships, and analyzing change in various contexts.
<b>Geometry and Measurement (GM)</b>	This strand provides focus for the PK-7 and Geometry standards around the notion that geometry and measurement help students understand and represent ideas and solve problems they will encounter in their daily lives.
<b>Data and Probability (D)</b>	A focus on data and probability should enable all students to formulate questions that can be addressed with data and to collect, organize, and display relevant data to answer them. Students should select and use appropriate statistical methods to analyze data, develop and evaluate inferences and predictions that are based on data, and understand and apply basic concepts of probability.

In addition to the content standards, the process standards are defined as the Mathematical Actions and Processes and are comprised of the skills and abilities students should develop and be engaged in throughout their PK-12 mathematics education. The process and content standards work in concert to create clear, concise, and rigorous mathematics standards and expectations for Oklahoma students with the aim of helping them be college and career ready.

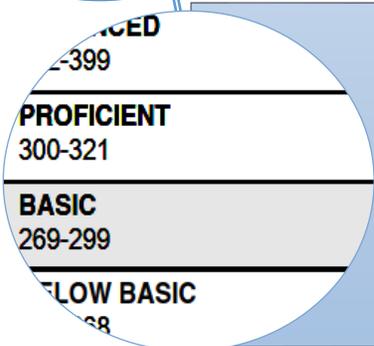


Claims made by the OSTP are reported out at three different levels: **Performance Level, Oklahoma Performance Index Score (OPI), and Reporting Category Indicator**. Data related to each claim can be used to help identify instructional and programmatic strengths and gaps.



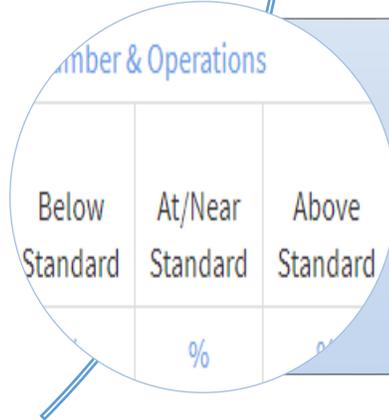
**Performance Level - Are we on track?**

- Reported as one of four levels: **Advanced, Proficient, Basic, or Below Basic**
- Relates what a typical student at each level should know and be able to do relative to the Oklahoma Academic Standards (OAS) as described in the Performance Level Descriptors (PLDs)
- Provides a broad view of whether a student, program, or group is on track with the grade-level expectations needed to be college- and career-ready



**Oklahoma Performance Index Scores (OPI) - Are we progressing?**

- Reported as a number between 200-399 where **300** is always **Proficient**
- Provides a data point that can be used to measure growth from year to year and determine where a student or program is meeting grade-level expectations.



**Reporting Category Indicators - Where are our strengths?**

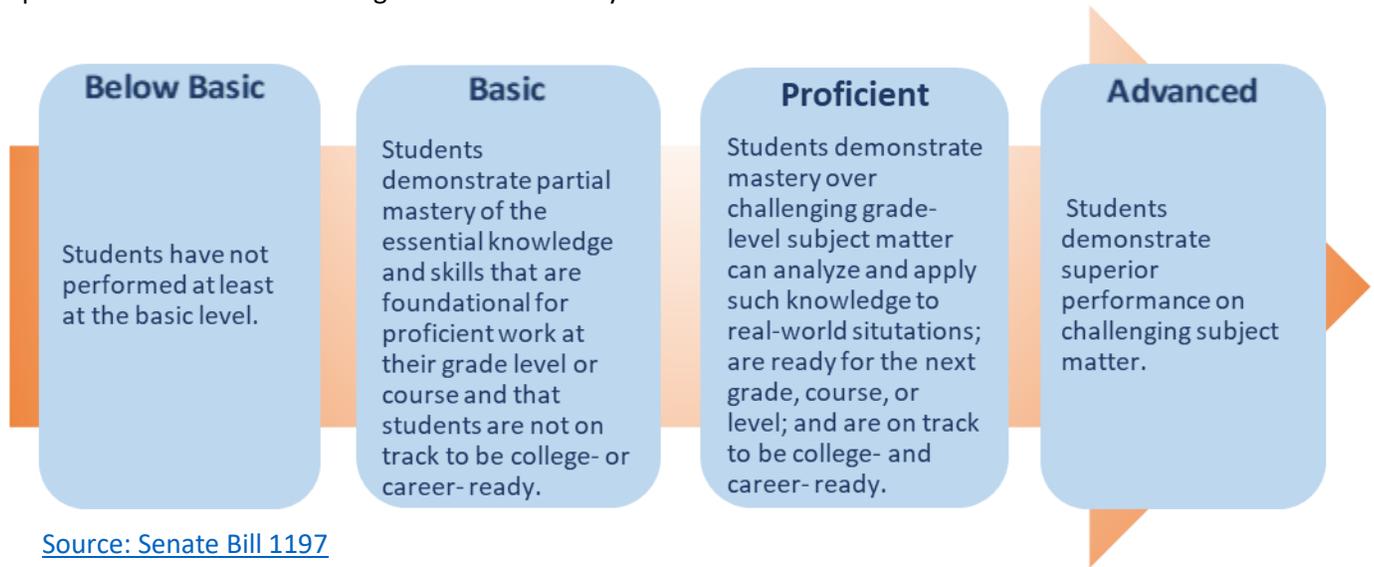
- Identified on the OSTP Test Blueprints and reported out as one of three indicators: **Above Standard, At/Near Standard, or Below Standard**
- Determined by comparing student performance on items associated with each reporting category against the expectations of Proficiency
- Provides a data point about student or program strengths and gaps

Educators can access OSTP reports through the [Measured Progress portal](#); however, a username and password are needed. Please contact your district test coordinator to find out about your school/district policy related to accessing data in the portal. In addition, the [test blueprints](#) are available on the OSDE website.

Parents can access individual student reports through the [Parent Portal](#). Your student’s State Testing Number is required to access scores; please contact your district of enrollment for this information.

## OSTP Performance Level Data: Are we on track?

Performance levels provide a broad view of whether a student, program, or group is on track with grade-level expectations needed to be college- and career-ready.



Source: [Senate Bill 1197](#)

Performance levels were determined by Oklahoma educators to identify the knowledge, skills, and abilities (KSAs) students should demonstrate based on their command of grade-level standards. The resulting Performance Level Descriptors (PLDs) and OSTP test results were used during the standard setting process to determine the “cut scores” for each performance band. The range of scores for each performance level band varies by grade as shown in the table below. The table communicates the range of index scores in each performance band and the percentage of Oklahoma students that scored at each level.

### Math Performance Bands and % of OK Students Scoring at Band by Grade Level (2018-19)

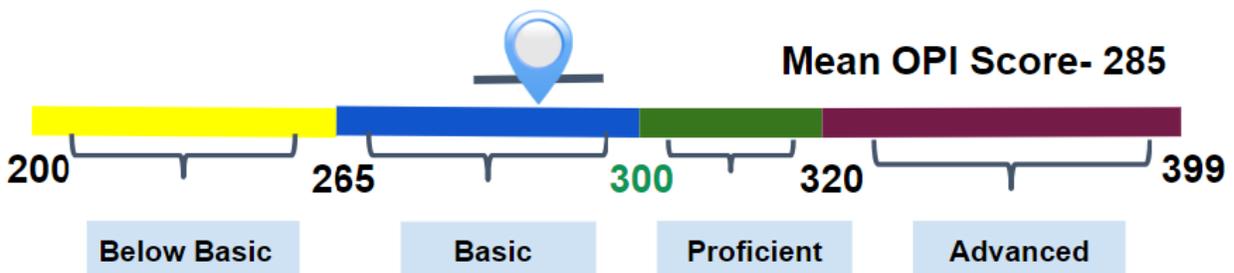
Grade	Below Basic	% at Band	Basic	% at Band	Proficient	% at Band	Advanced	% at Band
3 <sup>rd</sup>	200-273	22%	274-299	35%	300-320	26%	321-399	17%
4 <sup>th</sup>	200-272	26%	273-299	36%	300-321	26%	322-399	12%
5 <sup>th</sup>	200-265	24%	266-299	45%	300-320	19%	321-399	11%
6 <sup>th</sup>	200-266	27%	267-299	43%	300-329	23%	330-399	8%
7 <sup>th</sup>	200-278	38%	279-299	29%	300-328	26%	329-399	7%
8 <sup>th</sup>	200-276	47%	277-299	30%	300-315	13%	316-399	10%

Performance Level claims inform stakeholders of how to interpret student test scores in relation to the OAS through [Performance Level Descriptors](#) (PLD). PLDs define the knowledge, skills, and abilities students should demonstrate at each grade and in each Performance Level.

# Oklahoma Performance Index (OPI) Scores: Are we progressing?

Oklahoma Performance Index (OPI) scores supplement performance-level data by pinpointing where a score is relative to the performance level.

## Sample Math Performance Level Bands and Mean OPI



OPI scale scores allow for numerical comparison between test takers taking the same test. Because these tests are administered in consecutive years, OPI scores can also be used to track student growth in ELA and math. Score ranges differ by grade and subject area as shown in the [performance level lookup table](#).

OPI scores are obtained by converting raw scores onto a common scale and account for differences in difficulty across different assessment forms so that OPI scores are equivalent regardless of form difficulty. This allows for consistency in score interpretation.

Also referred to as an average, the mean OPI score is calculated by adding all the individual student scores and dividing by the number of total scores and communicates the average performance for a group of students.

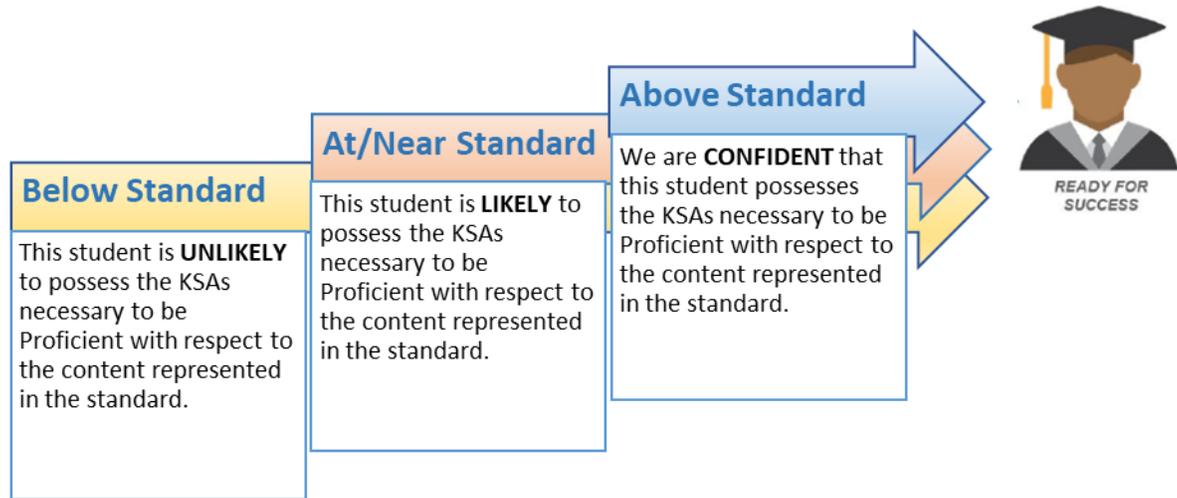
Grade	2017 Mean OPI	2018 Mean OPI	2019 Mean OPI
3	295	293	294
4	293	289	289
5	288	285	285
6	287	282	284
7	287	287	286
8	276	275	276

Mean OPI scores can be compared across years by looking at cohort data. Students in grade 3 in 2017 would have been in grade 4 in 2018 and grade 5 in 2019.

## OSTP Reporting Category Indicators: Where are our strengths?

Each OSTP math assessment has four reporting categories: Number and Operations, Algebraic Reasoning and Algebra, Geometry and Measurement, and Data and Probability. Performance is reported with an indicator that communicates a confidence level of the student’s likelihood of being able to demonstrate the proficient level Knowledge, Skills, and Abilities (KSAs) found in the Performance Level Descriptor (PLD) and assessed through at least six questions. The indicators are ***Below Standard, At/Near Standard, and Above Standard.***

Reporting category indicator claims have the **smallest grain size** and can provide an additional piece of evidence to inform instructional and programmatic decisions by **bringing to the surface** what is working and what may need to change relative to the standards.



**2018-19 Mathematics Reporting Categories by Grade Level and Indicator**

Strand - Number and Operations (N)	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>	6 <sup>th</sup>	7 <sup>th</sup>	8 <sup>th</sup>
➤ Below Standard	41%	48%	57%	55%	45%	47%
➤ At/Near Standard	28%	26%	22%	21%	35%	40%
➤ Above Standard	31%	26%	20%	24%	20%	13%
Strand - Algebraic Reasoning and Algebra (A)	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>	6 <sup>th</sup>	7 <sup>th</sup>	8 <sup>th</sup>
➤ Below Standard	40%	43%	46%	42%	46%	68%
➤ At/Near Standard	23%	41%	29%	45%	35%	16%
➤ Above Standard	37%	16%	25%	13%	19%	16%
Strand - Geometry and Measurement (GM)	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>	6 <sup>th</sup>	7 <sup>th</sup>	8 <sup>th</sup>
➤ Below Standard	42%	43%	44%	37%	50%	56%
➤ At/Near Standard	31%	33%	42%	45%	28%	28%
➤ Above Standard	27%	25%	15%	18%	22%	15%
Strand - Data and Probability (D)	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>	6 <sup>th</sup>	7 <sup>th</sup>	8 <sup>th</sup>
➤ Below Standard	29%	20%	42%	39%	47%	58%
➤ At/Near Standard	38%	58%	41%	39%	33%	31%
➤ Above Standard	33%	22%	17%	22%	20%	12%

## Reporting Category Analysis: Mathematics

Reporting Category indicator claims can best be interpreted by linking the [Oklahoma Academic Standards](#) measured on the assessment with proficient (or on track) level knowledge, skills, and abilities described in the [Performance Level Descriptors](#) (PLDs). PLDs define the intended interpretations of tests scores by describing what students should know and be able to do in each level of achievement. PLDs reflect the standards but should not be the emphasis of instruction. Additional guidance for educators can be found in the [Oklahoma Math Frameworks](#).

Grade 3	
<b>Number &amp; Operations</b>	<b>On Track Knowledge, Skills, and Abilities</b>
<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 receiving <b>At/Near or Above Standard</b> indicators are likely to be 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>
<b>Algebraic Reasoning &amp; Algebra</b>	<b>On Track Knowledge, Skills, and Abilities</b>
<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 receiving <b>At/Near or Above Standard</b> indicators are likely to be 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>
<b>Geometry &amp; Measurement</b>	<b>On Track Knowledge, Skills, and Abilities</b>
<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 receiving <b>At/Near or Above Standard</b> indicators are likely to be 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>
<b>Data &amp; Probability</b>	<b>On Track Knowledge, Skills, and Abilities</b>
<p><b>3.D.1</b> Summarize, construct, and analyze data.</p>	<p>Students receiving <b>At/Near or Above Standard</b> indicators are likely to be 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

Grade 4	
<b>Number &amp; Operations</b>	<b>On Track Knowledge, Skills, and Abilities</b>
<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 receiving <b>At/Near or Above Standard</b> indicators are likely to be 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>
<b>Algebraic Reasoning &amp; Algebra</b>	<b>On Track Knowledge, Skills, and Abilities</b>
<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 receiving <b>At/Near or Above Standard</b> indicators are likely to be 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>
<b>Geometry &amp; Measurement</b>	<b>On Track Knowledge, Skills, and Abilities</b>
<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 receiving <b>At/Near or Above Standard</b> indicators are likely to be 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>
<b>Data &amp; Probability</b>	<b>On Track Knowledge, Skills, and Abilities</b>
<p><b>4.D.1</b> Collect, organize, and analyze data.</p>	<p>Students receiving <b>At/Near or Above Standard</b> indicators are likely to be 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

Grade 5	
<b>Number &amp; Operations</b>	<b>On Track Knowledge, Skills, and Abilities</b>
<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 receiving <b>At/Near or Above Standard</b> indicators are likely to be 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>
<b>Algebraic Reasoning &amp; Algebra</b>	<b>On Track Knowledge, Skills, and Abilities</b>
<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 receiving <b>At/Near or Above Standard</b> indicators are likely to be 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>
<b>Geometry &amp; Measurement</b>	<b>On Track Knowledge, Skills, and Abilities</b>
<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 receiving <b>At/Near or Above Standard</b> indicators are likely to be 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>
<b>Data &amp; Probability</b>	<b>On Track Knowledge, Skills, and Abilities</b>
<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 receiving <b>At/Near or Above Standard</b> indicators are likely to be 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

Number & Operations	On Track Knowledge, Skills, and Abilities
<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 receiving <b>At/Near or Above Standard</b> indicators are likely to be able to employ problem-solving strategies of identifying and using appropriate information 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	On Track Knowledge, Skills, and Abilities
<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 receiving <b>At/Near or Above Standard</b> indicators are likely to be able to employ problem-solving strategies of identifying and using appropriate information 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	On Track Knowledge, Skills, and Abilities
<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 receiving <b>At/Near or Above Standard</b> indicators are likely to be able to employ problem-solving strategies of identifying and using appropriate information 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	On Track Knowledge, Skills, and Abilities
<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 receiving <b>At/Near or Above Standard</b> indicators are likely to be able to employ problem-solving strategies of identifying and using appropriate information 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

Grade 7	
<b>Number &amp; Operations</b>	<b>On Track Knowledge, Skills, and Abilities</b>
<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 receiving <b>At/Near or Above Standard</b> indicators are likely to be able to employ problem-solving strategies of identifying and using appropriate information 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>
<b>Algebraic Reasoning &amp; Algebra</b>	<b>On Track Knowledge, Skills, and Abilities</b>
<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 receiving <b>At/Near or Above Standard</b> indicators are likely to be able to employ problem-solving strategies of identifying and using appropriate information 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>
<b>Geometry &amp; Measurement</b>	<b>On Track Knowledge, Skills, and Abilities</b>
<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 receiving <b>At/Near or Above Standard</b> indicators are likely to be able to employ problem-solving strategies of identifying and using appropriate information 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>
<b>Data &amp; Probability</b>	<b>On Track Knowledge, Skills, and Abilities</b>
<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 receiving <b>At/Near or Above Standard</b> indicators are likely to be able to employ problem-solving strategies of identifying and using appropriate information 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

Grade 8	
<b>Number &amp; Operations</b>	<b>On Track Knowledge, Skills, and Abilities</b>
<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 receiving <b>At/Near or Above Standard</b> indicators are likely to be able to employ problem-solving strategies of identifying and using appropriate information 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>
<b>Algebraic Reasoning &amp; Algebra</b>	<b>On Track Knowledge, Skills, and Abilities</b>
<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 receiving <b>At/Near or Above Standard</b> indicators are likely to be able to employ problem-solving strategies of identifying and using appropriate information 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>
<b>Geometry &amp; Measurement</b>	<b>On Track Knowledge, Skills, and Abilities</b>
<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 receiving <b>At/Near or Above Standard</b> indicators are likely to be able to employ problem-solving strategies of identifying and using appropriate information 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>
<b>Data &amp; Probability</b>	<b>On Track Knowledge, Skills, and Abilities</b>
<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 receiving <b>At/Near or Above Standard</b> indicators are likely to be able to employ problem-solving strategies of identifying and using appropriate information 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>

## Next Steps

As with all OSTP data, other relevant information such as student work samples and local level standards-based assessments should be considered when making programmatic or student-level decisions.

### State, District, Site, and Teacher Level Insights

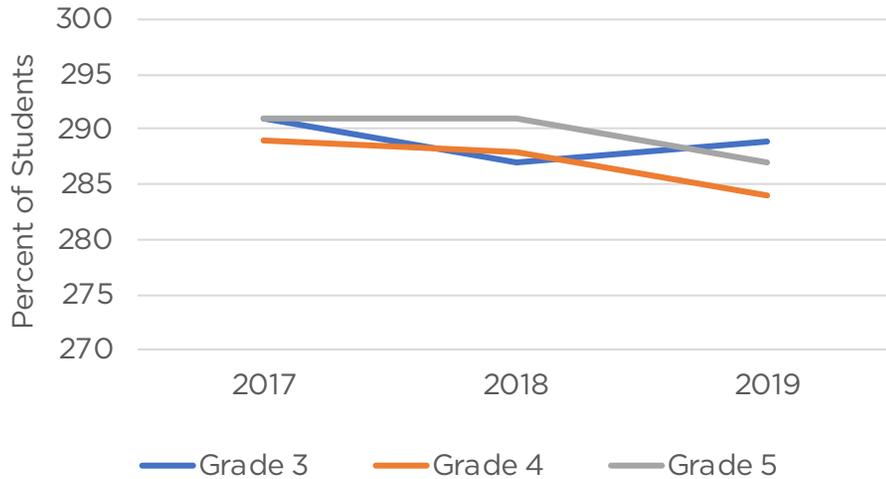
How OSTP Performance Levels Can Be Used	How Oklahoma Performance Index (OPI) Scores Can Be Used	How OSTP Reporting Category Indicators Can Be Used
To see where students are as a whole	To identify changes in achievement gaps over time and track changes in student growth from year to year	To identify where strengths and gaps may exist in the curriculum
To determine equity gaps across student groups	To determine equity gaps across student groups	To determine equity gaps across student groups
To identify patterns or trends across student groups and/or grade levels	To identify patterns or trends across student groups and/or grade levels	To evaluate effectiveness of differentiation
To evaluate vertical alignment across grade levels and horizontal alignment across teachers or student groups	To evaluate alignment across grade levels	To evaluate alignment across grade levels
To compare your district to the state and to compare local formative and/or interim assessments and other evidence of student learning	To compare your district to the state and to other districts and clarify relationship between test data to local level evidence of learning	To compare your district to the state and to other districts

### Student Level Considerations

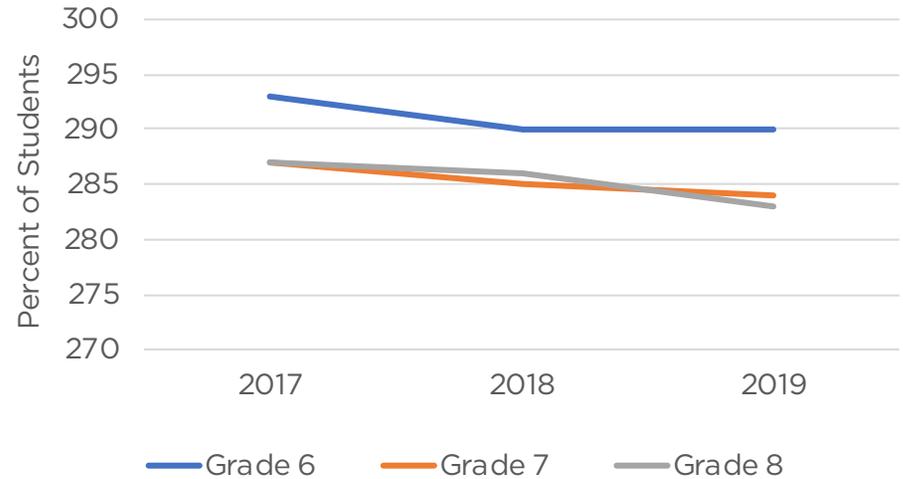
Performance level data tells only part of the student's story and other relevant information should be considered when making student level decisions. Other relevant information includes:

- Student work samples
- Course grades
- Teacher observations

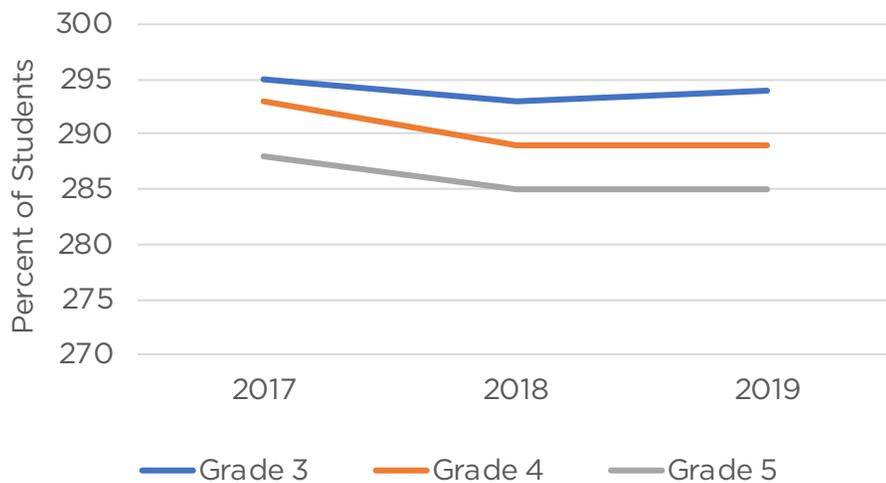
### Grades 3-5 ELA Mean OPI



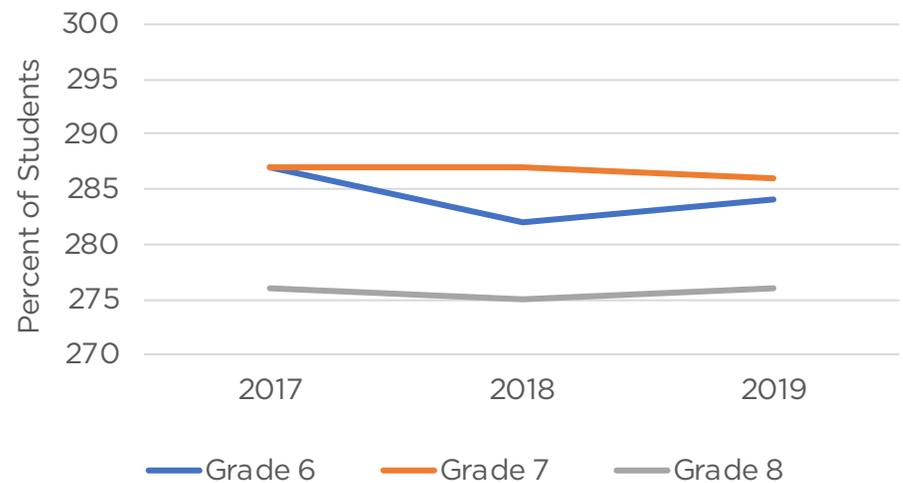
### Grades 6-8 ELA Mean OPI



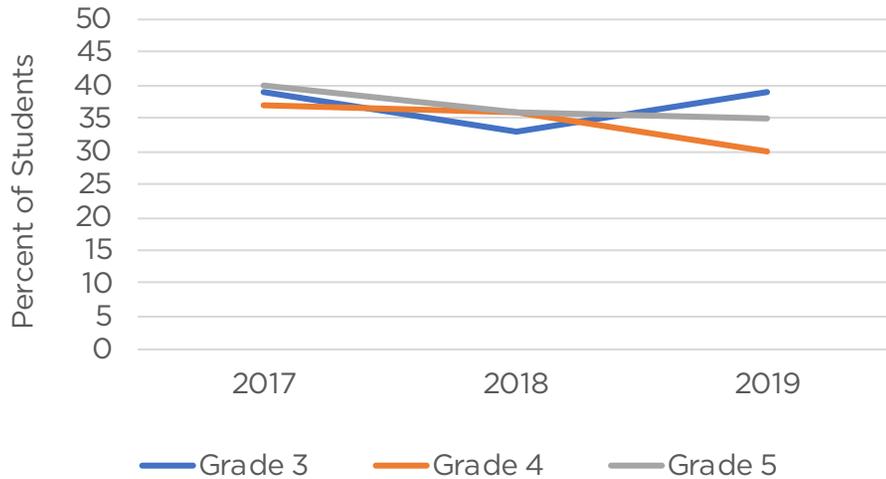
### Grades 3-5 Math Mean OPI



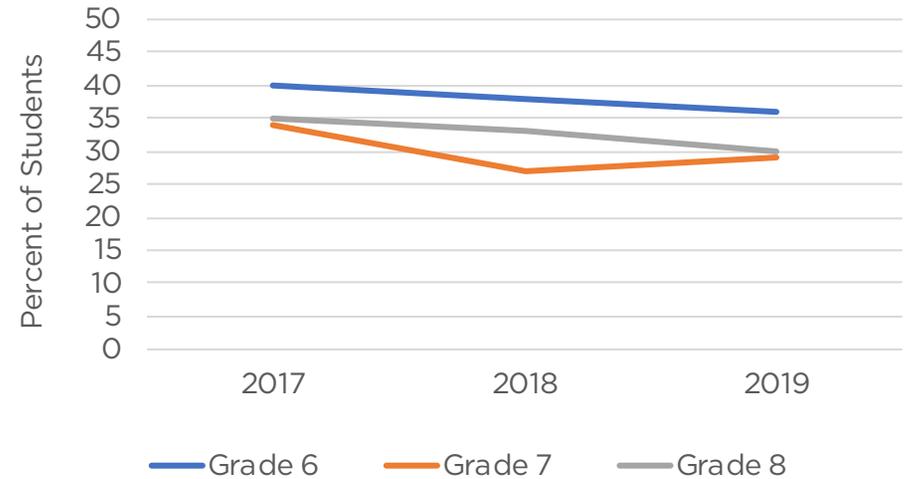
### Grades 6-8 Math Mean OPI



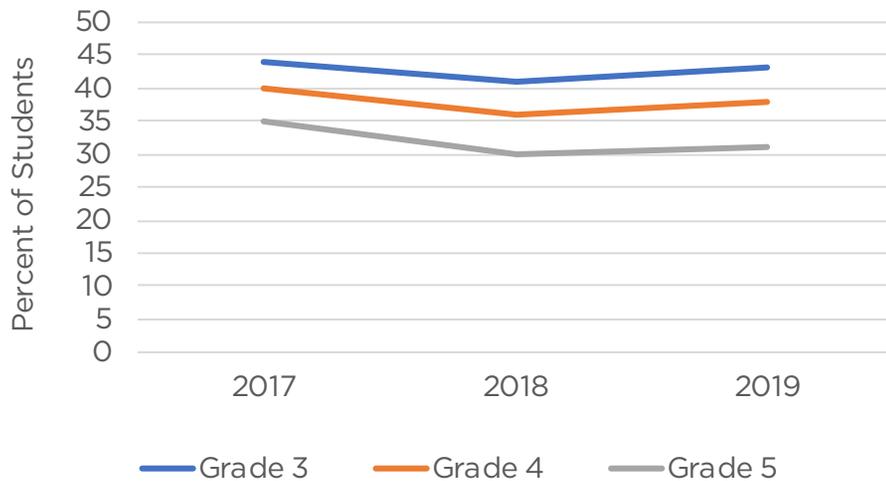
### Grades 3-5 ELA Percent Proficient & Above



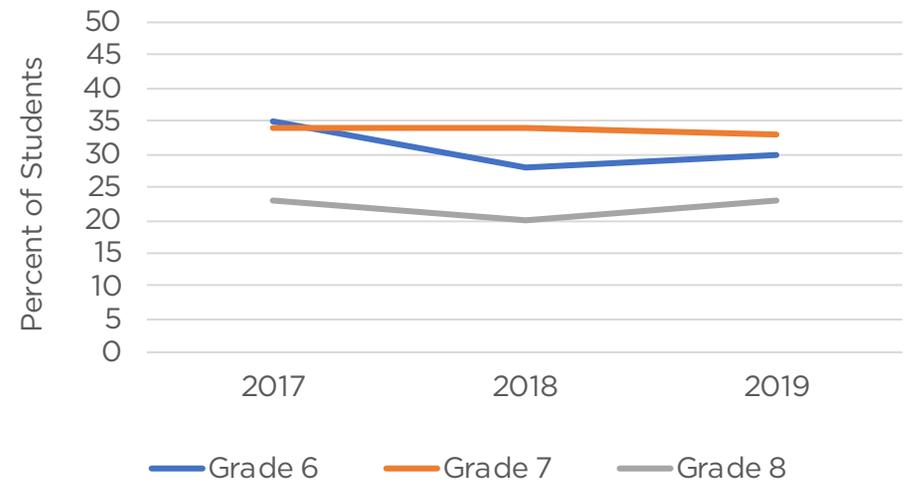
### Grades 6-8 ELA Percent Proficient & Above



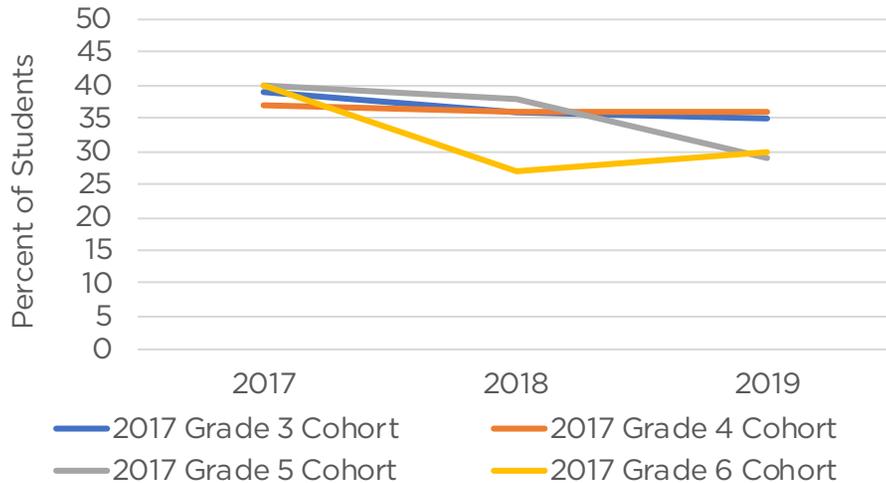
### Grades 3-5 Math Percent Proficient & Above



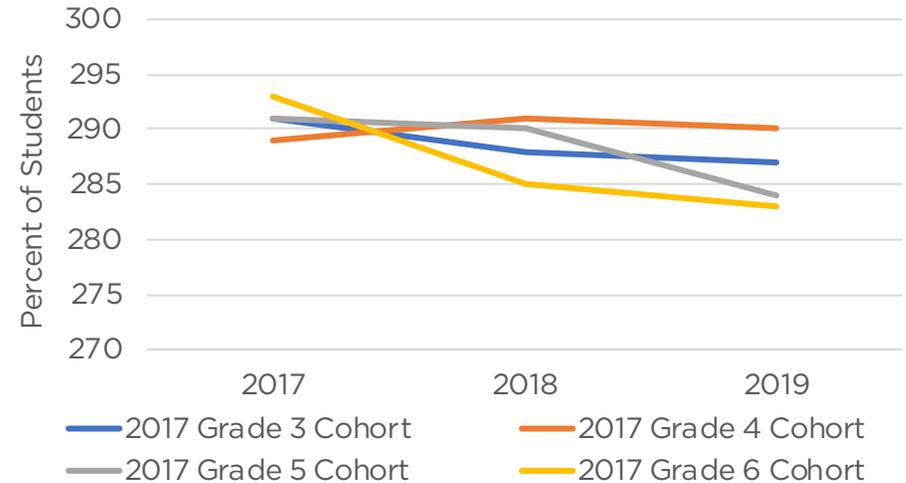
### Grades 6-8 Math Percent Proficient & Above



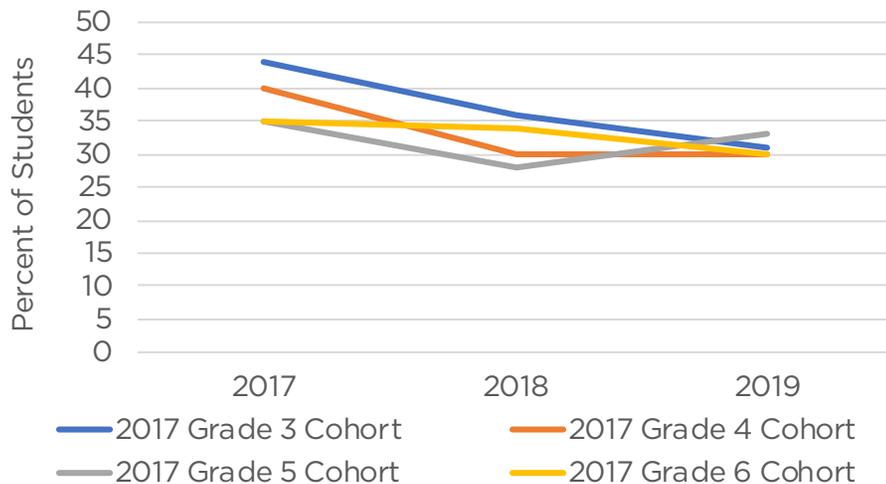
### ELA Percent Proficient Cohort Trend



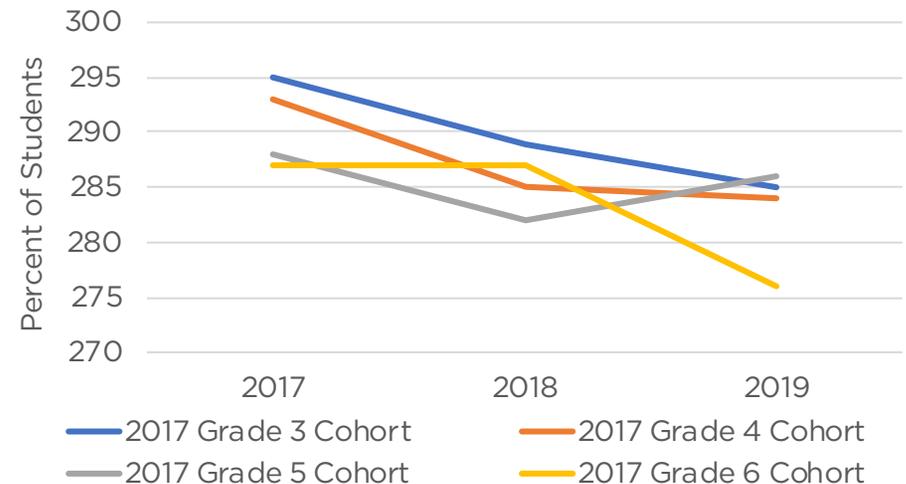
### ELA Mean OPI Cohort Trend



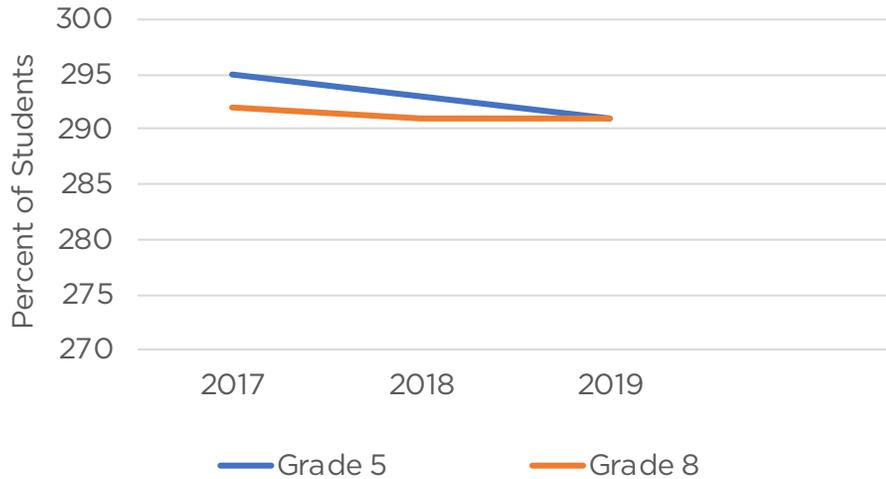
### Math Percent Proficient Cohort Trend



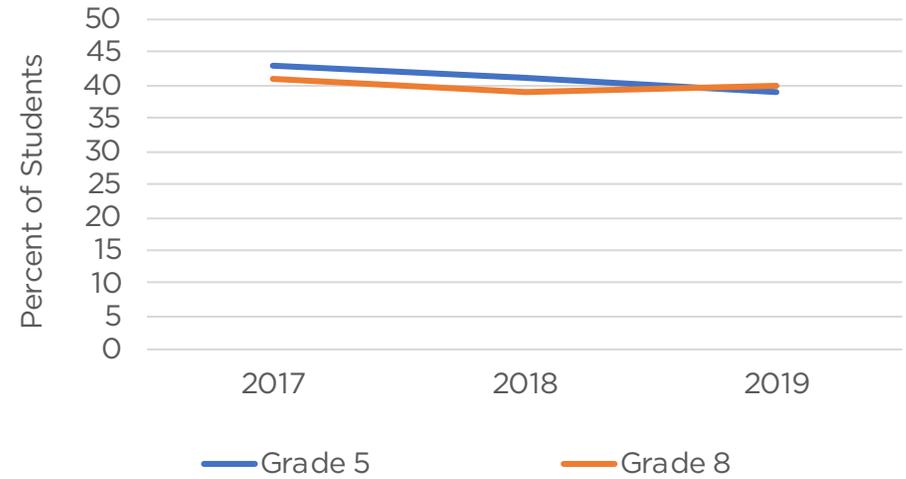
### Math Mean OPI Cohort Trend



### Science Mean OPI



### Grades 5 Science Percent Proficient & Above



## DEFINED TERMS:

**OPI** - The OSTP scaled score between 200 and 399

**Mean OPI** - Average OPI score

**Percent Proficient and Above** - Percentage of students who received an OPI score of 300 or above

**ELA** - English Language Arts

**Cohort** - A group of students tracked over multiple years



OKLAHOMA STATE DEPARTMENT OF  
**EDUCATION**  
— CHAMPION EXCELLENCE —