Smarter Balanced Assessments
Smarter Balanced assessments in English language arts (ELA) and mathematics are administered to students in grades 3–8 and high school. Smarter Balanced Achievement Level Descriptors (ALDs) were developed by K–12 teachers and administrators and higher education faculty from the Smarter Balanced Governing States. The ALDs are aligned to the academic level colleges expect students to have when they arrive on campus. The ALDs describe the knowledge, skills, and processes that students demonstrate on state tests in each performance level, at each tested grade level.

**Range ALDs:**
Grade- and content-specific descriptions of the cognitive and content rigor encompassed within each achievement level. The range ALDs describe the knowledge, skills, and processes *typical* of students in each achievement level.

The Range ALDs presented in this document represent a new direction in the focus and purpose of ALDs. In the past, ALDs were developed near the end of the test development cycle and could only summarize student performance. This new approach allows for the development of ALDs at the beginning of the test development cycle so that expectations for student performance may guide the way tests are conceived and produced.

The Range ALDs presented in this document are identical to the Smarter Balanced ALDs. We have extracted the Claim 1 Range ALDs and bulleted them for ease of reading. The Claims 2, 3, and 4 Range ALDs have also been extracted and formatted by removing the assessment targets for those claims.

**It is important to note that this document is not intended to be used as a checklist.** This is especially true for the high school ALDs which do not describe all of the content in the Standards that students should be learning. The ALDs should, instead, be used to inform educators regarding the typical skills and knowledge a student in each achievement level (Level 1, 2, 3, and 4) is likely to have. They can also be used to inform educators of the skills and knowledge required for students to perform at Levels 3 and 4, levels that show students are making adequate progress toward career- and college-ready skills.

Any questions about this document can be sent to mathematics@k12.wa.us. Thank you.
Achievement level descriptors (ALDs) describe student performance on a standardized test in terms of levels or categories of performance. For the Smarter Balanced assessments, outcomes will be reported in terms of four levels of achievement: Level 1, Level 2, Level 3, and Level 4. The ALDs are text descriptions of the knowledge, skills, and processes that are expected to be demonstrated by students in each category of performance.

**CLAIM 1: Students can explain and apply mathematical concepts and carry out mathematical procedures with precision and fluency.**

<table>
<thead>
<tr>
<th>Target A: Understand ratio concepts and use ratio reasoning to solve problems.</th>
<th>Level 1 students should be able to:</th>
<th>Level 2 students should be able to:</th>
<th>Level 3 students should be able to:</th>
<th>Level 4 students should be able to:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Describe a ratio relationship between two whole number quantities, find missing values in tables that display a proportional relationship, and plot the pairs of values from a table on the coordinate plane.</td>
<td>• Understand the concept of unit rate in straightforward, well-posed problems and solve straightforward, well-posed, one-step problems requiring ratio reasoning.</td>
<td>• Use ratio reasoning to solve and understand the concept of unit rates in unfamiliar or multi-step problems, including instances of unit pricing and constant speed, and solve percent problems by finding the whole, given a part and the percent.</td>
<td>• Solve unfamiliar or multi-step problems by finding the whole, given a part and the percent; explain ratio relationships between any two number quantities; and identify relationships between models or representations.</td>
<td></td>
</tr>
<tr>
<td>• Find a percent as a rate per hundred and convert measurement units.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Target B: Apply and extend previous understandings of multiplication and division to divide fractions by fractions.</th>
<th>Level 1 students should be able to:</th>
<th>Level 2 students should be able to:</th>
<th>Level 3 students should be able to:</th>
<th>Level 4 students should be able to:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Apply and extend previous understandings of multiplication and division to multiply a fraction by a fraction, divide a fraction by a whole number, and be able to connect to a visual model.</td>
<td>• Apply and extend previous understandings of multiplication and division to divide a whole number by a fraction between 0 and 1, divide a mixed number by a whole number, and be able to connect to a visual model.</td>
<td>• Apply and extend previous understandings of multiplication and division to divide a fraction by a fraction and be able to connect to a visual model.</td>
<td>• Use visual models in settings where smaller fractions are divided by larger fractions.</td>
<td></td>
</tr>
<tr>
<td>• Understand the effect that a fraction greater than or less than 1 has on a whole number when multiplied and use or create visual models when multiplying a whole number by a fraction between 0 and 1.</td>
<td>• Understand the effect that a fraction greater than or less than 1 has on a whole number when multiplied and use or create visual models when multiplying a whole number by a fraction between 0 and 1.</td>
<td>• Understand and apply the fact that a fraction multiplied or divided by 1 in the form of ( \frac{a}{a} ) is equivalent to the original fraction.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Target C: Compute fluently with multi-digit numbers and find common factors and multiples.</th>
<th>Level 1 students should be able to:</th>
<th>Level 2 students should be able to:</th>
<th>Level 3 students should be able to:</th>
<th>Level 4 students should be able to:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Add, subtract, and multiply multi-digit whole numbers and decimals to hundredths</td>
<td>• Divide multi-digit whole numbers and add and subtract multi-digit decimal numbers.</td>
<td>• Fluently divide multi-digit numbers and add, subtract, multiply, and divide multi-digit decimal numbers.</td>
<td>• Make generalizations regarding multiples and factors of sets of numbers (e.g., state that a particular set of numbers is relatively prime).</td>
<td></td>
</tr>
<tr>
<td>• Use the distributive property to express the sum of two whole numbers with a common factor.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Target E: Apply and extend previous understandings of arithmetic to algebraic expressions. | - Evaluate numerical expressions without exponents.  
- Write one- or two-step numerical expressions.  
- Identify parts of an expression, using terms (e.g., coefficient, term, sum, product, difference, quotient, factor). | - Evaluate numerical expressions with nonnegative integer exponents that do not need to be distributed across a set of parentheses.  
- Apply and extend previous understandings of arithmetic to evaluate expressions with variables that do not contain exponents.  
- Write one- and two-step algebraic expressions that introduce a variable and identify equivalent expressions. | - Write and evaluate numerical expressions with nonnegative integer exponents and expressions from formulas in real-world problems.  
- Apply and extend previous understandings of arithmetic to evaluate expressions with variables that include nonnegative integer exponents.  
- Apply properties of operations to generate equivalent expressions. | - Apply the understanding of the properties of operations and use the properties to show why two expressions are equivalent. |
| --- | --- | --- | --- | --- |
| Target F: Reason about and solve one-variable equations and inequalities. | - Use substitution to determine when a given number makes an equation or inequality true. | - Solve one-variable equations and inequalities of the form \(x + p = q\) or \(px = q\), where \(p\) and \(q\) are nonnegative rational numbers.  
- Identify and use variables when writing equations. | - Write one-variable equations and inequalities of the form \(x + p > q\) or \(px = q\), where \(p\) and \(q\) are nonnegative rational numbers.  
- Reason about and solve equations and inequalities by writing and graphing their solutions on a number line. | - Solve equations and inequalities of the form \(x + p = q\) or \(px = q\), where \(p\) and \(q\) are rational numbers.  
- Write and graph solutions on the number line. |
| Target G: Represent and analyze quantitative relationships between dependent and independent variables. | - Identify a table that represents a relationship between two variables of the forms \(y = kx\) and \(y = x + c\) with rational numbers and plot points corresponding to equations on coordinate planes. | - Use variables to represent and analyze two quantities that change in relationship to each other of the form \(y = kx\) or \(y = x + c\) with rational numbers.  
- Identify and create an equation that expresses one quantity in terms of another and use graphs and tables to represent the relationship. | - Use graphs, tables, or context to analyze the relationship between dependent and independent variables and relate them to a linear equation. | - Use graphs, tables, or context to analyze nonlinear polynomial relationships between dependent and independent variables and relate them to nonlinear polynomial equations. |
<table>
<thead>
<tr>
<th>Target D: Apply and extend previous understandings of numbers to the system of rational numbers.</th>
<th>• Place all integers on a number line and integer pairs on a coordinate plane with one-unit increments on both axes.</th>
<th>• Apply and extend previous understandings of whole numbers to order rational numbers and interpret statements of their order in the context of a situation.</th>
<th>• Apply and extend previous understandings of numbers to relate statements of inequality to relative positions on a number line, place points with rational coordinates on a coordinate plane, and solve problems involving the distance between points when they share a coordinate.</th>
<th>• Understand absolute value and ordering by using number lines and models and relate reflection across axes to changes in sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target H: Solve real-world and mathematical problems involving area, surface area, and volume.</td>
<td>• Find areas of right triangles. • Draw polygons with positive coordinates on a grid with a scale in one-unit increments, given nonnegative integer-valued coordinates for the vertices. • Find the volume of right rectangular prisms with one side expressed as a fraction or a mixed number in halves or fourths.</td>
<td>• Find areas of special quadrilaterals and triangles. • Draw polygons in the four-quadrant coordinate plane with scales in one-unit increments, given integer-valued coordinates for the vertices. • Find the volume of right rectangular prisms with one side expressed as a fraction or a mixed number.</td>
<td>• Solve problems that involve finding areas of polygons and special quadrilaterals and triangles and find the volume of right rectangular prisms with all sides expressed as a fraction or a mixed number. • Solve problems by drawing polygons in the four-quadrant coordinate plane with scales in various integer increments, given integer-valued coordinates for the vertices or coordinates containing a mix of integers and half, quarter, or tenth units.</td>
<td>• Solve problems by finding surface areas of three-dimensional shapes composed of rectangles and triangles. • Find the volume of a compound figure composed of right rectangular prisms to solve problems.</td>
</tr>
<tr>
<td>Target I: Develop understanding of statistical variability.</td>
<td>• Identify questions that lead to variable responses posed in familiar contexts and recognize that such questions are statistical questions.</td>
<td>• Recognize that questions that lead to variable responses are statistical questions and vice versa, and they should relate the concept of varying responses to the notion of a range of possible responses. • Develop an understanding that the responses to a statistical question will have a representative center and a given set of numerical data. • Identify a reasonable measure of central tendency with respect to a familiar context.</td>
<td>• Pose statistical questions and understand that the responses to a statistical question have a distribution described by its center, spread, and overall shape. • Understand that a measure of center summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number. • Identify a reasonable center and spread with respect to a context.</td>
<td>• Justify the reasonableness of their identified center and spread with respect to an unfamiliar context. • Create or complete a data set with given measures (e.g., mean, median, mode, interquartile range).</td>
</tr>
</tbody>
</table>
**Target J:** Summarize and describe distributions.

- Summarize or display numerical data on a number line, in dot plots, and in histograms.
- Find the median of an odd number of data points.
- Find the mean when data points are nonnegative integers.
- Calculate mean and median, understand that mean and median can be different or the same, and use the measure of center to summarize data with respect to the context.
- Summarize or display data in box plots and find the interquartile range.
- Use the interquartile range along with the angle and measures of center to describe overall patterns in a data distribution, such as symmetry and clusters, and any striking deviations.
- Examine a data set in context and explain the choice of the mean or median, as it relates to the data.
- Relate choice of measures of center and variability to the shape of the data distribution in context of the data.
- Find mean absolute deviation and identify outliers with reference to the context of the situation.
- Predict effects on the mean and median, given a change in data points.

**CLAIM 2:** Students can solve a range of complex, well-posed problems in pure and applied mathematics, making productive use of knowledge and problem-solving strategies.

**CLAIM 4:** Students can analyze complex, real-world scenarios and can construct and use mathematical models to interpret and solve problems.

<table>
<thead>
<tr>
<th>Level 1 students should be able to:</th>
<th>Level 2 students should be able to:</th>
<th>Level 3 students should be able to:</th>
<th>Level 4 students should be able to:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identify important quantities in the context of a familiar situation and translate words to equations or other mathematical formulation. When given the correct math tool(s), students should be able to apply the tool(s) to problems with a high degree of scaffolding. Apply mathematics to solve familiar problems arising in everyday life, society, and the workplace by identifying important quantities and by beginning to develop a model.</td>
<td>Identify important quantities in the context of an unfamiliar situation and to select tools to solve a familiar and moderately scaffolded problem or to solve a less familiar or a non-scaffolded problem with partial accuracy. Provide solutions to familiar problems using an appropriate format (e.g., correct units, etc.). Interpret information and results in the context of a familiar situation. Apply mathematics to propose solutions by identifying important quantities, locating missing information from relevant external resources, beginning to construct chains of reasoning to connect with a model, producing partial justification and interpretations, and beginning to state logical assumptions.</td>
<td>Map, display, and identify relationships, use appropriate tools strategically, and apply mathematics accurately in everyday life, society, and the workplace. Interpret information and results in the context of an unfamiliar situation. Apply mathematics to solve unfamiliar problems arising in everyday life, society, and the workplace by identifying important quantities and mapping, displaying, explaining, or applying their relationship and by locating missing information from relevant external resources. Construct chains of reasoning to justify a model used, produce justification of interpretations, state logical assumptions, and compare and contrast multiple plausible solutions and approaches.</td>
<td>Analyze and interpret the context of an unfamiliar situation for problems of increasing complexity and solve problems with optimal solutions. Apply mathematics to solve unfamiliar problems by constructing chains of reasoning to analyze a model, producing and analyzing justification of interpretations, stating logical assumptions, and constructing and comparing/contrast multiple plausible solutions and approaches.</td>
</tr>
</tbody>
</table>
CLAIM 3: Students can clearly and precisely construct viable arguments to support their own reasoning and to critique the reasoning of others.

<table>
<thead>
<tr>
<th>Level 1 students should be able to:</th>
<th>Level 2 students should be able to:</th>
<th>Level 3 students should be able to:</th>
<th>Level 4 students should be able to:</th>
</tr>
</thead>
</table>
| • Base arguments on concrete referents such as objects, drawings, diagrams, and actions and identify obvious flawed arguments in familiar contexts. | • Find and identify the flaw in an argument by using examples or particular cases.  
• Break a familiar argument given in a highly scaffolded situation into cases to determine when the argument does or does not hold. | • Use stated assumptions, definitions, and previously established results and examples to test and support their reasoning or to identify, explain, and repair the flaw in an argument.  
• Break an argument into cases to determine when the argument does or does not apply. | • Use stated assumptions, definitions, and previously established results to support their reasoning or repair and explain the flaw in an argument.  
• Construct a chain of logic to justify or refute a proposition or conjecture and to determine the conditions under which an argument does or does not apply. |