Front Matter for Performance Level Descriptors for Mathematics
NCSC Alternate Assessment

General Description

Performance Level Descriptors (PLDs) describe how well a student has learned the content and skills measured by the NCSC Alternate Assessment based on Alternate Achievement Standards (AA-AAS). For Indiana, three performance categories describe the Indiana/NCSC assessment results. The assessments measure what a student knows and is able to do in the tested subjects of English Language Arts (ELA) and mathematics in grades 3 – 8 and grade 10. The PLDs indicate whether a student's performance is on target to meet academic expectations or if there are gaps in learning. The test results are one way teachers find out what a student has learned and in what areas a student needs more help; the test results help teachers, schools, parents and guardians build a path to student learning.

NCSC developed the AA-AAS items in reading, writing, and mathematics to present a range of complexity and difficulty. Most of the assessment items ask the student to select the correct response (e.g., selected-response). Some items ask the student to construct a response using materials provided through the assessment. Each item addresses grade-specific academic content targets and provides students with the opportunity to respond independently and show what they know and can do.

Mathematics Task Complexity

The PLDs for mathematics include references to task complexity. All mathematics items are grade- and age-appropriate. All items are to be read aloud to a student or signed if the student is deaf.

The table below describes some of the general characteristics included in the low to high task complexity used in the NCSC AA-AAS. For example, the complexity increases in the low to high complexity tasks from the application of basic arithmetic facts with various concrete materials to problem solving using the conventions of written mathematics notation and operations.

Low Task Complexity	Moderate Task Complexity	High Task Complexity
- Simple problems - Use of common mathematical terms and symbols	- Common problems presented in mathematical context - Use of various mathematical terms and symbols	- Multiple mathematical ideas presented in problems - Use of various mathematical terms and symbolic representations of numbers, variables, and other item elements

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Low Task Complexity

These tasks present mathematical problems in a clear and organized manner with simple arrangements of numerals and symbols. These types of tasks address present grade- and age-appropriate content using common terms to support a student's application of basic number facts and computation. These tasks include pictorial representations paired with standardized verbal descriptions of each quantity. Low complexity tasks support those students developing comprehension of mathematical concepts and problem solving. These students require teacher support, during instruction, to demonstrate skills at a moderate task complexity level.

Moderate Task Complexity

These tasks present mathematical problems in the context of the language and symbolic notation system of mathematics. Mathematical language and symbolic representations (e.g., $<$, $>$, $=$) are incorporated into a sequence of steps, to make explicit the application of the quantities and operations required to solve problems. These tasks provide basic fact references. Moderate complexity tasks support those students that may require teacher support, during instruction, to demonstrate application and problem solving skills on high complexity tasks.

High Task Complexity

These tasks present mathematical problems which require students to analyze mathematical situations and apply appropriate concepts of quantities and operations to demonstrate an understanding of how to solve problems. Students must make connections between mathematical concepts, the language of mathematics, and mathematical symbols. These tasks are generally harder than the low and moderate complexity tasks.

Grade 3 Mathematics Performance Level Descriptors

Did Not Pass	Pass	Pass+
Low task complexity - *Simple problems using common mathematical terms and symbols*	**Low/Moderate task complexity -** ***Low** - Simple problems using common mathematical terms and symbols* ***Moderate** - Common problems presented in mathematical context using various mathematical terms and symbols*	**High task complexity -** *Multiple mathematical ideas presented in problems using various mathematical terms and symbolic representations of numbers, variables, and other item elements*
He/she is able to: • solve addition problems • identify growing number patterns • identify an object showing a specified number of parts shaded • identify which object has the greater number of parts shaded • identify an object equally divided in two parts • identify the number of objects to be represented in a pictograph	He/she is able to: • identify an arrangement of objects which represents factors in a problem • solve multiplication equations in which both numbers are equal to or less than five • identify a set of objects as nearer to 1 or 10 • identify a representation of the area of a rectangle **AND with Moderate task complexity -** *Common problems presented in mathematical context using various mathematical terms and symbols* • identify geometric figures which are divided into equal parts • match fraction models to unitary fractions • compare fractions with different numerators and the same denominator • identify multiplication patterns • count unit squares to compute the area of a rectangle **AND with High task complexity -** *Multiple mathematical ideas presented in problems using various mathematical terms and symbolic representations of numbers, variables, and other item elements* • round numbers to nearest 10 • compare fractions with different numerators and the same denominator	He/she is able to: • solve addition and subtraction word problems • check the correctness of an answer in the context of a scenario • solve multiplication equations in which both numbers are greater than five • transfer data from an organized list to a bar graph

Grade 4 Mathematics Performance Level Descriptors

Did Not Pass	Pass	Pass+
Low task complexity - *Simple problems using common mathematical terms and symbols*	**Low/Moderate task complexity -** ***Low*** *- Simple problems using common mathematical terms and symbols* ***Moderate*** *- Common problems presented in mathematical context using various mathematical terms and symbols*	**High task complexity -** *Multiple mathematical ideas presented in problems using various mathematical terms and symbolic representations of numbers, variables, and other item elements*
He/she is able to: • identify an array with the same number of objects in each row • identify values rounded to nearest tens place • identify equivalent representations of a fraction (e.g., shaded diagram) • compare representations of a fraction (e.g., shaded diagram) • identify a rectangle with the larger or smaller perimeter • identify a given attribute of a shape • identify the data drawn in a bar graph that represents the greatest value	He/she is able to: • match a model to an multiplication expression using two single digit numbers • identify a model of a multiplicative comparison • round numbers to nearest 10, 100 or 1000 • differentiate parts and wholes **AND with Moderate task complexity -** *Common problems presented in mathematical context using various mathematical terms and symbols* • select a 2-dimensional shape with a given attribute • compare two fractions with different denominators • sort a set of 2-dimensional shapes • compute the perimeter of a rectangle **AND with High task complexity -** *Multiple mathematical ideas presented in problems using various mathematical terms and symbolic representations of numbers, variables, and other item elements* • transfer data to a graph • solve multiplication word problems	He/she is able to: • show division of objects into equal groups • solve a multiplicative comparison word problem using up to two-digit numbers • check the correctness of an answer in the context of a scenario • identify equivalent fractions

Grade 5 Mathematics Performance Level Descriptors

Did Not Pass	Pass	Pass+
Low task complexity - *Simple problems using common mathematical terms and symbols*	**Low/Moderate task complexity -** ***Low*** *- Simple problems using common mathematical terms and symbols* ***Moderate*** *- Common problems presented in mathematical context using various mathematical terms and symbols*	**High task complexity -** *Multiple mathematical ideas presented in problems using various mathematical terms and symbolic representations of numbers, variables, and other item elements*
He/she is able to: • solve one-step subtraction word problems • divide sets (no greater than 6) into two equal parts • identify values in the tenths place • identify a number in the ones, tens or hundreds place • identify a given axis of a coordinate plan • calculate elapsed time (i.e., hours) • identify whether the values increase or decrease in a line graph	**He/she is able to:** • identify if the total will increase or decrease when combining sets • perform addition and subtraction with decimals • identify a symbolic representation of the addition of two fractions • identify place values to the hundredths place **AND with Moderate/High task complexity -** ***Moderate*** *- Common problems presented in mathematical context using various mathematical terms and symbols -* ***High*** *- Multiple mathematical ideas presented in problems using various mathematical terms and symbolic representations of numbers, variables, and other item elements* • compare the values of two products based upon multipliers • round decimals to nearest whole number • locate a given point on a coordinate plane when given an ordered pair • convert between minutes and hours	**He/she is able to:** • solve multiplication and division word problems • perform all four operations with decimals • solve word problems involving fractions • convert any standard measurement • make quantitative comparisons between data sets shown as line graphs

Grade 6 Mathematics Performance Level Descriptors

Did Not Pass	Pass	Pass+
Low task complexity - *Simple problems using common mathematical terms and symbols*	**Low/Moderate task complexity -** ***Low*** *- Simple problems using common mathematical terms and symbols* ***Moderate*** *- Common problems presented in mathematical context using various mathematical terms and symbols*	**High task complexity -** *Multiple mathematical ideas presented in problems using various mathematical terms and symbolic representations of numbers, variables, and other item elements*
He/she is able to: • identify a model of a given percent • match a given unit rate to a model • identify a representation of two equal sets • identify a number less than zero on a number line • identify the meaning of an unknown in a modeled equation • count the number of grids or tiles inside a rectangle to find the area of a rectangle • identify the object that appears most frequently in a set of data (mode) • identify a representation of a set of data arranged into even groups (mean)	**He/she is able to:** • match a given ratio to a model • recognize a representation of the sum of two halves • solve measurement problems involving unit rates • identify a representation of a value less than zero **AND with Moderate/High task complexity -** *Moderate - Common problems presented in mathematical context using various mathematical terms and symbols* *High - Multiple mathematical ideas presented in problems using various mathematical terms and symbolic representations of numbers, variables, and other item elements* • perform one-step operations with two decimal numbers • solve word problems using a percent • perform operations using up to three-digit numbers • identify positive and negative values on a number line • determine the meaning of a value from a set of positive and negative integers • solve word problems using ratios and rates	**He/she is able to:** • solve real world measurement problems involving unit rates • solve word problems with expressions including variables • compute the area of a parallelogram • identify the median or the equation needed to determine the mean of a set of data

Grade 7 Mathematics Performance Level Descriptors

Did Not Pass	Pass	Pass+
Low task complexity - *Simple problems using common mathematical terms and symbols*	**Low task complexity -** *Simple problems using common mathematical terms and symbols*	**High task complexity -** *Multiple mathematical ideas presented in problems using various mathematical terms and symbolic representations of numbers, variables, and other item elements*
He/she is able to: - identify a representation which represents a negative number and its multiplication or division by a positive number - identify representations of area and circumference of a circle - identify representations of surface area - make qualitative comparisons when interpreting a data set presented on a bar graph or in a table	He/she is able to: - match a given ratio to a model - identify the meaning of an unknown in a modeled equation - describe a directly proportional relationship (i.e., increases or decreases) **AND with Moderate/High task complexity -** ***Moderate*** *- Common problems presented in mathematical context using various mathematical terms and symbols* ***High*** *- Multiple mathematical ideas presented in problems using various mathematical terms and symbolic representations of numbers, variables, and other item elements* - solve multiplication problems with positive/negative whole numbers - interpret graphs to qualitatively contrast data sets - solve division problems with positive/negative whole numbers - use a proportional relationship to solve a percentage problem - identify unit rate (constant of proportionality) in tables and graphs of proportional relationships - evaluate variable expressions that represent word problems	He/she is able to: - solve word problems involving ratios - identify proportional relationships between quantities represented in a table - compute the area of a circle - find the surface area of a three-dimensional right prism

Grade 8 Mathematics Performance Level Descriptors

Did Not Pass	Pass	Pass+
Low task complexity - *Simple problems using common mathematical terms and symbols*	**Low task complexity -** *Simple problems using common mathematical terms and symbols*	**High task complexity -** *Multiple mathematical ideas presented in problems using various mathematical terms and symbolic representations of numbers, variables, and other item elements*
He/she is able to: • locate a given decimal number on a number line • identify the relatively larger data set when given two data sets presented in a graph • identify similar rectangles • identify an attribute of a cylinder • identify a rectangle with the larger or smaller area as compared to another rectangle • identify an ordered pair and its point on a graph	He/she is able to: • identify the solution to an equation which contains a variable • identify the y-intercept of a linear graph • match a given relationship between two variables to a model • identify a data display that represents a given situation • interpret data presented in graphs to identify associations between variables	He/she is able to: • locate approximate placement of an irrational number on a number line • identify the relationship shown on a linear graph • compute the change in area of a figure when its dimensions are changed • plot provided data on a graph
	AND with Moderate task complexity - *Common problems presented in mathematical context using various mathematical terms and symbols* • use properties of similarity to identify similar figures • solve a linear equation which contains a variable • calculate slope of a positive linear graph • solve for the volume of a cylinder • plot provided data on a graph	
	AND with High task complexity - *Common problems presented in mathematical context using various mathematical terms and symbols*	
	• interpret data presented in graphs to identify associations between variables • interpret data tables to identify the relationship between variables • identify congruent figures	

Grade 10 Mathematics Performance Level Descriptors

Did Not Pass	Pass	Pass+
Low task complexity - *Simple problems using common mathematical terms and symbols*	**Low task complexity -** *Simple problems using common mathematical terms and symbols*	**High task complexity -** *Multiple mathematical ideas presented in problems using various mathematical terms and symbolic representations of numbers, variables, and other item elements*
He/she is able to: - arrange a given number of objects into two sets in multiple combinations - match an equation with a variable to a provided real world situation - determine whether a given point is or is not part of a data set shown on a graph - identify an extension of a linear graph - use a table to match a unit conversion - complete the formula for area of a figure	He/she is able to: - identify the model that represents a square number - identify the hypotenuse of a right triangle - identify the greatest or least value in a set of data shown on a number line - identify the missing label on a histogram - calculate the mean and median of a set of data **AND with Moderate/High task complexity -** *__Moderate__ - Common problems presented in mathematical context using various mathematical terms and symbols* *__High__ - Multiple mathematical ideas presented in problems using various mathematical terms and symbolic representations of numbers, variables, and other item elements* - compute the value of an expression that includes an exponent - find the missing attribute of a three-dimensional figure - plot data on a histogram - calculate the mean and median of a set of data - identify the linear representation of a provided real world situation - use an equation or a linear graphical representation to solve a word problem - identify a histogram which represents a provided data set	He/she is able to: - identify variable expressions which represent word problems - solve real world measurement problems that require unit conversions - determine two similar right triangles when a scale factor is given - make predictions from data tables and graphs to solve problems