DLM® Performance Level Descriptors–Math: Grade 3

Integrated Model

Emerging	A student who achieves at the **emerging** performance level typically attends to objects and people and uses attributes or characteristics to identify and sort familiar objects into sets. The student attends to objects and people by • attending to new and different objects and people in the environment The student identifies and sorts familiar objects into sets by • understanding the difference between parts of objects and whole objects • recognizing sets of objects and determining if the objects in a set are the same or different based on a given attribute (for example, size, shape, or texture) • understanding the combining and dividing of objects by attending to a particular set of objects and then moving them either to create a group or to create separate sets
Approaching the Target	A student who achieves at the **approaching the target** performance level typically represents and solves problems using an understanding of abstract math concepts and symbols. The student demonstrates an understanding of abstract math concepts and symbols by • recognizing how numbers appear in a sequence (for example, 5, 6, 7) and counting to 30 • identifying symbols used in equations (for example, =, -, +) • solving basic addition and subtraction problems with solutions up to 20 • communicating basic place-value knowledge by recognizing ten objects as a tens unit • making direct comparisons of length when shown two similar objects • classifying shapes based on a given attribute (for example, the number of sides) • identifying shapes divided into equal parts from shapes that are divided into unequal parts

At Target	A student who achieves at the **at target** performance level typically makes sense of problems and perseveres in solving them, and identifies repeating calculations or patterns. The student makes sense of problems and solves them by • identifying the place value of two-digit numbers to tens • calculating the length of objects using informal units of measurement • identifying shapes divided into fractional parts and shapes that are whole • recognizing the hour and minute on a digital clock display and telling time to the nearest hour • recognizing the structure of a picture or bar graph • answering questions about the data displayed in the graph The student identifies repeating calculations or patterns by • solving repeated addition problems (for example, 2 + 2 + 2 or 3 + 3 + 3) • classifying data based on given attributes (for example, the number of objects)
Advanced	A student who achieves at the **advanced** performance level typically calculates accurately, understands mathematical terms, and uses that understanding to identify connections between mathematical concepts. The student calculates accurately by • multiplying numbers 1 through 5 • solving two-step addition and subtraction word problems with solutions up to 20 • extending a pattern with symbols or numbers using a rule • identifying shapes divided into fractional parts up to one-half • communicating time to the quarter hour on a digital or analog clock The student demonstrates an understanding of mathematical terms and connections between concepts by • comparing and rounding numbers to the nearest ten or hundred • using formal units of measure to communicate length in inches and feet • interpreting data displayed within a graph

DLM Performance Level Descriptors–Math: Grade 4

Integrated Model

Emerging	A student who achieves at the **emerging** performance level typically looks for and makes use of mathematical structures (for example, patterns and attributes of shapes). The student looks for and makes use of mathematical structures by • attending to objects and shapes • recognizing objects or shapes that are whole or in separate parts • recognizing that a set is a group of objects or shapes with similar or different characteristics • understanding the combining and dividing of objects by moving them to create a group or to create separate sets • combining objects or shapes into pairs based on attributes
Approaching the Target	A student who achieves at the **approaching the target** performance level typically identifies repeated calculations, calculates accurately, and attends to precision in computation and measurement. The student identifies repeated calculations by • solving repeated addition problems (for example, 2 + 2 + 2) The student calculates accurately by • adding and subtracting numbers within 20 The student attends to precision in computation and measurement by • counting objects, ordering numbers, and classifying objects based on attributes • communicating place value of numbers to the tens place • recognizing patterns in numbers and symbols • ordering numbers • classifying objects based on attributes • recognizing shapes divided into two or more parts • comparing the weight or volume of two objects • identifying the names of coins (pennies, nickels, dimes, and quarters) • recognizing the hour and minute on a digital and analog clock

At Target	A student who achieves at the **at target** performance level typically calculates accurately, reasons abstractly, interprets data, and makes sense of problems and perseveres in solving them. The student calculates accurately by • adding or subtracting two-digit numbers without regrouping • rounding two-digit numbers to the nearest ten The student reasons abstractly, interprets data, and makes sense of problems and perseveres in solving them by • identifying the core unit of a repeating number or symbol pattern (for example, in 123123123, the core unit is 123) • identifying types of angles (for example, obtuse, acute, and right) • counting unit squares to calculate area • using appropriate tools (for example, scales, tiles, or measuring cups) to measure the weight, area, or volume of different objects • identifying fractions up to one-fourth • telling time to the hour and half hour on a digital and analog clock • identifying the values of coins (pennies, nickels, dimes, and quarters) and one-dollar bills • interpreting data on a graph and using that information to answer questions
Advanced	A student who achieves at the **advanced** performance level typically calculates accurately, reasons abstractly, explains reasoning, and uses appropriate tools to solve problems. The student calculates accurately by • adding or subtracting two-digit numbers with regrouping • solving two-step addition or subtraction word problems • multiplying numbers up to 12 by numbers 1 through 5 The student reasons abstractly and explains reasoning by • rounding three-digit numbers to the nearest hundred • recognizing math symbols (for example, parallel lines or intersecting lines) • extending a pattern that uses numbers or symbols • ordering angles from largest to smallest • estimating the weight of different objects and the volume of different containers • calculating coin equivalency (for example, the number of nickels that equals one quarter) The student uses appropriate tools to solve problems by • telling time to the nearest quarter hour on a digital and analog clock • making predictions about data after interpreting a line graph

DLM Performance Level Descriptors–Math: Grade 5

Integrated Model

Emerging	A student who achieves at the **emerging** performance level typically attends to and seeks objects and makes use of mathematical structures (for example, patterns and attributes of shapes). The student attends to and seeks objects by • attending to new objects in the environment • identifying familiar objects and communicating whether the objects are grouped together or are separate The student looks for and makes use of mathematical structures by • arranging objects in pairs and recognizing the number of objects in a set • classifying objects or shapes by a given attribute (for example, the number of sides)
Approaching the Target	A student who achieves at the **approaching the target** performance level typically identifies repeated calculations, models with mathematics, and makes sense of problems and perseveres in solving them. The student identifies repeated calculations by • identifying a number or symbol pattern • recognizing that repeated addition problems are made up of a set of numbers (for example, 2 + 2 + 2) The student models with mathematics by • recognizing equal shares of objects (for example, shapes divided into two equal parts) • identifying two-dimensional and three-dimensional shapes The student makes sense of problems and perseveres in solving them by • demonstrating number sense by comparing numerals or numbers of objects up to 10 • communicating coin and bill values • telling time to the hour on a digital and analog clock • interpreting data from a graph or chart

At Target	A student who achieves at the **at target** performance level typically calculates accurately, reasons abstractly, interprets data, and uses mathematical tools to solve problems. The student calculates accurately by • multiplying numbers by 1 through 5 • identifying fractions with denominators up to 10 • communicating coin names and values (pennies, nickels, dimes, and quarters) • demonstrating beginning division skills (for example, repeated subtraction, dividing groups of objects) The student reasons abstractly by • communicating the place value of numerals up to the tens place • demonstrating number sense up to 100 by comparing two sets of objects or numerals • recognizing and extending patterns of numbers or symbols The student interprets data by • identifying two- and three-dimensional shapes The student uses mathematical tools to solve problems by • measuring objects using appropriate tools (for example, a scale to weigh objects or a ruler to measure length) and directly comparing the length or weight of two or more objects • telling time to the hour, half hour, and quarter hour on a digital or analog clock • answering questions and representing data on a bar, picture, or line plot graph

Advanced	A student who achieves at the **advanced** performance level typically calculates accurately, reasons abstractly, explains reasoning, and interprets real-world problems and model their solutions. The student calculates accurately by • identifying sets of objects that have been equally distributed to demonstrate beginning division • identifying and supplying missing numbers in a pattern • ordering numbers from least to greatest • recognizing proper fractions on an area-model representation (for example, a garden divided into four equal parts) The student reasons abstractly by • recognizing whether an object is two-dimensional or three-dimensional • sorting two-dimensional shapes that are the same size • recognizing attributes or characteristics of three-dimensional shapes • recognizing measurable attributes (for example, size and shape) The student explains reasoning by • demonstrating an expanded math vocabulary by using mathematical terms (for example, *same*, *different*, *more*, and *fewer*) The student interprets real-world problems and models their solutions by • estimating measures of length and weight • determining the volume of a rectangular prism • adding using mixed coins • telling time to the quarter-hour on a digital or analog clock • making predictions using data displayed in a graph

DLM Performance Level Descriptors–Math: Grade 6

Integrated Model

Emerging	A student who achieves at the **emerging** performance level typically attends to and seeks objects and looks for and makes use of mathematical structures (for example, patterns and attributes of shapes). The student attends to and seeks objects by • arranging objects into sets • recognizing sets and subsets of objects • recognizing groups of objects that are separated The student looks for and makes use of mathematical structures by • identifying equal parts of objects (for example, shapes, markers, or toys) • partitioning or dividing sets of objects into equal groups • combining and comparing sets of objects • classifying objects by attributes (for example, size, and shape) • ordering objects using a rule or pattern
Approaching the Target	A student who achieves at the **approaching the target** performance level typically identifies repeated calculations, models with mathematics, and reasons abstractly. The student identifies repeated calculations by • solving repeated addition problems (for example, 2 + 2 + 2 or 4 + 4 + 4) • solving repeated subtraction problems (for example, 10 - 2 - 2 - 2 - 2) The student models with mathematics by • representing addition and subtraction in equations The student reasons abstractly by • explaining volume as the composition of unit cubes • explaining the relationship between a unit square and area • recognizing the distribution of data by shape

At Target	A student who achieves at the **at target** performance level typically calculates accurately, reasons abstractly, interprets data, and uses mathematical tools to solve problems.
	The student calculates accurately by
	• solving word problems involving the area of rectangles
	• multiplying numbers by 1, 2, 3, 4, and 5
	• solving equations using positive and negative numbers
	• calculating volume of rectangular prisms by packing unit cubes
	The student reasons abstractly by
	• explaining relationships between unit fractions and decimals
	• representing variables in expressions
	• representing unknown values in expressions
	• recognizing equivalent expressions involving addition or subtraction
	The student interprets data by
	• recognizing the overall shape of data in a graph
	• identifying outliers in a data distribution
	The student uses mathematical tools to solve problems by
	• calculating area with unit squares and tiling
Advanced	A student who achieves at the **advanced** performance level typically calculates accurately, reasons abstractly, explains reasoning, and interprets real-world problems and models their solutions.
	The student calculates accurately by
	• using tiling and a formula to find the area of a rectangle
	• using a formula to calculate the volume of rectangular prisms
	• dividing numbers by 1, 2, 3, 4, and 5
	• recognizing and representing ratios of many to one (for example, 3:1)
	• adding, comparing, and decomposing fractions (for example, 2/4 = 1/4 + 1/4)
	The student reasons abstractly by
	• recognizing the overall shape of data on a graph
	The student explains reasoning by
	• communicating measurements of center by using data distribution (for example, a graph or line plot)
	The student interprets real-world problems and models their solutions by
	• solving real-world problems
	• using properties of operations to generate equivalent expressions involving addition and subtraction
	• explaining inequalities and integers in the real world

DLM Performance Level Descriptors–Math: Grade 7

Integrated Model

Emerging	A student who achieves at the **emerging** performance level typically attends to and seeks objects and people and looks for and makes use of mathematical structures (for example, patterns and attributes of shapes). The student attends to and seeks objects and people by • paying attention to and noticing new things in the environment • recognizing measurable attributes of an object (for example, size, shape, and number of sides) • identifying objects that are the same and objects that are different The student looks for and makes use of mathematical structures by • combining objects and partitioning, or dividing, objects into sets • classifying objects • arranging objects using a rule • recognizing separate objects and objects in a set • recognizing the concept of *whole* on a set model
Approaching the Target	A student who achieves at the **approaching the target** performance level typically identifies repeated calculations, looks for and makes use of mathematical structures, and models with mathematics. The student identifies repeated calculations by • modeling and solving repeated addition (for example, 2 + 2 + 2 or 4 + 4 + 4) • modeling and solving repeated subtraction (for example, 10 - 2 - 2 - 2 - 2) The student looks for and makes use of mathematical structures by • matching identical two-dimensional and three-dimensional shapes The student models with mathematics by • recognizing increasing or decreasing patterns (for example, 1, 3, 5 . . . or 8, 6, 4 . . .) • recognizing line plots, bar graphs, and picture graphs • recognizing lines, line segments, points, and rays

At Target	A student who achieves at the **at target** performance level typically calculates accurately, reasons abstractly, and explains reasoning. The student calculates accurately by • adding and subtracting fractions with common denominators (for example, 2/5 + 1/5) • decomposing fractions (for example, 2/4 = 1/4 + 1/4) • demonstrating the concept of multiplication and division • applying the properties of addition and multiplication to solve problems The student reasons abstractly by • recognizing angles of different sizes (for example, acute, right, and obtuse angles) • recognizing an arithmetic sequence • recognizing one tenth or tenths on a set model The student explains his or her reasoning by • describing attributes of shapes (for example, size and number of sides) • explaining length and perimeter • recognizing the outcomes of an event
Advanced	A student who achieves at the **advanced** performance level typically calculates accurately, reasons abstractly, explains reasoning, interprets real-world problems, models solutions, and interprets data. The student calculates accurately by • matching similar two-dimensional and three-dimensional shapes • using coordinates on a grid to find the perimeter of polygons • comparing angles to a right angle • comparing two decimals to the tenths place using symbols • demonstrating the relationship between multiplication and division • adding and subtracting fractions with denominators of 10 and 100 (for example, 4/10 + 60/100) • multiplying numbers 1 through 10 by numbers 1 through 5 • dividing numbers 1 through 10 by numbers 1 through 5 • representing fractions as decimals The student reasons abstractly and explains reasoning by • explaining decimals • recognizing recursive rules for arithmetic sequences • using symbols to compare two decimals with a hundredths place (for example, 0.01 > 0.001) The student interprets real-world problems and models solutions by • recognizing equivalent expressions • writing equivalent expressions for word problems The student interprets data by • assessing the variability of data sets • comparing the shapes of two data sets

DLM Performance Level Descriptors–Math: Grade 8

Integrated Model

Emerging	A student who achieves at the **emerging** performance level typically looks for and makes use of mathematical structures (for example, patterns and attributes of shapes). The student looks for and makes use of mathematical structures by • combining and partitioning, or dividing, sets of objects • forming pairs of objects and ordering pairs of objects • recognizing a set of objects • recognizing objects that are separate from the set • classifying objects by attribute and ordering objects by attribute • recognizing the attribute values of shapes (for example, size and number of sides) • identifying objects that are the same and objects that are different • combining two parts to make a whole • recognizing patterns occurring in nature (for example, sunrise and sunset)
Approaching the Target	A student who achieves at the **approaching the target** performance level typically identifies repeated calculations, looks for and makes use of mathematical structures, reasons abstractly, and interprets data. The student identifies repeated calculations by • modeling, solving, and explaining repeated addition problems (for example, 2 + 2 + 2 or 4 + 4 + 4) • modeling, solving, and explaining repeated subtraction problems (for example, 10 - 2 - 2 - 2 - 2) The student looks for and makes use of mathematical structures by • explaining repeated addition and repeated subtraction problems • recognizing tenths and one-tenth in decimal and fraction form (for example, 0.10 and 1/10) • matching two-dimensional and three-dimensional shapes • recognizing angles of different degrees (for example, acute, obtuse, and right angles) The student reasons abstractly by • explaining transformations of geometric shapes • recognizing increasing and decreasing patterns • extending a pattern The student interprets data by • explaining coordinate pairs • recognizing bar graphs, picture graphs, line graphs, and charts • using graphs or charts to answer questions

At Target	A student who achieves at the **at target** performance level typically makes sense of problems and perseveres in solving them, calculates accurately, reasons abstractly, and interprets data.
	The student makes sense of problems and calculates accurately by • recognizing exponents • representing decimals with tenths and hundredths as fractions (for example, 0.40 = 4/10) • subtracting two decimals • finding the unknown value in an equation • solving multiplication problems • representing fractions as decimals The student reasons abstractly by • explaining decimals • comparing angles to a right angle • recognizing figures that have had a transformation (for example, translation, reflection, or rotation) • recognizing congruent figures The student interprets data by • reading and representing data on graphs and charts • generating ordered pairs
Advanced	A student who achieves at the **advanced** performance level typically calculates accurately, attends to precision in calculations, reasons abstractly, explains reasoning, interprets real-world problems and models their solutions, and interprets data.
	The student calculates accurately and attends to precision by • solving word problems involving addition, subtraction, or multiplication • finding the function rule in graphs and tables • using formulas to calculate area, perimeter, and volume • representing a fraction as a decimal • explaining properties of exponents • solving linear inequalities • adding and subtracting fractions with unlike denominators of 10 and 100 (for example, 4/10 + 60/100) The student reasons abstractly and explains reasoning by • recognizing the recursive rule • relating similar figures to transformations • describing a series of transformations on shapes The student interprets real-world problems and models their solutions by • recognizing and extending geometric sequences • explaining complementary angles • using symbols to compare decimals with thousandths (for example, 0.002 < 0.005) The student interprets data by • recognizing covariation and the direction of covariation • making predictions using data displayed on graphs and charts

DLM Performance Level Descriptors–Math: Grade 9

Integrated Model

Emerging	A student who achieves at the **emerging** performance level typically looks for and makes use of mathematical structures (for example, patterns and attributes of shapes). The student looks for and makes use of mathematical structures by • partitioning, or dividing, and combining objects or shapes • recognizing attributes of shapes (for example, size and number of sides) • recognizing sets and subsets of objects • recognizing objects that are separate • understanding opposites • recognizing objects as the same or different
Approaching the Target	A student who achieves at the **approaching the target** performance level typically calculates accurately and looks for and makes use of mathematical structures. The student calculates accurately by • using repeated addition to solve problems (for example, 2 + 2 + 2 or 4 + 4 + 4) • using repeated subtraction to solve problems (for example, 10 - 2 - 2 - 2 - 2) • understanding place value (for example, that one ten equals ten ones) • demonstrating an understanding of multiplication and division The student looks for and makes use of mathematical structures by • recognizing two-dimensional and three-dimensional shapes • recognizing measureable attributes (for example, size, shape, and number of sides) • identifying points, rays, and right angles

At Target	A student who achieves at the **at target** performance level typically makes sense of problems and perseveres in solving them, calculates accurately, looks for and makes use of mathematical structures, and reasons abstractly. The student makes sense of problems, perseveres in solving them, and calculates accurately by • solving multiplication and division word problems • finding the unknown value in multiplication and division equations • solving real-world problems with rational numbers • solving word problems involving area and perimeter The student looks for and makes use of mathematical structures by • recognizing measureable attributes • representing linear equations with one variable • recognizing circles, perpendicular lines, and parallel lines The student reasons abstractly by • using geometric shape names to describe real-world objects • describing a mathematical situation
Advanced	A student who achieves at the **advanced** performance level typically calculates accurately, attends to precision in calculations, and looks for and makes use of mathematical structures. The student calculates accurately and attends to precision by • applying the associative and commutative properties of addition and multiplication to solve problems • multiplying without a calculator • solving real-world problems • solving multi-step word problems The student looks for and makes use of mathematical structures by • applying math vocabulary to solve problems • identifying vertical, straight, and adjacent angles

DLM Performance Level Descriptors–Math: Grade 10

Integrated Model

Emerging	A student who achieves at the **emerging** performance level typically looks for and makes use of mathematical structures (for example, patterns and attributes of shapes). The student looks for and makes use of mathematical structures by • combining and partitioning, or dividing, objects into sets • recognizing objects or shapes that are the same or different • forming pairs of objects • communicating the number of objects (up to ten) in a set without counting • comparing objects in a set based on attributes (for example, size, shape, and number of sides)
Approaching the Target	A student who achieves at the **approaching the target** performance level typically calculates accurately, looks for and makes use of mathematical structures, and interprets data. The student calculates accurately by • rounding decimals to the tenths and hundredths places • using different operations (addition, subtraction, multiplication and division) to solve problems • writing equations using different operations (addition, subtraction, multiplication and division) The student looks for and makes use of mathematical structures by • classifying objects based on attributes (for example, size, shape, and number of sides) • matching two-dimensional and three-dimensional shapes with the same size and different orientation The student interprets data by • identifying types of bar, picture, or line graphs • reading and communicating data from bar and picture graphs

At Target	A student who achieves at the **at target** performance level typically makes sense of problems and perseveres in solving them, calculates accurately, reasons abstractly, and interprets data. The student makes sense of problems, perseveres in solving them, and calculates accurately by • solving linear equations that include one variable • solving linear inequalities • reporting numerical answers with a degree of precision • representing and solving real-world problems • solving problems using rational numbers The student reasons abstractly by • communicating if an event outcome is possible or impossible • communicating whether an event is independent or dependent The student interprets data by • calculating the mean of a data set • using graphs to interpret concrete information • communicating an understanding of bar graphs, picture graphs, line plots, and pie charts • explaining the *x*-coordinate and *y*-coordinate • interpreting a point within a line on a graph • recognizing covariation within a data set
Advanced	A student who achieves at the **advanced** performance level typically calculates accurately, makes use of mathematical structures, attends to precision in calculations, reasons abstractly, and interprets data. The student calculates accurately and attends to precision by • solving multi-step word problems The student looks for and makes use of mathematical structures by • selecting and applying appropriate mathematical methods to solve problems • understanding and recognizing congruent shapes The student reasons abstractly by • synthesizing information presented in word problems • explaining compound events The student interprets data by • calculating the median and mode of a data set • predicting information using a graph or chart • analyzing and comparing data from different graphical representations

DLM Performance Level Descriptors–Math: Grade 11

Integrated Model

Emerging	A student who achieves at the **emerging** performance level typically looks for and makes use of mathematical structures (for example, patterns and attributes of shapes). The student looks for and makes use of mathematical structures by • forming pairs of objects • combining and comparing object pairs • classifying objects or shapes by attribute (for example, size, shape, and number of sides) • combining two parts to make a whole • communicating if an object is the same or different • identifying objects that are the same and objects that are different • matching two-dimensional and three-dimensional shapes • ordering objects using a rule • recognizing patterns in real life or nature (for example, sunrise and sunset)
Approaching the Target	A student who achieves at the **approaching the target** performance level typically calculates accurately, looks for and makes use of mathematical structures, and interprets data. The student calculates accurately by • solving and explaining repeated addition problems (for example, 2 + 2 + 2 or 4 + 4 + 4) • recognizing a sample space, or all possible outcomes of an event The student looks for and makes use of mathematical structures by • recognizing patterns and sequences in numbers or symbols The student interprets data by • identifying bar graphs, picture graphs, line plots, and pie charts • using math vocabulary related to graphing to solve problems (for example, *variability*, *peak of data*, and *outlier*) • explaining coordinate pairs • explaining *x*-coordinate and *y*-coordinate

At Target	A student who achieves at the **at target** performance level typically makes sense of problems, perseveres in solving them, models with mathematics, reasons abstractly, and interprets data. The student makes sense of problems and perseveres in solving them by • recognizing the recursive rule in an arithmetic sequence The student models with mathematics by • recognizing and extending geometric and arithmetic sequences • recognizing and explaining similar and congruent figures The student reasons abstractly by • identifying the theoretical probability of an event The student interprets data by • solving problems using graphs • interpreting data and using it to make inferences • understanding covariation • finding the rate of change (slope) of a linear function
Advanced	A student who achieves at the **advanced** performance level typically calculates accurately, attends to precision in calculations, reasons abstractly, and interprets data. The student calculates accurately and attends to precision by • simplifying expressions with exponents • applying sequencing rules • extending geometric and arithmetic sequences • finding a term in an arithmetic sequence • finding perfect squares and cubes The student reasons abstractly by • applying theoretical probability to simple events • relating transformations to congruent and similar shapes The student interprets data by • solving real-world problems with graphs and tables • analyzing graphs, tables, and data distributions • comparing data sets to draw inferences • predicting and extending information with graphs and tables