



Maryland Comprehensive
Assessment Program

Grade 3

Performance Level Descriptors

Maryland State Department of Education

August 2021



MCAP Grade 3 Performance Level Descriptors (PLDs)

Content Subclaim

Domain: Operations and Algebraic Thinking

3.OA.A: Represent and solve problems involving multiplication and division.

3.OA.B: Understand properties of multiplication and the relationship between multiplication and division.

Evidence Statements:

- **3.OA.A.1 and 3.OA.A.2** - Interpret products of whole numbers and whole number quotients of whole numbers.
- **3.OA.A.3** - Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, or are, e.g., by using drawings and equations.
- **3.OA.A.4** - Determine the unknown whole number in a multiplication or division equation relating three whole numbers.
- **3.OA.B.5** - Apply properties of operations as strategies to multiply and divide.

Evidence Statement Code	Level 4 <i>A student performing at this level should be able to:</i>	Level 3 <i>A student performing at this level should be able to:</i>	Level 2 <i>A student performing at this level should be able to:</i>	Level 1 <i>A student performing at this level should be able to:</i>
3.OA.A.1 3.OA.A.2 3.OA.A.4	apply an understanding of the meaning of single digit multiplication and division and the properties of operations to solve problems that require connecting multiple grade-level concepts.	interpret the unknown in single digit multiplication and division problems within the range of 10 x 10.	interpret the unknown in single digit multiplication or division problems within 10 x 10 using a visual model.	determine products and quotients within the range of 10 x 10.
3.OA.A.3		solve a variety of one or two-step problems involving multiplication and division within 100.	solve one-step word problems within 50 using visual models.	solve one-step, thin context problems within 25 using visual models.
3.OA.B.5		use the properties of operations (commutative, associative and distributive) to solve multiplication and division problems.	use the commutative property and associative property to multiply and divide.	use the commutative property to multiply when given visual models.

MCAP Grade 3 Performance Level Descriptors (PLDs)

Domain: Operations and Algebraic Thinking

3.OA.C: Multiply and divide within 100.

3.OA.D: Solve problems involving the four operations, and identify and explain patterns in arithmetic.

Evidence Statements:

- **3.OA.C.7** - Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division or properties of operations.
- **3.OA.D.9** - Identify arithmetic patterns, and explain them using properties of operations.

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3.OA.C.7	apply an understanding of identifying the unknown when multiplying or dividing within 100 to solve problems that require connecting multiple grade-level concepts.	accurately multiply or divide within 100 to solve for an unknown product, quotient or factor(s); select or identify a strategy that could be used to find the product, quotient, or unknown factors.	accurately multiply and divide with factors within the range of 5 x 5; select or identify a strategy that could be used to find the product, quotient, or unknown factors.	accurately multiply and divide within the range of 5 x 5 using visual models.
3.OA.D.9	identify and explain arithmetic patterns that require connecting multiple grade-level concepts.	identify arithmetic patterns (including patterns in the addition table or multiplication table) and explain them using properties of operations.	use a visual tool (multiplication or addition table), with one row or column shaded and identify the pattern in the shaded row or column.	find the missing term using an addition or multiplication table.

MCAP Grade 3 Performance Level Descriptors (PLDs)

Domain: Number and Operations in Base Ten

3.NBT.A: Use place value understanding and properties of operations to perform multi-digit arithmetic.

Evidence Statements:

- **3.NBT.A.1** - Use place value understanding to round whole numbers to the nearest 10 or 100.
- **3.NBT.A.2** - Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.
- **3.NBT.A.3** - Multiply one-digit whole numbers by multiples of 10 in the range 10-90 using strategies based on place value and properties of operations.

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3.NBT.A.1	apply an understanding of adding and subtracting within 1000 and multiply one-digit whole numbers by multiples of 10 to solve problems that require connecting multiple grade-level concepts.	round two- and three-digit whole numbers to the nearest 10 or 100; use a number line to round numbers to the nearest 10 or 100.	round two-digit whole numbers to the nearest 10 and three-digit numbers to the nearest 100.	round two-digit whole numbers to the nearest 10 using visual models.
3.NBT.A.2		accurately add and subtract within 1000.	accurately add and subtract within 1000 using visual models such as a number line.	accurately add and subtract within 500 using visual models such as base ten blocks, place value chart, two hundreds chart, etc.
3.NBT.A.3		multiply one-digit whole numbers by multiples of 10 (10-90); select or identify a strategy that could be used to find the product.	multiply one-digit whole numbers by multiples of 10 (10-50); or select or identify a strategy that could be used to find the product.	multiply one-digit whole numbers within 5 by multiples of 10 (10-50) using visual models.

MCAP Grade 3 Performance Level Descriptors (PLDs)

Domain: Numbers and Operations-Fractions

3.NF.A: Develop an understanding of fractions as numbers.

Evidence Statements:

- **3.NF.A.3** - Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.
 - **3.NF.A.3a** - Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line.
 - **3.NF.A.3b** - Recognize and generate simple equivalent fractions. Explain why the fractions are equivalent, e.g., by using a visual fraction model.
 - **3.NF.A.3c** - Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers.
 - **3.NF.A.3d** - Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols $<$, $=$, or $>$, and justify the conclusions, e.g., by using a visual fraction model.

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3.NF.A.3a 3.NF.A.3c	apply the meaning of equivalent fractions and compare fractions with the same numerator or denominator to solve problems that require connecting multiple grade-level concepts.	recognize and generate two fractions as equivalent if they are the same size or the same point on the number line; express whole numbers as fractions.	recognize and generate two fractions as equivalent with denominators of 2, 3, 4, 6, 8 if they are the same size or the same point on the number line between 0 and 3; express whole numbers as fractions.	recognize two fractions as equivalent with denominators of 2, 4 and 8 if they are the same size or the same point on the number line between 0 and 2; or express whole numbers as fractions.
3.NF.A.3b 3.NF.A.3d		recognize, generate and compare simple equivalent fractions, including fractions greater than one, reasoning about their size using comparison symbols.	recognize and generate simple equivalent fractions with denominators of 2, 3, 4, 6, 8 using a visual model; compare two fractions using comparison symbols.	recognize or generate simple equivalent fractions with denominators of 2, 4 and 8 using a visual model; compare fractions with the same numerators or same denominators.

MCAP Grade 3 Performance Level Descriptors (PLDs)

Domain: Measurement and Data

3.MD.A: Solve problems involving measurement and estimation of intervals of time, liquid volume, and masses of objects.

Evidence Statements:

- **3.MD.A.1** - Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing problem on a number line diagram.
- **3.MD.A.2** - Measure and estimate liquid volumes and masses of object using standard units of grams, kilograms, and liters. Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes given in the same units, e.g., by using drawings to represent the problem.

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3.MD.A.1	apply the skills and concepts of telling time, estimating and measuring time intervals, liquid volume and masses of objects to solve problems that require connecting multiple grade-level concepts.	tell and write time to the nearest minute and measure time intervals in minutes; solve word problems involving addition and subtraction of time intervals in minutes.	tell and write time to the nearest minute; solve one-step addition and subtraction problems involving time intervals to the nearest minute using a given number line.	tell and write time to the nearest minute around the half hour; measure time intervals within the hour using a labeled number line with thin context problems.
3.MD.A.2		read measurement scales for liquid volume and masses of objects using standard units, solve one-step word problems involving the four operations and masses and volumes given in the same units to represent the problem.	read measurements of mass and liquid volume and solve one-step addition and subtraction word problems involving mass and liquid volume.	read measurements of mass and liquid measurement using visual models.

MCAP Grade 3 Performance Level Descriptors (PLDs)

Domain: Measurement and Data

3.MD.B: Represent and interpret data.

Evidence Statements:

- **3.MD.B.3** - Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step “how many more” or “how many less” problems using information presented in the scaled bar graph.
- **3.MD.B.4** - Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making (completing) a line plot, where the horizontal scale is marked off in appropriate units - whole numbers, halves, or quarters.

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3.MD.B.3	apply an understanding of how to complete a scaled picture graph or scaled bar graph when given a data set; solve one and two-step “how many more” or “how many less” problems using the information from the graph that require connecting multiple grade-level concepts.	complete a scaled picture graph or a scaled bar graph that represents a data set; solve one- and two-step “how many more/less” problems using the data in a given scaled bar graph.	complete a scaled picture graph and a scaled bar graph to represent a data set; solve one-step “how many more/less” problems using the data in a given scaled bar graph.	complete a scaled picture graph or a scaled bar graph to represent a data set.
3.MD.B.4	apply an understanding of how to generate measurement data using rulers to complete a line plot or to complete a line plot with a given data set; solve word problems based on the data found in the line plot that require connecting multiple grade-level concepts.	generate measurement data using rulers to complete a line plot with a horizontal scale marked off in whole numbers, halves and quarters.	generate measurement data to the nearest fourth, using rulers to complete a line plot with a horizontal scale marked off in fourths.	generate measurement data to the nearest half or complete a line plot using given data and a horizontal scale marked off in halves.

MCAP Grade 3 Performance Level Descriptors (PLDs)

Domain: Measurement and Data

3.MD.C: Geometric measurement: Understand concepts of area and relate area to multiplication and to addition.

3.MD.D: Geometric measurement: Recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.

Evidence Statements:

- **3.MD.C.6** - Measure areas by counting unit squares (square cm, square m, square in., square ft., and improvised units).
- **3.MD.C.7b** - Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real-world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning.
- **3.MD.C.7d** - Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real-world problems.
- **3.MD.D.8** - Solve real-world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.

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3.MD.C.6 3.MD.C.7b	apply an understanding of the concepts of area and perimeter to determine the area of rectangle or rectilinear figures or the perimeter of polygons to solve problems that require connecting multiple grade-level concepts.	use the formula for finding the area of rectangles with whole side lengths within or without context.	find the area of a rectangle by counting unit squares using a visual model limited to 10 x 10 on the multiplication table.	find the area of a rectangle by counting unit squares using a visual model limited to 5 x 5 on the multiplication table.
3.MD.C.7d		find the areas of rectilinear figures by decomposing them into non-overlapping rectangles, apply this technique to solve real-world problems.	find the area of rectilinear figures with specific non-overlapping areas and simple context (provides all dimensions for the rectilinear figure without having to determine a missing dimension).	find the area of rectilinear figures by counting unit squares using a visual model with sums within 100.
3.MD.D.8		solve real-world and mathematical problems involving perimeters of polygons including finding the perimeter given the side lengths, finding the unknown side length and rectangles with the same perimeter and different areas or the same area and different perimeters.	solve real-world and mathematical problems involving perimeters with polygons using given side lengths and unknown side lengths.	find the perimeter of a rectangle with given side lengths on a visual model (The dimensions are no greater than the sums within 100).

MCAP Grade 3 Performance Level Descriptors (PLDs)

Domain: Geometry

3.G.A: Reason with shapes and their attributes.

Evidence Statements:

- **3.G.A.1** - Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.
- **3.G.A.2** - Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole.

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3.G.A.1	apply an understanding of shapes and their attributes in order to place them in different categories to solve word problems that require connecting multiple grade-level concepts.	identify a large category of shapes that are quadrilaterals and identify shapes that belong or do not belong in this category based on their attributes.	describe and/or compare the attributes of two-dimensional shapes.	sort shapes by their attributes.
3.G.A.2	apply an understanding of partitioning shapes into equal parts and describe the area of each part as a unit fraction to solve problems that require connecting multiple grade-level concepts.	partition shapes into parts with equal areas or identify the number of parts within the equal areas. Express the area of each part as a unit fraction.	recognize the parts have equal areas, given a partitioned shape; identify the number of equal parts and identify the unit fraction that each part represents.	identify the shapes that represent a whole that is correctly or incorrectly divided into fractional parts.

MCAP Grade 3 Performance Level Descriptors (PLDs)

Reasoning Subclaim

All Reasoning assessment items connect to the content knowledge, skills, and abilities described in the Grade 3 Content Evidence Statements.

Students must provide evidence of their ability to reason mathematically by responding to:

- one-point items that require the application of reasoning skills aligned to the Content PLDs.
- three-point items that require communicating their reasoning via a written response.

Evidence Statements:

- **3.R.1** - Base reasoning or explanations on a given pictorial representation and explain how the pictorial model represents a mathematical concept or how it can be used to justify or refute a statement (with or without flaws) or how it can be used to make a generalization.
- **3.R.2** - Identify flawed thinking/reasoning and explain how to correct the thinking or work.
- **3.R.3** - Prove or disprove a statement, conjecture, or generalization, using correct and precise mathematical examples.
- **3.R.4** - Reason mathematically to create or analyze a correct and precise solution to a real-world problem and be able to explain why the answer is mathematically correct.

Reasoning PLDs

The Reasoning PLDs describe a student's written response to a three-point reasoning item at each performance level.

Level 4 <i>A student performing at this level should be able to provide evidence of mathematical reasoning by communicating:</i>	Level 3 <i>A student performing at this level should be able to provide evidence of mathematical reasoning by communicating:</i>	Level 2 <i>A student performing at this level should be able to provide evidence of mathematical reasoning by communicating:</i>	Level 1 <i>A student performing at this level should be able to provide evidence of mathematical reasoning by communicating:</i>
a sophisticated chain of reasoning. a precise, logical solution pathway. an extensive command of mathematical representations and vocabulary.	a well-developed chain of reasoning. a logical solution pathway that may contain minor flaws. a proficient command of mathematical representations and vocabulary.	a partially developed, valid chain of reasoning. a solution pathway that contains some correct processes yielding an incorrect solution. an understanding of some mathematical representations and vocabulary.	the beginning of a chain of reasoning. an attempted solution pathway. a developing understanding of some mathematical representations and vocabulary.

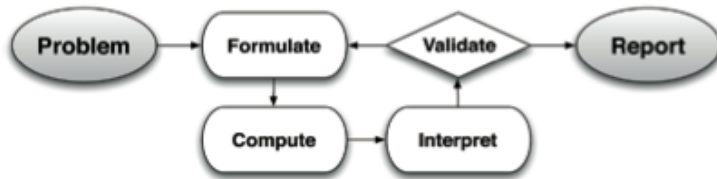
MCAP Grade 3 Performance Level Descriptors (PLDs)

Modeling Subclaim

All Modeling assessment items require a student to employ one or more steps of the modeling cycle when determining a response and are connected to the content knowledge, skills, and abilities described in the Grade 3 Content Evidence Statements.

Students must provide evidence of their ability to use the modeling cycle by responding to one-point machine scored items and three-point items that require communicating a written response.

Modeling Cycle



Evidence Statements:

- **3.M.1-1** Determine the problem that needs to be solved in a real-world situation.
- **3.M.1-2** Determine the information that is needed to solve a problem in a given real-world situation.
- **3.M.1-3** Identify the mathematics that is needed to create a solution path for a real-world situation.
- **3.M.1-4** Create a solution path that represents the mathematics needed to solve a real-world situation.
- **3.M.1-5** Evaluate a partial or complete solution path to a real-world situation.

MCAP Grade 3 Performance Level Descriptors (PLDs)

Modeling PLDs

The Modeling PLDs describe a student’s written response to a three-point modeling item at each performance level. For one-point modeling items, refer to the content PLD for the associated standard.

Level 4 <i>A student performing at this level should be able to provide evidence of the ability to use the modeling cycle by:</i>	Level 3 <i>A student performing at this level should be able to provide evidence of the ability to use the modeling cycle by:</i>	Level 2 <i>A student performing at this level should be able to provide evidence of the ability to use the modeling cycle by:</i>	Level 1 <i>A student performing at this level should be able to provide evidence of the ability to use the modeling cycle by:</i>
<p>determining the information or mathematics needed to solve a problem that requires connecting multiple grade-level concepts.</p> <p>communicating an accurate, organized solution path aligned to the problem using appropriate, effective, and precise representations.</p> <p>evaluating or validating a solution path or showing how to improve a model or correct a given solution.</p>	<p>determining needed information or mathematics.</p> <p>communicating an accurate, organized solution path aligned to the problem using appropriate, effective, and precise representations that may contain minor flaws.</p> <p>evaluating or validating a solution path or showing how to improve a model, but work may include minor flaws.</p>	<p>identifying needed information or mathematics.</p> <p>communicating a partial solution path that may contain mathematical errors.</p> <p>partially validating a solution path or incorrectly improving the model.</p>	<p>identifying some needed information or mathematics.</p> <p>communicating the beginning of a solution path, containing mathematical errors.</p> <p>attempting to validate a solution path.</p>