



Math: Representations and Models

Competency: Creating and analyzing representations and models.

Grade Level Competency: Kindergarten

Students will create and analyze multiple representations and models to solve problems using mathematical resources and tools.

Criteria	Extending	Proficient	In Progress	Beginning
Create Representations	A complex performance or application of learning that is transferred to new or novel situations beyond the content area, makes extended or abstract connections to authentic, real-world, multifaceted situations, and/or constructs entirely new ideas that are transformational.	I can create multiple visual, verbal, physical, contextual and numerical representations of a given mathematical idea or problem.	I can create a visual, verbal, physical, contextual or numerical representations to show mathematical ideas and solve problems.	I can recognize or name a representation.
Analyze Representations		I can identify, describe and compare multiple representations.	I can identify and describe multiple representations.	I can identify what a representation is modeling.

MDE grade level benchmarks embedded explicitly in the rubric

Kindergarten

K.1.1.2 Read whole numbers from 0 to at least 31. Representations may include numerals, pictures, real objects and picture graphs, spoken words, and manipulatives such as connecting cubes.

K.3.1.3 Use basic shapes and spatial reasoning to model objects in the real-world.

K.1.1.2 Write whole numbers from 0 to at least 31. Representations may include numerals, pictures, real objects and picture graphs, spoken words, and manipulatives such as connecting cubes.

K.1.1.2 Represent whole numbers from 0 to at least 31. Representations may include numerals, pictures, real objects and picture graphs, spoken words, and manipulatives such as connecting cubes.



Math: Representations and Models

Competency: Creating and analyzing representations and models.

Grade Level Competency: Grades 1-2				
Students will create and analyze multiple representations and models to solve problems using mathematical resources and tools.				
Criteria	Extending	Proficient	In Progress	Beginning
Create Representations	A complex performance or application of learning that is transferred to new or novel situations beyond the content area, makes extended or abstract connections to authentic, real-world, multifaceted situations, and/or constructs entirely new ideas that are transformational.	I can create multiple visual, verbal, physical, contextual and numerical representations of a given mathematical idea or problem. <input type="checkbox"/> Grade 1 <input type="checkbox"/> Grade 2	I can create a visual, verbal, physical, contextual or numerical representations to show mathematical ideas and solve problems. <input type="checkbox"/> Grade 1 <input type="checkbox"/> Grade 2	I can recognize or name a representation. <input type="checkbox"/> Grade 1 <input type="checkbox"/> Grade 2
		I can identify, describe and compare multiple representations. <input type="checkbox"/> Grade 1 <input type="checkbox"/> Grade 2	I can identify and describe multiple representations. <input type="checkbox"/> Grade 1 <input type="checkbox"/> Grade 2	I can identify what a representation is modeling. <input type="checkbox"/> Grade 1 <input type="checkbox"/> Grade 2
MDE grade level benchmarks embedded explicitly in the rubric				
Grade 1		Grade 2		



Math: Representations and Models

Competency: Creating and analyzing representations and models.

Grade Level Competency: Grades 3-4

Students will create and analyze multiple representations and models to solve problems using mathematical resources and tools.

Criteria	Extending	Proficient	In Progress	Beginning
Create Representations	A complex performance or application of learning that is transferred to new or novel situations beyond the content area, makes extended or abstract connections to authentic, real-world, multifaceted situations, and/or constructs entirely new ideas that are transformational.	I can create multiple visual, verbal, physical, contextual and numerical representations for a given mathematical idea or problem. <input type="checkbox"/> Grade 3 <input type="checkbox"/> Grade 4	I can create a visual, verbal, physical, contextual or numerical representation of a mathematical idea or problem. <input type="checkbox"/> Grade 3 <input type="checkbox"/> Grade 4	I can recognize or name representations. <input type="checkbox"/> Grade 3 <input type="checkbox"/> Grade 4
Analyze Representations		I can make connections between multiple representations used to solve a problem and determine which is the most efficient. I can accurately interpret information from various representations <input type="checkbox"/> Grade 3 <input type="checkbox"/> Grade 4	I can make connections between multiple representations used to solve a problem. <input type="checkbox"/> Grade 3 <input type="checkbox"/> Grade 4	I can identify and describe what a representation is modeling. <input type="checkbox"/> Grade 3 <input type="checkbox"/> Grade 4



Math: Representations and Models

Competency: Creating and analyzing representations and models.

Grade Level Competency: Grades 5-6:

Students will create and analyze a variety of representations and models including using technology and other mathematical resources and tools.

Criteria	Extending	Proficient	In Progress	Beginning
Create Representations	A complex performance or application of learning that is transferred to new or novel situations beyond the content area, makes extended or abstract connections to authentic, real-world, multifaceted situations, and/or constructs entirely new ideas that are transformational.	<p>I can create and make connections between visual, verbal, physical, contextual and numerical representations of mathematical ideas and problems.</p> <p><input type="checkbox"/> Grade 5 <input type="checkbox"/> Grade 6</p>	<p>I can create or make connections between visual, verbal, physical, contextual and numerical representations of mathematical ideas and problems</p> <p><input type="checkbox"/> Grade 5 <input type="checkbox"/> Grade 6</p>	<p>I can identify multiple representations. I can use a given representation for a mathematical problem.</p> <p><input type="checkbox"/> Grade 5 <input type="checkbox"/> Grade 6</p>
Analyze Representations		<p>I can determine which representation most efficiently communicates information.</p> <p>I can accurately interpret information from various representations.</p> <p><input type="checkbox"/> Grade 5 <input type="checkbox"/> Grade 6</p>	<p>I can determine how a potential representation could communicate information.</p> <p>I can interpret information from various representations.</p> <p><input type="checkbox"/> Grade 5 <input type="checkbox"/> Grade 6</p>	<p>I can identify what information is being represented by various models.</p> <p><input type="checkbox"/> Grade 5 <input type="checkbox"/> Grade 6</p>



Math: Representations and Models

Competency: Creating and analyzing representations and models.

Grade Level Competency: Grades 7-8

Students will create and analyze a variety of representations and models including using technology and other mathematical resources and tools.

Criteria	Extending	Proficient	In Progress	Beginning
Create Representations	A complex performance or application of learning that is transferred to new or novel situations beyond the content area, makes extended or abstract connections to authentic, real-world, multifaceted situations, and/or constructs entirely new ideas that are transformational.	I can create an -accurate representation to model a situation or problem. I can use a variety of representations (graphs, tables, pictures, diagrams, words, actions, etc.). <input type="checkbox"/> Grade 7 <input type="checkbox"/> Grade 8	I can create a representation to model a situation or problem. <input type="checkbox"/> Grade 7 <input type="checkbox"/> Grade 8	I can identify a representation that could be used to model a problem or situation. <input type="checkbox"/> Grade 7 <input type="checkbox"/> Grade 8
Analyze Representations		I can use given representations to make connections between various models, use models to draw conclusions, and use mathematical vocabulary to explain my conclusions. <input type="checkbox"/> Grade 7 <input type="checkbox"/> Grade 8	I can use given representations to draw conclusions about a situation. <input type="checkbox"/> Grade 7 <input type="checkbox"/> Grade 8	I can answer basic questions about representations or models. <input type="checkbox"/> Grade 7 <input type="checkbox"/> Grade 8



Math: Representations and Models

Competency: Creating and analyzing representations and models.

Grade Level Competency: Grades 9-12

Students will create, analyze, and transfer between a variety of relevant representations and models including use of technology and other mathematical resources and tools.

Criteria	Extending	Proficient	In Progress	Beginning
Create Representations	A complex performance or application of learning that is transferred to new or novel situations beyond the content area, makes extended or abstract connections to authentic, real-world, multifaceted situations, and/or constructs entirely new ideas that are transformational.	I can create a variety of models and representations to show my understanding of a situation. I can use tools and technology to create representations.	I can create a representation or convert between given representations of a situation.	I can identify a representation that could be used to model a problem or situation.
Analyze Representations		I can analyze information from a variety of given representations and use mathematical vocabulary to explain my conclusions.	I can interpret information and draw conclusions from various representations.	I can read information from various representations.