

# MATH

## GRADUATION PROFICIENCIES AND PERFORMANCE INDICATORS FOR RHODE ISLAND

**Proficiency #1:** Mathematical Reasoning and Communication

**Proficiency #2:** Modeling

**Proficiency #3:** Number and Quantity

**Proficiency #4:** Functions and Algebraic Reasoning

**Proficiency #5:** Geometry and Measurement

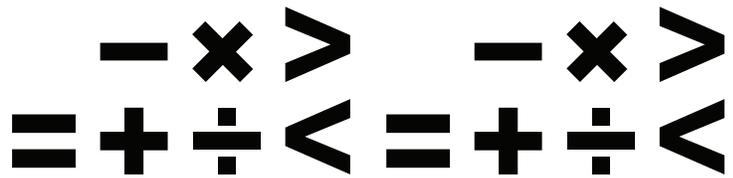
**Proficiency #6:** Data, Statistics and Probability



**RIDE** Rhode Island  
Department  
of Education

# MATH

## GRADUATION PROFICIENCIES AND PERFORMANCE INDICATORS



### GRADUATION PROFICIENCY #1:

## MATHEMATICAL REASONING AND COMMUNICATION

Students will reason mathematically to solve problems and communicate with others.

**Proficiency #1:** Mathematical Reasoning and Communication

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**Proficiency #5:** Geometry and Measurement

**Proficiency #6:** Data, Statistics and Probability

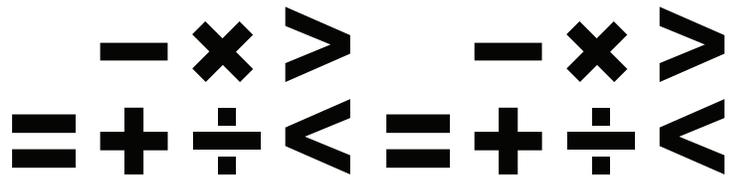
### PERFORMANCE INDICATORS:

*Students will...*

	K-2	3-5	6-8	9-12
<b>A</b>	Observe, identify and analyze situations in order to ask questions and understand and describe problems. (MP1, 2)	Observe, identify and analyze situations in order to ask questions and understand and describe problems. (MP1,2 )	Observe, identify and analyze situations in order to ask questions and understand and describe problems. (MP1, 2)	Observe, identify and analyze situations in order to ask questions and understand and describe problems. (MP1, 2)
<b>B</b>	Select strategies and appropriate tools to develop and implement a plan to solve problems. (MP1, 5)	Select strategies and appropriate tools to develop and implement a plan to solve problems. (MP1, 5)	Select strategies and appropriate tools to develop and implement a plan to solve problems. (MP1, 5)	Select strategies and appropriate tools to develop and implement a plan to solve problems. (MP1, 5)
<b>C</b>	Explain whether an answer is mathematically and contextually reasonable. (MP1, 6)	Explain whether an answer is mathematically and contextually reasonable. (MP1, 6)	Explain whether an answer is mathematically and contextually reasonable. (MP1, 6)	Explain whether an answer is mathematically and contextually reasonable. (MP1, 6)
<b>D</b>	Evaluate, justify, and defend the relative effectiveness of problem solving processes using logical argument. (MP1, 3)	Evaluate, justify, and defend the relative effectiveness of problem solving processes using logical argument. (MP 1, 3)	Evaluate, justify, and defend the relative effectiveness of problem solving processes using logical argument. (MP 1, 3)	Evaluate, justify, and defend the relative effectiveness of problem solving processes using logical argument. (MP1, 3)

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## GRADUATION PROFICIENCIES AND PERFORMANCE INDICATORS



### GRADUATION PROFICIENCY #1:

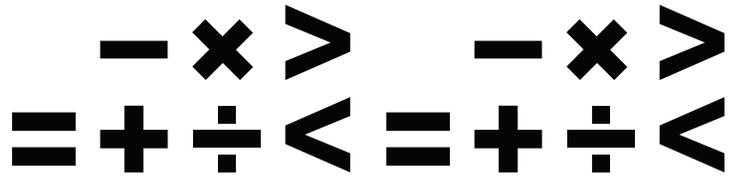
## MATHEMATICAL REASONING AND COMMUNICATION

(CONTINUED)

	K-2	3-5	6-8	9-12
<b>E</b>	Precisely communicate mathematical understandings and connections using a variety of representations. (MP1, 3, 6)	Precisely communicate mathematical understandings and connections using a variety of representations. (MP1, 3, 6)	Precisely communicate mathematical understandings and connections using a variety of representations. (MP1, 3, 6)	Precisely communicate mathematical understandings and connections using a variety of representations. (MP1, 3, 6)

# MATH

## GRADUATION PROFICIENCIES AND PERFORMANCE INDICATORS



### GRADUATION PROFICIENCY #2:

## MODELING

Students will choose the appropriate mathematics to describe, understand and analyze real world situations.

**Proficiency #1:** Mathematical Reasoning and Communication

**Proficiency #2:** Modeling

**Proficiency #3:** Number and Quantity

**Proficiency #4:** Functions and Algebraic Reasoning

**Proficiency #5:** Geometry and Measurement

**Proficiency #6:** Data, Statistics and Probability

### PERFORMANCE INDICATORS:

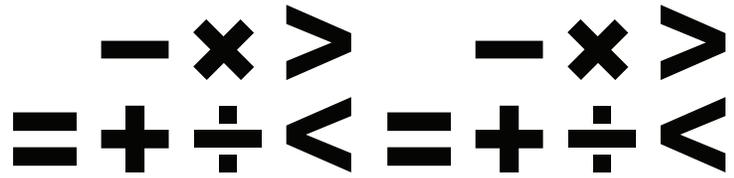
*Students will...*

	K-2	3-5	6-8	9-12
<b>A</b>	Create an appropriate model using numbers, quantities, and other representations to describe a relationship in a real world situation. (MP4)	Create an appropriate model using numbers, quantities, and other representations to describe a relationship in a real world situation. (MP4)	Create an appropriate model using numbers, quantities, and other representations to describe a relationship in a real world situation. (MP4)	Create an appropriate model using numbers, quantities, and other representations to describe a relationship in a real world situation. (MP4)
<b>B</b>	Compare and critique different models for a real world situation. (MP4)	Compare and critique different models for a real world situation. (MP4)	Compare and critique different models for a real world situation. (MP4)	Compare and critique different models for a real world situation. (MP4)
<b>C</b>	Apply models to real world situations. (MP4)			
<b>D</b>	Interpret the results of a mathematical model in the context of the original real world situation. (MP4)	Interpret the results of a mathematical model in the context of the original real world situation. (MP4)	Interpret the results of a mathematical model in the context of the original real world situation and adjust the model as needed. (MP4)	Interpret the results of a mathematical model in the context of the original real world situation and adjust the model as needed. (MP4)



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## GRADUATION PROFICIENCIES AND PERFORMANCE INDICATORS



### GRADUATION PROFICIENCY #3:

## NUMBER AND QUANTITY

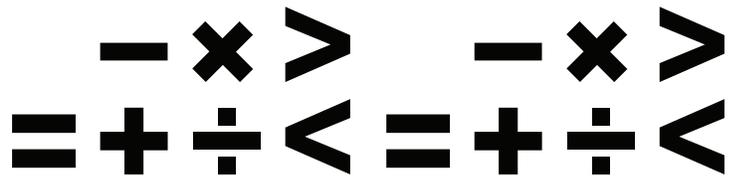
(CONTINUED)

	K-2	3-5	6-8	9-12
<b>C</b>	Perform single- and multi-digit addition and subtraction with whole numbers using understanding of place value and the properties of operations. (K.OA.2, 5; 1.OA.5, 6, 8; 1.NBT.4, 5, 6; 2.OA.2; 2.NBT.5, 6, 7, 8, 9)	Solve problems involving measurement concepts using all four operations. (3.MD.1; 4.MD.1, 2; 5.MD.1)	Solve real world and mathematical problems involving the four operations with rational numbers. (6.NS.1; 7.NS.1, 2, 3; 7.EE.3)	
<b>D</b>	Solve problems with addition and subtraction involving measurement concepts. (K.MD.2 ; 1.MD.A.3; 2.MD.5, 6, 7, 8)	Solve fraction problems with all four operations by applying understanding of fraction as number, the concept of equivalency, and previous understanding of operations on whole numbers. (3.NF.1, 2, 3; 3.G.2; 4.NF.1, 2, 3, 4, 5; 5.NF.1, 2, 3, 4, 5, 6, 7)	Identify irrational numbers and approximate them with rational numbers. (8.NS.1, 2; 8.EE.2)	



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## GRADUATION PROFICIENCIES AND PERFORMANCE INDICATORS



### GRADUATION PROFICIENCY #4:

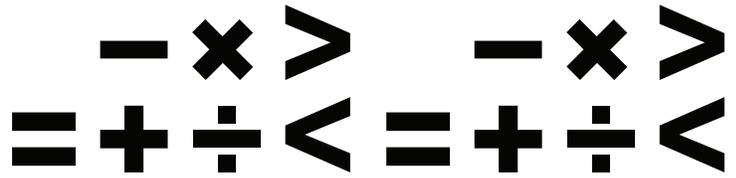
## FUNCTIONS & ALGEBRAIC REASONING

(CONTINUED)

	K-2	3-5	6-8	9-12
D			Analyze, graph and solve linear equations and pairs of simultaneous linear equations to solve problems. (6.EE.9; 8.EE.7, 8)	Build functions to model relationships between quantities. (HS.F-BF.A; HS.F-LE.A, B)
E			Identify and compare functions.(8.F.1, 2, 3)	
F			Use functions to model relationships between two quantities. (8.F.4, 5)	
G				

# MATH

## GRADUATION PROFICIENCIES AND PERFORMANCE INDICATORS



### GRADUATION PROFICIENCY #5:

## GEOMETRY AND MEASUREMENT

Students will apply concepts of geometry, spatial reasoning, and measurement in the context of real world problems.

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**Proficiency #6:** Data, Statistics and Probability

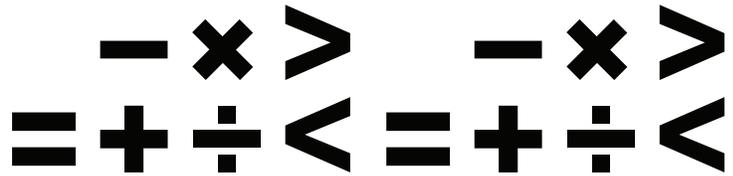
### PERFORMANCE INDICATORS:

*Students will...*

	K-2	3-5	6-8	9-12
<b>A</b>	Describe and compare measurable attributes of objects. (K.MD.1, 2; 1.MD.1)	Graph points on the coordinate plane to solve real world and mathematical problems. (5.G.1, 2)	Use transformations to demonstrate congruence and similarity. (8.G.1, 2, 3, 4)	Use transformations to define congruence and similarity. (HS.G-CO.A,B; HS.G-SRT.A)
<b>B</b>	Create, identify, and distinguish between shapes based on their defining attributes. (K.G.1, 2, 3, 4, 5, 6; 1.G.1, 2; 2.G.1)	Identify, distinguish, and classify 2D and 3D geometric figures based on their properties. (3.G.1; 4.G.1, 2, 3; 5.G.3, 4)	Apply the Pythagorean Theorem and its converse to solve real world and mathematical problems. (8.G.7, 8)	Demonstrate and explain proofs of geometric theorems. (HS.G-CO.C; HS.G-SRT.B.4; HS.G-GC.1)
<b>C</b>	Use appropriate tools to measure. (1.MD.2; 2.MD.1, 2, 3, 4)	Apply understanding of geometric measurement (angles, perimeter, area and volume) to solve real world problems. (3.MD.5, 6, 7; 4.MD.3, 5, 6, 7; 5.MD.3, 4, 5)	Apply understanding of geometric measurement (angles, length, area, surface area and volume) to solve real world problems. (6.G.1, 2, 3, 4; 7.G.4, 5, 6; 8.G.9)	Use geometric properties and theorems to solve problems. (HS.G-SRT.B.5; C; HS.G-C.A.1, 2, 3; B.5; HS.G-GPE.B.4,5,7)

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## GRADUATION PROFICIENCIES AND PERFORMANCE INDICATORS



### GRADUATION PROFICIENCY #5:

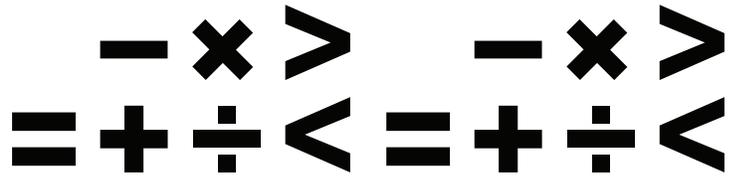
## GEOMETRY AND MEASUREMENT

(CONTINUED)

	K-2	3-5	6-8	9-12
D				Apply coordinate geometry to solve problems. (HS.G-GPE.A.1, 2; B.6)
E				Solve problems involving two- and three-dimensional objects. (HS.G-GMD.A, B)
F				Apply trigonometric ratios to solve problems involving right triangles. (HS.G-SRT.C)

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## GRADUATION PROFICIENCIES AND PERFORMANCE INDICATORS



### GRADUATION PROFICIENCY #6:

## DATA, STATISTICS, AND PROBABILITY

Students will apply principles of statistics and probability to analyze and interpret data, reach and justify conclusions and make inferences and predictions.

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### PERFORMANCE INDICATORS:

*Students will...*

	K-2	3-5	6-8	9-12
<b>A</b>	Classify, organize and represent data. (K.MD.3; 1.MD.4; 2.MD.9, 10)	Classify, organize and represent data. (3.MD.3, 4; 4.MD.4; 5.MD.2)	Organize and represent bivariate data. (6.SP.4; 8.SP.1, 2, 4)	Summarize, represent, and interpret data. (HS.S-ID.A, B, C)
<b>B</b>	Interpret and use information from data sets to solve problems. (1.MD.4; 2.MD.10)	Interpret and use information from data sets to solve problems. (3.MD.3; 4.MD.4; 5.MD.2)	Summarize, describe and make inferences about distributions of data. (6.SP.2, 3, 5; 7.SP.3, 4; 8.SP.1, 3, 4)	Use data to make inferences and justify conclusions from sample surveys, experiments, and observational studies. (HS.S-IC.A, B)
<b>C</b>			Use random sampling to draw inferences about a population. (7.SP.1, 2)	Use the concept of dependence and rules of probability to compute probabilities. (HS.S-CP.A; B.6, 7)
<b>D</b>			Develop, use, and evaluate probability models. (7.SP.C)	