



Smarter Balanced Assessment Consortium Claims, Targets, and Standard Alignment for Math Interim Assessment Blocks



The Smarter Balanced Assessment Consortium (SBAC) has created a hierarchy comprised of claims and targets that together can be used to make statements about student achievement. Claims are broad statements that outline the outcomes achieved with mastery of the standards within it. Within each claim are a variety of assessment targets that further clarify the knowledge and specific skills that cross over a cluster of standards.

The following tables layout the claims and targets for each assessment claim. Each target may feature a standard or a variety of standards that make up the skill(s) of the target. Each target lists Depth of Knowledge level(s), item type(s) in which the target may be assessed as well as the Interim Assessment Block (IAB) that the target may be assessed in.

Item Types:

- MC – Multiple Choice, Single Correct Response
- MS – Multiple Choice, Multiple Correct Response
- EQ – Equation/Numeric
- MA – Matching Tables
- TI – Fill-in tables
- DD – Drag and Drop
- HS – Hot Spot
- G – Graphing
- GI – Graphing Interaction
- ST – Short Text

Depth of Knowledge:

- 1 - Recall
- 2 - Skill/Concept
- 3 - Strategic Thinking
- 4 - Extended Thinking

Major and Additional/Supporting Clusters:

Not all content in a given grade is emphasized equally in the standards. Some clusters require greater emphasis than others based on the depth of ideas, the time they take to master, and/or their importance to future mathematics or the demands of college and career readiness. The following tables identify the additional and supporting work for the grade with shading. If no shading is included, all standards listed are part of the major work for the grade.



Claim	Target	IAB	DOK	Standards	Item Types
1: Concepts and Procedures	A: Analyze proportional relationships and use them to solve real-world and mathematical problems.	Ratio and Proportional Relationships	2	<p>7.RP.1: Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. For example, if a person walks $\frac{1}{2}$ mile in each $\frac{1}{4}$ hour, compute the unit rate as the complex fraction $\frac{1/2}{1/4}$ miles per hour, equivalently 2 miles per hour.</p>	EQ, MS, MA
				<p>7.RP.2: Recognize and represent proportional relationships between quantities.</p> <p>7.RP.2a: Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.</p> <p>7.RP.2b: Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.</p> <p>7.RP.2c: Represent proportional relationships by equations. For example, if total cost t is proportional to the number n of items purchased at a constant price p, the relationship between the total cost and the number of items can be expressed as $t = pn$.</p> <p>7.RP.2d: Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points $(0, 0)$ and $(1, r)$ where r is the unit rate.</p>	
				<p>7.RP.3 Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.</p>	

Shaded standards denote additional and supporting clusters

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Claim	Target	IAB	DOK	Standards	Item Types
1: Concepts and Procedures	B: Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.	The Number System	1, 2	<p>7.NS.1: Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.</p> <p>7.NS.1a: Describe situations in which opposite quantities combine to make 0. For example, a hydrogen atom has 0 charge because its two constituents are oppositely charged.</p> <p>7.NS.1b: Understand $p + q$ as the number located a distance q from p, in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.</p> <p>7.NS.1c: Understand subtraction of rational numbers as adding the additive inverse, $p - q = p + (-q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.</p> <p>7.NS.1d: Apply properties of operations as strategies to add and subtract rational numbers.</p>	G, EQ, MS, MC, MA, DD

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Claim	Target	IAB	DOK	Standards	Item Types
1: Concepts and Procedures	B: Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.	The Number System	1, 2	<p>7.NS.2: Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.</p> <p>7.NS.2a: Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as $(-1)(-1) = 1$ and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.</p> <p>7.NS.2b: Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with a non-zero divisor) is a rational number. If p and q are integers, then $-(p/q) = (-p)/q = p/(-q)$. Interpret quotients of rational numbers by describing real-world contexts.</p> <p>7.NS.2c: Apply properties of operations as strategies to multiply and divide rational numbers.</p> <p>7.NS.2d: Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.</p>	G, EQ, MS, MC, MA, DD

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Grade 7 Mathematics



Claim	Target	IAB	DOK	Standards	Item Types
1: Concepts and Procedures	B: Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.	The Number System	1, 2	7.NS.3: Solve real-world and mathematical problems involving the four operations with rational numbers.	G, EQ, MS, MC, MA, DD
	C: Use properties of operations to generate equivalent expressions.	Expressions and Equations	1, 2	7.EE.1: Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients. 7.EE.2: Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. For example, $a + 0.05a = 1.05a$ means that “increase by 5%” is the same as “multiply by 1.05.”	MC, MS, EQ

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Claim	Target	IAB	DOK	Standards	Item Types
1: Concepts and Procedures	D: Solve real-life and mathematical problems using numerical and algebraic expressions and equations.	Expressions and Equations	1, 2	<p>7.EE.3 Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. For example: If a woman making \$25 an hour gets a 10% raise, she will make an additional 1/10 of her salary an hour, or \$2.50, for a new salary of \$27.50. If you want to place a towel bar 9 3/4 inches long in the center of a door that is 27 1/2 inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation.</p>	MC, EQ, MS, DD
				<p>7.EE.4 Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.</p> <p>7.EE.4a: Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?</p> <p>7.EE.4b: Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p, q, and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem. For example: As a salesperson, you are paid \$50 per week plus \$3 per sale. This week you want your pay to be at least \$100. Give an inequality for the number of sales you need to make, and describe the solutions.</p>	

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Claim	Target	IAB	DOK	Standards	Item Types
1: Concepts and Procedures	E: Draw, construct, and describe geometrical figures and describe the relationships between them.	Geometry	1, 2	7.G.1: Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.	MS, MA, EQ, G
				7.G.2: Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.	
				7.G.3: Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.	
	F: Solve real-life mathematical problem involving angle measure, area, surface area, and volume.	Geometry	1, 2	7.G.4: Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.	EQ, MA
				7.G.5: Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.	
				7.G.6: Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.	

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Claim	Target	IAB	DOK	Standards	Item Types
1: Concepts and Procedures	G: Use random sampling to draw inferences about a population.	Statistics and Probability	1, 2	7.SP.1: Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences.	MC, MS
				7.SP.2 Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions. For example, estimate the mean word length in a book by randomly sampling words from the book; predict the winner of a school election based on randomly sampled survey data. Gauge how far off the estimate or prediction might be.	

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Claim	Target	IAB	DOK	Standards	Item Types
1: Concepts and Procedures	H: Draw informal comparative inferences about two populations.	Statistics and Probability	2	<p>7.SP.3: Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability. For example, the mean height of players on the basketball team is 10 cm greater than the mean height of players on the soccer team, about twice the variability (mean absolute deviation) on either team; on a dot plot, the separation between the two distributions of heights is noticeable.</p> <p>7.SP.4: Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations. For example, decide whether the words in a chapter of a seventh-grade science book are generally longer than the words in a chapter of a fourth-grade science book.</p>	MA, EQ
	I: Investigate chance processes and develop, use, and evaluate probability models.	Statistics and Probability	1, 2	<p>7.SP.5: Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.</p> <p>7.SP.6: Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability. For example, when rolling a number cube 600 times, predict that a 3 or 6 would be rolled roughly 200 times, but probably not exactly 200 times.</p>	MC, EQ, MA

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Claim	Target	IAB	DOK	Standards	Item Types
1: Concepts and Procedures	I: Investigate chance processes and develop, use, and evaluate probability models.	Statistics and Probability	1, 2	<p>7.SP.7: Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy.</p> <p>7.SP.7a: Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events. For example, if a student is selected at random from a class, find the probability that Jane will be selected and the probability that a girl will be selected.</p> <p>7.SP.7b: Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process. For example, find the approximate probability that a spinning penny will land heads up or that a tossed paper cup will land open-end down. Do the outcomes for the spinning penny appear to be equally likely based on the observed frequencies?</p>	MC, EQ, MA
				<p>7.SP.8: Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.</p> <p>7.SP.8a: Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs.</p> <p>7.SP.8b: Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language (e.g., “rolling double sixes”), identify the outcomes in the sample space which compose the event.</p>	

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2: Problem Solving	<p>A: Apply mathematics to solve well-posed problems in pure mathematics and arising in everyday life, society, and the workplace. (2, 3)</p> <p>B: Select and use appropriate tools strategically. (1, 2, 3)</p> <p>C: Interpret results in the context of a situation. (1, 2, 3)</p> <p>D: Identify important quantities in a practical situation and map their relationships (e.g., using diagrams, two-way tables, graphs, flowcharts, or formulas). (1, 2, 3)</p>	Ratio and Proportional Relationships	<p>7.RP.1: Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. For example, if a person walks $\frac{1}{2}$ mile in each $\frac{1}{4}$ hour, compute the unit rate as the complex fraction $\frac{1/2}{1/4}$ miles per hour, equivalently 2 miles per hour.</p>	MC, MS, EQ, GI, MA, TI ST (PT Only)
	The Number System	<p>7.RP.2: Recognize and represent proportional relationships between quantities.</p> <p>7.RP.2a: Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.</p>		
	Expressions and Equations	<p>7.RP.2b: Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.</p>		
	Geometry	<p>7.RP.2c: Represent proportional relationships by equations. For example, if total cost t is proportional to the number n of items purchased at a constant price p, the relationship between the total cost and the number of items can be expressed as $t = pn$.</p> <p>7.RP.2d: Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points $(0, 0)$ and $(1, r)$ where r is the unit rate.</p>		
Statistics and Probability	Performance Task			

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			<p>7.NS.1: Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.</p> <p>7.NS.1a: Describe situations in which opposite quantities combine to make 0. For example, a hydrogen atom has 0 charge because its two constituents are oppositely charged.</p> <p>7.NS.1b: Understand $p + q$ as the number located a distance q from p, in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.</p> <p>7.NS.1c: Understand subtraction of rational numbers as adding the additive inverse, $p - q = p + (-q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.</p> <p>7.NS.1d: Apply properties of operations as strategies to add and subtract rational numbers.</p>	

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2: Problem Solving	<p>A: Apply mathematics to solve well-posed problems in pure mathematics and arising in everyday life, society, and the workplace. (2, 3)</p> <p>B: Select and use appropriate tools strategically. (1, 2, 3)</p> <p>C: Interpret results in the context of a situation. (1, 2, 3)</p> <p>D: Identify important quantities in a practical situation and map their relationships (e.g., using diagrams, two-way tables, graphs, flowcharts, or formulas). (1, 2, 3)</p>	Ratio and Proportional Relationships	<p>7.NS.2: Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.</p> <p>7.NS.2a: Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as $(-1)(-1) = 1$ and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.</p> <p>7.NS.2b: Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with a non-zero divisor) is a rational number. If p and q are integers, then $-(p/q) = (-p)/q = p/(-q)$. Interpret quotients of rational numbers by describing real-world contexts.</p> <p>7.NS.2c: Apply properties of operations as strategies to multiply and divide rational numbers.</p> <p>7.NS.2d: Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.</p>	MC, MS, EQ, GI, MA, TI ST (PT Only)
		The Number System	7.NS.3: Solve real-world and mathematical problems involving the four operations with rational numbers.	
		Expressions and Equations	7.EE.1: Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.	
		Geometry	7.EE.2: Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. For example, $a + 0.05a = 1.05a$ means that “increase by 5%” is the same as “multiply by 1.05.”	
		Statistics and Probability		
		Performance Task		

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Claim	Target/DOK	IAB	Standards	Item Types
2: Problem Solving	<p>A: Apply mathematics to solve well-posed problems in pure mathematics and arising in everyday life, society, and the workplace. (2, 3)</p> <p>B: Select and use appropriate tools strategically. (1, 2, 3)</p> <p>C: Interpret results in the context of a situation. (1, 2, 3)</p> <p>D: Identify important quantities in a practical situation and map their relationships (e.g., using diagrams, two-way tables, graphs, flowcharts, or formulas). (1, 2, 3)</p>	Ratio and Proportional Relationships	<p>7.EE.3 Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. For example: If a woman making \$25 an hour gets a 10% raise, she will make an additional 1/10 of her salary an hour, or \$2.50, for a new salary of \$27.50. If you want to place a towel bar 9 3/4 inches long in the center of a door that is 27 1/2 inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation.</p>	MC, MS, EQ, GI, MA, TI ST (PT Only)
		The Number System	<p>7.EE.4 Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.</p> <p>7.EE.4a: Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?</p> <p>7.EE.4b: Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p, q, and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem. For example: As a salesperson, you are paid \$50 per week plus \$3 per sale. This week you want your pay to be at least \$100. Give an inequality for the number of sales you need to make, and describe the solutions.</p>	
		Expressions and Equations		
		Geometry		
		Statistics and Probability		
		Performance Task		

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Claim	Target/DOK	IAB	Standards	Item Types
2: Problem Solving	<p>A: Apply mathematics to solve well-posed problems in pure mathematics and arising in everyday life, society, and the workplace. (2, 3)</p> <p>B: Select and use appropriate tools strategically. (1, 2, 3)</p> <p>C: Interpret results in the context of a situation. (1, 2, 3)</p> <p>D: Identify important quantities in a practical situation and map their relationships (e.g., using diagrams, two-way tables, graphs, flowcharts, or formulas). (1, 2, 3)</p>	Ratio and Proportional Relationships	7.G.1: Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.	MC, MS, EQ, GI, MA, TI ST (PT Only)
		The Number System	7.G.2: Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.	
		Expressions and Equations	7.G.3: Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.	
		Geometry	7.G.4: Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.	
		Statistics and Probability	7.G.5: Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.	
		Performance Task	7.G.6: Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.	

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<p>3: Communicating Reasoning</p>	<p>A: Test propositions or conjectures with specific examples. (2, 3)</p> <p>B: Construct, autonomously, chains of reasoning that will justify or refute propositions or conjectures. (2, 3, 4)</p> <p>C: State logical assumptions being used. (2, 3)</p> <p>D: Use the technique of breaking an argument into cases. (2, 3)</p> <p>E: Distinguish correct logic or reasoning from that which is flawed and—if there is a flaw in the argument—explain what it is. (2, 3, 4)</p> <p>F: Base arguments on concrete referents such as objects, drawings, diagrams, and actions. (2, 3)</p> <p>G: At later grades, determine conditions under which an argument does and does not apply. (For example, area increases with perimeter for squares, but not for all plane figures.) (2, 3)</p>	<p>Ratio and Proportional Relationships</p> <p>The Number System</p> <p>Expressions and Equations</p> <p>Geometry</p> <p>Statistics and Probability</p> <p>Performance Task</p>	<p>7.RP.2: Recognize and represent proportional relationships between quantities.</p> <p>7.RP.2a: Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.</p> <p>7.RP.2b: Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.</p> <p>7.RP.2c: Represent proportional relationships by equations. For example, if total cost t is proportional to the number n of items purchased at a constant price p, the relationship between the total cost and the number of items can be expressed as $t = pn$.</p> <p>7.RP.2d: Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points $(0, 0)$ and $(1, r)$ where r is the unit rate.</p>	<p>MC, MS, EQ, DD, HS, GI, MA, TI</p> <p>ST (PT Only)</p>

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Claim	Target/DOK	IAB	Standards	Item Types
<p>3: Communicating Reasoning</p>	<p>A: Test propositions or conjectures with specific examples. (2, 3)</p>			
	<p>B: Construct, autonomously, chains of reasoning that will justify or refute propositions or conjectures. (2, 3, 4)</p>	Ratio and Proportional Relationships	<p>7.NS.1: Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.</p> <p>7.NS.1a: Describe situations in which opposite quantities combine to make 0. For example, a hydrogen atom has 0 charge because its two constituents are oppositely charged.</p> <p>7.NS.1b: Understand $p + q$ as the number located a distance q from p, in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.</p> <p>7.NS.1c: Understand subtraction of rational numbers as adding the additive inverse, $p - q = p + (-q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.</p> <p>7.NS.1d: Apply properties of operations as strategies to add and subtract rational numbers.</p>	<p>MC, MS, EQ, DD, HS, GI, MA, TI</p> <p>ST (PT Only)</p>
	<p>C: State logical assumptions being used. (2, 3)</p>	The Number System		
	<p>D: Use the technique of breaking an argument into cases. (2, 3)</p>	Expressions and Equations		
	<p>E: Distinguish correct logic or reasoning from that which is flawed and—if there is a flaw in the argument—explain what it is. (2, 3, 4)</p>	Geometry		
	<p>F: Base arguments on concrete referents such as objects, drawings, diagrams, and actions. (2, 3)</p>	Statistics and Probability		
	<p>G: At later grades, determine conditions under which an argument does and does not apply. (For example, area increases with perimeter for squares, but not for all plane figures.) (2, 3)</p>	Performance Task		

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Claim	Target/DOK	IAB	Standards	Item Types
3: Communicating Reasoning	A: Test propositions or conjectures with specific examples. (2, 3)	Ratio and Proportional Relationships The Number System Expressions and Equations Geometry Statistics and Probability Performance Task	7.NS.2: Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.	MC, MS, EQ, DD, HS, GI, MA, TI ST (PT Only)
	B: Construct, autonomously, chains of reasoning that will justify or refute propositions or conjectures. (2, 3, 4)		7.NS.2a: Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as $(-1)(-1) = 1$ and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.	
	C: State logical assumptions being used. (2, 3)		7.NS.2b: Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then $-(p/q) = (-p)/q = p/(-q)$. Interpret quotients of rational numbers by describing real-world contexts.	
	D: Use the technique of breaking an argument into cases. (2, 3)		7.NS.2c: Apply properties of operations as strategies to multiply and divide rational numbers.	
	E: Distinguish correct logic or reasoning from that which is flawed and—if there is a flaw in the argument—explain what it is. (2, 3, 4)		7.NS.2d: Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.	
	F: Base arguments on concrete referents such as objects, drawings, diagrams, and actions. (2, 3)		7.EE.1: Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.	
	G: At later grades, determine conditions under which an argument does and does not apply. (For example, area increases with perimeter for squares, but not for all plane figures.) (2, 3)		7.EE.2: Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. For example, $a + 0.05a = 1.05a$ means that “increase by 5%” is the same as “multiply by 1.05.”	

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Claim	Target/DOK	IAB	Standards	Item Types
4: Modeling and Data Analysis	A: Apply mathematics to solve problems arising in everyday life, society, and the workplace. (2, 3)	Ratio and Proportional Relationships The Number System Expressions and Equations Geometry Statistics and Probability Performance Task	7.RP.1: Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. For example, if a person walks $\frac{1}{2}$ mile in each $\frac{1}{4}$ hour, compute the unit rate as the complex fraction $\frac{1/2}{1/4}$ miles per hour, equivalently 2 miles per hour.	MC, MS, EQ, DD, HS, GI, MA, TI ST (PT Only)
	B: Construct, autonomously, chains of reasoning to justify mathematical models used, interpretations made, and solutions proposed for a complex problem. (2, 3, 4)		7.RP.2: Recognize and represent proportional relationships between quantities. 7.RP.2a: Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.	
	C: State logical assumptions being used. (1, 2, 3)		7.RP.2b: Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.	
	D: Interpret results in the context of a situation. (2, 3)		7.RP.2c: Represent proportional relationships by equations. For example, if total cost t is proportional to the number n of items purchased at a constant price p , the relationship between the total cost and the number of items can be expressed as $t = pn$.	
	E: Analyze the adequacy of and make improvements to an existing model or develop a mathematical model of a real phenomenon. (2, 3, 4)		7.RP.2d: Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points $(0, 0)$ and $(1, r)$ where r is the unit rate.	
	F: Identify important quantities in a practical situation and map their relationships (e.g., using diagrams, two-way tables, graphs, flowcharts, or formulas). (1, 2, 3)			
	G: Identify, analyze and synthesize relevant external resources to pose or solve problems. (3, 4)			

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Claim	Target/DOK	IAB	Standards	Item Types
4: Modeling and Data Analysis	A: Apply mathematics to solve problems arising in everyday life, society, and the workplace. (2, 3)		7.RP.3 Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.	
	B: Construct, autonomously, chains of reasoning to justify mathematical models used, interpretations made, and solutions proposed for a complex problem. (2, 3, 4)	Ratio and Proportional Relationships	7.NS.1: Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.	
	C: State logical assumptions being used. (1, 2, 3)	The Number System	7.NS.1a: Describe situations in which opposite quantities combine to make 0. For example, a hydrogen atom has 0 charge because its two constituents are oppositely charged.	MC, MS, EQ, DD, HS, GI, MA, TI
	D: Interpret results in the context of a situation. (2, 3)	Expressions and Equations	7.NS.1b: Understand $p + q$ as the number located a distance $ q $ from p , in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.	ST (PT Only)
	E: Analyze the adequacy of and make improvements to an existing model or develop a mathematical model of a real phenomenon. (2, 3, 4)	Geometry	7.NS.1c: Understand subtraction of rational numbers as adding the additive inverse, $p - q = p + (-q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.	
	F: Identify important quantities in a practical situation and map their relationships (e.g., using diagrams, two-way tables, graphs, flowcharts, or formulas). (1, 2, 3)	Statistics and Probability	7.NS.1d: Apply properties of operations as strategies to add and subtract rational numbers.	
G: Identify, analyze and synthesize relevant external resources to pose or solve problems. (3, 4)	Performance Task			

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Claim	Target/DOK	IAB	Standards	Item Types
4: Modeling and Data Analysis	<p>A: Apply mathematics to solve problems arising in everyday life, society, and the workplace. (2, 3)</p> <p>B: Construct, autonomously, chains of reasoning to justify mathematical models used, interpretations made, and solutions proposed for a complex problem. (2, 3, 4)</p> <p>C: State logical assumptions being used. (1, 2, 3)</p> <p>D: Interpret results in the context of a situation. (2, 3)</p> <p>E: Analyze the adequacy of and make improvements to an existing model or develop a mathematical model of a real phenomenon. (2, 3, 4)</p> <p>F: Identify important quantities in a practical situation and map their relationships (e.g., using diagrams, two-way tables, graphs, flowcharts, or formulas). (1, 2, 3)</p> <p>G: Identify, analyze and synthesize relevant external resources to pose or solve problems. (3, 4)</p>	<p>Ratio and Proportional Relationships</p> <p>The Number System</p> <p>Expressions and Equations</p> <p>Geometry</p> <p>Statistics and Probability</p> <p>Performance Task</p>	<p>7.NS.2: Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.</p> <p>7.NS.2a: Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as $(-1)(-1) = 1$ and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.</p> <p>7.NS.2b: Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with a non-zero divisor) is a rational number. If p and q are integers, then $-(p/q) = (-p)/q = p/(-q)$. Interpret quotients of rational numbers by describing real-world contexts.</p> <p>7.NS.2c: Apply properties of operations as strategies to multiply and divide rational numbers.</p> <p>7.NS.2d: Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.</p>	<p>MC, MS, EQ, DD, HS, GI, MA, TI</p> <p>ST (PT Only)</p>
	<p>7.NS.3: Solve real-world and mathematical problems involving the four operations with rational numbers.</p>			

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Claim	Target/DOK	IAB	Standards	Item Types
4: Modeling and Data Analysis	A: Apply mathematics to solve problems arising in everyday life, society, and the workplace. (2, 3)			
	B: Construct, autonomously, chains of reasoning to justify mathematical models used, interpretations made, and solutions proposed for a complex problem. (2, 3, 4)	Ratio and Proportional Relationships	7.EE.3 Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. For example: If a woman making \$25 an hour gets a 10% raise, she will make an additional 1/10 of her salary an hour, or \$2.50, for a new salary of \$27.50. If you want to place a towel bar 9 3/4 inches long in the center of a door that is 27 1/2 inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation.	
	C: State logical assumptions being used. (1, 2, 3)	The Number System		
	D: Interpret results in the context of a situation. (2, 3)	Expressions and Equations		
	E: Analyze the adequacy of and make improvements to an existing model or develop a mathematical model of a real phenomenon. (2, 3, 4)	Geometry		
	F: Identify important quantities in a practical situation and map their relationships (e.g., using diagrams, two-way tables, graphs, flowcharts, or formulas). (1, 2, 3)	Statistics and Probability		
	G: Identify, analyze and synthesize relevant external resources to pose or solve problems. (3, 4)	Performance Task		
				MC, MS, EQ, DD, HS, GI, MA, TI ST (PT Only)

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Claim	Target/DOK	IAB	Standards	Item Types
4: Modeling and Data Analysis	A: Apply mathematics to solve problems arising in everyday life, society, and the workplace. (2, 3)			
	B: Construct, autonomously, chains of reasoning to justify mathematical models used, interpretations made, and solutions proposed for a complex problem. (2, 3, 4)	Ratio and Proportional Relationships	7.EE.4 Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.	
	C: State logical assumptions being used. (1, 2, 3)	The Number System	7.EE.4a: Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p , q , and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?	MC, MS, EQ, DD, HS, GI, MA, TI
	D: Interpret results in the context of a situation. (2, 3)	Expressions and Equations	7.EE.4b: Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p , q , and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem. For example: As a salesperson, you are paid \$50 per week plus \$3 per sale. This week you want your pay to be at least \$100. Give an inequality for the number of sales you need to make, and describe the solutions.	ST (PT Only)
	E: Analyze the adequacy of and make improvements to an existing model or develop a mathematical model of a real phenomenon. (2, 3, 4)	Geometry		
	F: Identify important quantities in a practical situation and map their relationships (e.g., using diagrams, two-way tables, graphs, flowcharts, or formulas). (1, 2, 3)	Statistics and Probability		
	G: Identify, analyze and synthesize relevant external resources to pose or solve problems. (3, 4)	Performance Task		

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Claim	Target/DOK	IAB	Standards	Item Types
4: Modeling and Data Analysis	A: Apply mathematics to solve problems arising in everyday life, society, and the workplace. (2, 3)	Ratio and Proportional Relationships The Number System Expressions and Equations Geometry Statistics and Probability Performance Task	7.G.1: Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.	MC, MS, EQ, DD, HS, GI, MA, TI ST (PT Only)
	B: Construct, autonomously, chains of reasoning to justify mathematical models used, interpretations made, and solutions proposed for a complex problem. (2, 3, 4)		7.G.2: Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.	
	C: State logical assumptions being used. (1, 2, 3)		7.G.3: Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.	
	D: Interpret results in the context of a situation. (2, 3)		7.G.4: Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.	
	E: Analyze the adequacy of and make improvements to an existing model or develop a mathematical model of a real phenomenon. (2, 3, 4)		7.G.5: Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.	
	F: Identify important quantities in a practical situation and map their relationships (e.g., using diagrams, two-way tables, graphs, flowcharts, or formulas). (1, 2, 3)		7.G.6: Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.	
	G: Identify, analyze and synthesize relevant external resources to pose or solve problems. (3, 4)			

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Claim	Target/DOK	IAB	Standards	Item Types
4: Modeling and Data Analysis	A: Apply mathematics to solve problems arising in everyday life, society, and the workplace. (2, 3)		7.SP.1: Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences.	MC, MS, EQ, DD, HS, GI, MA, TI ST (PT Only)
	B: Construct, autonomously, chains of reasoning to justify mathematical models used, interpretations made, and solutions proposed for a complex problem. (2, 3, 4)	Ratio and Proportional Relationships	7.SP.2 Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions. For example, estimate the mean word length in a book by randomly sampling words from the book; predict the winner of a school election based on randomly sampled survey data. Gauge how far off the estimate or prediction might be.	
	C: State logical assumptions being used. (1, 2, 3)	The Number System	7.SP.3: Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability. For example, the mean height of players on the basketball team is 10 cm greater than the mean height of players on the soccer team, about twice the variability (mean absolute deviation) on either team; on a dot plot, the separation between the two distributions of heights is noticeable.	
	D: Interpret results in the context of a situation. (2, 3)	Expressions and Equations		
	E: Analyze the adequacy of and make improvements to an existing model or develop a mathematical model of a real phenomenon. (2, 3, 4)	Geometry		
	F: Identify important quantities in a practical situation and map their relationships (e.g., using diagrams, two-way tables, graphs, flowcharts, or formulas). (1, 2, 3)	Statistics and Probability		
	G: Identify, analyze and synthesize relevant external resources to pose or solve problems. (3, 4)	Performance Task		

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Claim	Target/DOK	IAB	Standards	Item Types
4: Modeling and Data Analysis	A: Apply mathematics to solve problems arising in everyday life, society, and the workplace. (2, 3)	Ratio and Proportional Relationships	7.SP.4: Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations. For example, decide whether the words in a chapter of a seventh-grade science book are generally longer than the words in a chapter of a fourth-grade science book.	MC, MS, EQ, DD, HS, GI, MA, TI ST (PT Only)
	B: Construct, autonomously, chains of reasoning to justify mathematical models used, interpretations made, and solutions proposed for a complex problem. (2, 3, 4)		The Number System	
	C: State logical assumptions being used. (1, 2, 3)	Expressions and Equations		
	D: Interpret results in the context of a situation. (2, 3)	Geometry		
	E: Analyze the adequacy of and make improvements to an existing model or develop a mathematical model of a real phenomenon. (2, 3, 4)	Statistics and Probability		
	F: Identify important quantities in a practical situation and map their relationships (e.g., using diagrams, two-way tables, graphs, flowcharts, or formulas). (1, 2, 3)	Performance Task	7.SP.6: Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability. For example, when rolling a number cube 600 times, predict that a 3 or 6 would be rolled roughly 200 times, but probably not exactly 200 times.	
	G: Identify, analyze and synthesize relevant external resources to pose or solve problems. (3, 4)			

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Claim	Target/DOK	IAB	Standards	Item Types
4: Modeling and Data Analysis	A: Apply mathematics to solve problems arising in everyday life, society, and the workplace. (2, 3)			
	B: Construct, autonomously, chains of reasoning to justify mathematical models used, interpretations made, and solutions proposed for a complex problem. (2, 3, 4)	Ratio and Proportional Relationships	7.SP.7: Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy. 7.SP.7a: Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events. For example, if a student is selected at random from a class, find the probability that Jane will be selected and the probability that a girl will be selected. 7.SP.7b: Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process. For example, find the approximate probability that a spinning penny will land heads up or that a tossed paper cup will land open-end down. Do the outcomes for the spinning penny appear to be equally likely based on the observed frequencies?	
	C: State logical assumptions being used. (1, 2, 3)	The Number System		
	D: Interpret results in the context of a situation. (2, 3)	Expressions and Equations		
	E: Analyze the adequacy of and make improvements to an existing model or develop a mathematical model of a real phenomenon. (2, 3, 4)	Geometry		
	F: Identify important quantities in a practical situation and map their relationships (e.g., using diagrams, two-way tables, graphs, flowcharts, or formulas). (1, 2, 3)	Statistics and Probability		
	G: Identify, analyze and synthesize relevant external resources to pose or solve problems. (3, 4)	Performance Task		
				MC, MS, EQ, DD, HS, GI, MA, TI ST (PT Only)

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Claim	Target/DOK	IAB	Standards	Item Types
4: Modeling and Data Analysis	A: Apply mathematics to solve problems arising in everyday life, society, and the workplace. (2, 3)			
	B: Construct, autonomously, chains of reasoning to justify mathematical models used, interpretations made, and solutions proposed for a complex problem. (2, 3, 4)	Ratio and Proportional Relationships	7.SP.8: Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation. 7.SP.8a: Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs. 7.SP.8b: Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language (e.g., “rolling double sixes”), identify the outcomes in the sample space which compose the event. 7.SP.8c: Design and use a simulation to generate frequencies for compound events. For example, use random digits as a simulation tool to approximate the answer to the question: If 40% of donors have type A blood, what is the probability that it will take at least 4 donors to find one with type A blood?	
	C: State logical assumptions being used. (1, 2, 3)	The Number System		MC, MS, EQ, DD, HS, GI, MA, TI
	D: Interpret results in the context of a situation. (2, 3)	Expressions and Equations		ST (PT Only)
	E: Analyze the adequacy of and make improvements to an existing model or develop a mathematical model of a real phenomenon. (2, 3, 4)	Geometry		
	F: Identify important quantities in a practical situation and map their relationships (e.g., using diagrams, two-way tables, graphs, flowcharts, or formulas). (1, 2, 3)	Statistics and Probability		
	G: Identify, analyze and synthesize relevant external resources to pose or solve problems. (3, 4)	Performance Task		

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