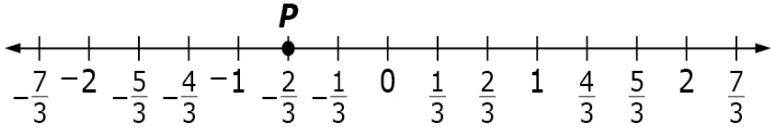
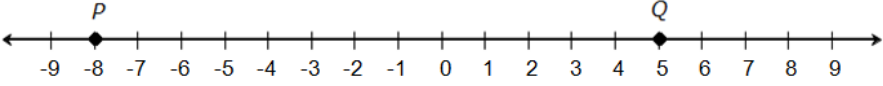
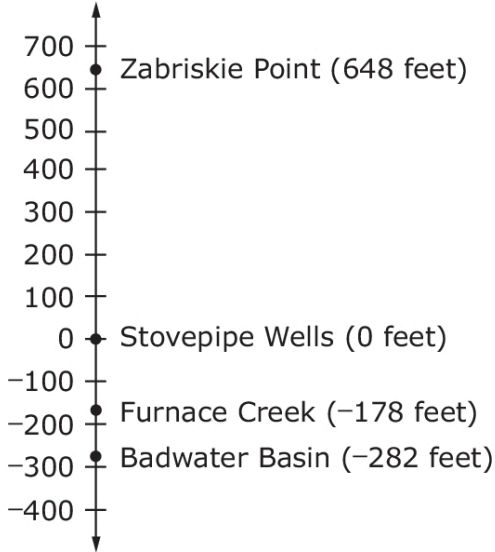


<p>Task Model 1</p> <p>Response Type: Graphing</p> <p>DOK Level 2</p> <p>7.NS.A.1b Understand $p + q$ as the number located a distance q from p, in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.</p> <p>Evidence Required: 1. The student interprets rational number values on a number line, including modeling addition and subtraction expressions.</p> <p>Tools: None</p> <p>Accessibility Note: Graphing items are not currently able to be Brailled. Minimize the number of items developed to this TM.</p>	<p>Prompt Features: The student is prompted to construct a model on the number line that corresponds to given information.</p> <p>Stimulus Guidelines:</p> <ul style="list-style-type: none"> • Item difficulty can be adjusted via these methods: <ul style="list-style-type: none"> ○ Mathematical operations involving addition and subtraction are easier when the summands are positive. ○ The majority of items written to this task model should use integers. <p>TM1a Stimulus: The student is presented with a number line with a labeled point at a rational number.</p> <p>Example Stem: What numbers are located exactly $\frac{5}{3}$ units from point P on the number line?</p> <p>Use the Add Point tool to plot the location of these numbers on the number line.</p> <div style="text-align: center;">  <p>The number line has arrows at both ends and tick marks at intervals of 1/3. The labels below the line are: $-\frac{7}{3}$, -2, $-\frac{5}{3}$, $-\frac{4}{3}$, -1, $-\frac{2}{3}$, $-\frac{1}{3}$, 0, $\frac{1}{3}$, $\frac{2}{3}$, 1, $\frac{4}{3}$, $\frac{5}{3}$, 2, $\frac{7}{3}$. A point labeled 'P' is marked with a black dot at the $-\frac{2}{3}$ position.</p> </div> <p>Interaction: Add Point and Delete tools should be provided for students to plot points on the number line containing snap-to regions at every tick mark.</p> <p>Rubric: (1 point) The student plots the exact location of both points (e.g., $-\frac{7}{3}$ and 1).</p> <p>Response Type: Graphing</p>
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<p>Task Model 1</p> <p>Response Type: Multiple Choice, multiple correct response</p> <p>DOK Level 1</p> <p>7.NS.A.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>Evidence Required: 1. The student interprets rational number values on a number line, including modeling addition and subtraction expressions.</p> <p>Tools: None</p>	<p>Prompt Features: The student is prompted to identify the sum or difference of rational numbers given a number line.</p> <p>Stimulus Guidelines:</p> <ul style="list-style-type: none"> All numbers should be integers. <p>TM1b</p> <p>Stimulus: The student is presented with a number line with two labeled points at least 3 units apart.</p> <p>Example Stem: Select all expressions that show the distance between P and Q.</p>  <p>A. $5 - (-8)$ B. $5 + -8$ C. $-8 + 5$ D. $5 + (-8)$</p> <p>Answer Choices: Answer choices should involve using absolute value signs, such as $5+8$. Distractors should include using a wrong operation, number, or sign(s).</p> <p>Rubric: (1 point) Student selects all correct expressions and no incorrect expressions (e.g., A and B).</p> <p>Response Type: Multiple Choice, multiple correct response</p>
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<p>Task Model 1</p> <p>Response Type: Multiple Choice, multiple correct response</p> <p>DOK Level 2</p> <p>7.NS.A.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>Evidence Required: 1. The student interprets rational number values on a number line, including modeling addition and subtraction expressions.</p> <p>Tools: None</p> <p>Version 3 Update: Retired TM1c and TM1d and added new TM1e.</p>	<p>Prompt Features: The student is prompted to identify equivalent expressions in the form $p - q = p + (-q)$.</p> <p>Stimulus Guidelines:</p> <ul style="list-style-type: none"> All numbers should be integers. <p>TM1e Stimulus: The student is presented with an expression in the form $p - q$ and asked to identify all equivalent expressions.</p> <p>Example Stem: Select all expressions that equal $-7 - (-12)$.</p> <p>A. $7 + (-12)$ B. $-7 + (-12)$ C. $-7 + 12$ D. $7 + 12$</p> <p>Rubric: (1 point) Student selects all correct expressions and no incorrect expressions (e.g., B and C).</p> <p>Response Type: Multiple Choice, multiple correct response</p>
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<p>Task Model 2</p> <p>Response Type: Equation/Numeric</p> <p>DOK Level 1</p> <p>7.NS.1d Apply properties of operations as strategies to add and subtract rational numbers.</p> <p>Evidence Required: 2. The student applies properties of operations as strategies to add and subtract rational numbers.</p> <p>Tools: None</p>	<p>Prompt Features: The student is prompted to identify the sum or difference of rational numbers.</p> <p>Stimulus Guidelines:</p> <ul style="list-style-type: none"> • Numbers can be presented on a vertical number line if more than three points with labels are graphed. • Item difficulty can be adjusted via these methods: <ul style="list-style-type: none"> ○ Mathematical operations involving addition and subtraction are easier when the summands are positive. ○ Summands consisting of integers are easier than summands that include rational numbers such as decimals, fractions or mixed numbers. ○ A number line containing whole number scaling is easier than one containing rational number scaling. <p>TM2a</p> <p>Stimulus: The student is presented with a problem in a real-world context involving the addition or subtraction of rational numbers written in the same form on a number line.</p> <p>Example Stem: The number line shows four elevations in Death Valley National Park.</p> <div style="text-align: center;">  </div> <p>Enter the difference, in feet, between the elevation at Zabriskie Point and Furnace Creek.</p> <p>Rubric: (1 point) Correct answer will be a rational number (e.g., 826).</p> <p>Response Type: Equation/Numeric</p>
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<p>Task Model 2</p> <p>Response Type: Equation/Numeric</p> <p>DOK Level 1</p> <p>7.NS.1d 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. d. Apply properties of operations as strategies to add and subtract rational numbers.</p> <p>Evidence Required: 2. The student applies properties of operations as strategies to add and subtract rational numbers.</p> <p>Tools: None</p> <p>Version 3 Update: TM2b stimulus guidelines and example stems updated to emphasize the use of strategies and properties of operations.</p>	<p>Prompt Features: The student is prompted to apply properties of operations as strategies to add and subtract rational numbers.</p> <p>Stimulus Guidelines:</p> <ul style="list-style-type: none"> • At least one of the numbers must be negative. • Items should be designed to encourage use of strategies and properties of operations. • Item difficulty can be adjusted via these methods: <ul style="list-style-type: none"> ○ Summands consisting of integers are easier than summands that include rational numbers such as decimals, fractions or mixed numbers. <p>TM2b</p> <p>Stimulus: The student is presented with an expression involving the sum or difference of rational numbers.</p> <p>Example Stem 1: Enter the value of $14 + (-22) - 14 - 22$.</p> <p>Example Stem 2: Enter the value of $2.1 + (-3) - (-0.9)$.</p> <p>Rubric: (1 point) Student accurately computes the value of the expression, which is a rational number (e.g., -44; 0).</p> <p>Response Type: Equation/Numeric</p>
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<p>Task Model 3</p> <p>Response Type: Multiple Choice, multiple correct response</p> <p>DOK Level 1</p> <p>7.NS.A.2b Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. b. 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.</p> <p>Evidence Required: 3. The student applies properties of operations as strategies to multiply and divide rational numbers.</p> <p>Tools: None</p> <p>Version 3 Update: TM3a retired.</p>	<p>Prompt Features: The student is prompted to identify equivalent representations of fractions involving negative signs.</p> <p>TM3b Stimulus: The student is presented with an expression of the form $\frac{p}{q}$ or $-\frac{p}{q}$ where p and q are integers, and $q \neq 0$.</p> <p>Example Stem: Select all values equal to $-\frac{4}{5}$.</p> <p>A. $\frac{-4}{-5}$</p> <p>B. $-\frac{-4}{-5}$</p> <p>C. $\frac{-4}{5}$</p> <p>D. $-\frac{-4}{5}$</p> <p>E. $\frac{4}{-5}$</p> <p>Answer Choices: Answer choices are rational numbers in the form of fractions. Distractors should include incorrect values which may be of the form $\frac{-p}{-q}$, $-\frac{-p}{q}$, $-\frac{p}{-q}$, $-\frac{-p}{-q}$, $\frac{-p}{q}$, $\frac{p}{-q}$.</p> <p>Rubric: (1 point) Student selects all the correct expressions (e.g., B, C, and E).</p> <p>Response Type: Multiple Choice, multiple correct response</p>
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<p>Task Model 3</p> <p>Response Type: Equation/Numeric</p> <p>DOK Level 1</p> <p>7.NS.A.2c Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. c. Apply properties of operations as strategies to multiply and divide rational numbers.</p> <p>Evidence Required: 3. The student applies properties of operations as strategies to multiply and divide rational numbers.</p> <p>Tools: None</p> <p>Version 3 Update: Added new example stems.</p>	<p>Prompt Features: The student is prompted to determine the value of a multiplication or division expression with rational numbers. Many of these should be designed to make properties of operations a desirable strategy.</p> <p>Stimulus Guidelines:</p> <ul style="list-style-type: none"> • Quotients must not result in a repeating decimal. • Rational numbers may be in different forms (integer, fraction/mixed number, decimal). • Item difficulty can be adjusted via these methods: <ul style="list-style-type: none"> ○ Use integer factors and/or divisors. ○ Use fractions and/or decimals. ○ Use of parentheses in mathematical operations. <p>TM3c Stimulus: The student is presented with an expression involving products or quotients of rational numbers.</p> <p>Example Stem 1: Enter the value of $\frac{1}{2}(1.7)$.</p> <p>Example Stem 2: Enter the value of $(-8)(45)(\frac{1}{8})$.</p> <p>Example Stem 3: Enter the value of $(0.01)(-0.1)(10)(-100)$.</p> <p>Example Stem 4: Enter the value of $(0.45) \div \frac{9}{10}$.</p> <p>Rubric: (1 point) Student accurately calculates the product or quotient, which is a rational number (e.g., 0.85; -45; 1; 0.5 or equivalents).</p> <p>Response Type: Equation/Numeric</p>
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<p>Task Model 3</p> <p>Response Type: Multiple Choice, single correct response</p> <p>DOK Level 1</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>Evidence Required: 3. The student applies properties of operations as strategies to multiply and divide rational numbers.</p> <p>Tools: None</p> <p>Version 3 Update: Added new TM3d.</p>	<p>Prompt Features: The student is prompted to multiply rational numbers in a real-world context.</p> <p>Stimulus Guidelines:</p> <ul style="list-style-type: none"> • Item difficulty can be adjusted via these methods: <ul style="list-style-type: none"> ○ Mathematical operations involving addition and subtraction are easier when the terms are positive. ○ Terms consisting of integers are easier than terms which include rational numbers such as decimals, fractions or mixed numbers. ○ Use of parentheses in mathematical operations. <p>TM3d</p> <p>Stimulus: The student is presented with a verbal description of a real-world situation with multiplication of rational numbers.</p> <p>Example Stem: If a bank represents deposits with positive numbers and withdrawals as negative numbers, what could $5 \cdot (-20)$ represent?</p> <ul style="list-style-type: none"> A. Five deposits of \$20. B. Five withdrawals of \$20. C. A \$5 deposit followed by a \$20 withdrawal D. A \$5 withdrawal followed by a \$20 deposit <p>Rubric: (1 point) The student selects the correct response (e.g., B).</p> <p>Response Type: Multiple choice, single correct response</p>
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<p>Task Model 4</p> <p>Response Type: Equation/Numeric</p> <p>DOK Level 1</p> <p>7.NS.A.2d Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. d. 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>Evidence Required: 4. The student converts from a fractional form of rational numbers to a decimal form of rational numbers.</p> <p>Tools: None</p>	<p>Prompt Features: The student is prompted to convert a positive or negative fraction to a decimal equivalent.</p> <p>Stimulus Guidelines:</p> <ul style="list-style-type: none"> • Quotients must not result in a repeating decimal. • The number is given in fraction form. • Item difficulty can be adjusted via these methods: <ul style="list-style-type: none"> ○ Commonly used fractions vs. not commonly used fractions. ○ Numerator and/or denominator negative. <p>TM4</p> <p>Stimulus: The student is presented with a rational number in fraction form.</p> <p>Example Stem: Enter the decimal equivalent of $\frac{5}{8}$.</p> <p>Rubric: (1 point) Student gives the correct decimal equivalent (e.g., 0.625).</p> <p>Interaction: Make sure student cannot enter a fraction in the response space.</p> <p>Response Type: Equation/Numeric</p>
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<p>Task Model 5</p> <p>Response Type: Equation/Numeric</p> <p>DOK Level 2</p> <p>7.NS.A.3 Solve real-world and mathematical problems involving the four operations with rational numbers.</p> <p>Evidence Required: 5. The student solves real-world and mathematical problems involving the four operations with rational numbers.</p> <p>Tools: None</p>	<p>Prompt Features: The student is prompted to solve real-world and mathematical problems involving the four operations with rational numbers.</p> <p>Stimulus Guidelines:</p> <ul style="list-style-type: none"> • Rational numbers may be in any form. • Quotients must not result in a repeating decimal. • Item difficulty can be adjusted via these methods: <ul style="list-style-type: none"> ○ Computations with integers may be easier than computations with non-integer rational numbers such as decimals, fractions or mixed numbers. ○ The number of differing mathematical operations increases difficulty. ○ Use of parentheses in mathematical operations. <p>TM5a Stimulus: The student is presented with a mathematical expression involving a combination of addition/subtraction and multiplication/division with rational numbers.</p> <p>Example Stem: Enter the value of $\frac{3}{8}[-8 + 16 - (-2\frac{1}{2})]$.</p> <p>Rubric: (1 point) Student accurately calculates the value, which is a rational number (e.g., 3.9375 or $3\frac{15}{16}$).</p> <p>Response Type: Equation/Numeric</p> <p>TM5b Stimulus: The student is presented with a one-step real-world problem involving addition, subtraction, multiplication, or division with rational numbers.</p> <p>Example Stem: Mark buys a wooden board that is $7\frac{1}{2}$ feet long. The cost of the board is \$0.50 per foot, including tax. What is the total cost, in dollars, of Mark’s board?</p> <p>Rubric: (1 point) Correct answer will be a single numeric value. (e.g., 3.75).</p> <p>Response Type: Equation/Numeric</p>
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