Claim 1: Concepts and Procedures
Students can explain and apply mathematical concepts and carry out mathematical procedures with precision and fluency.

Content Domain: **The Number System**

Target D [m]: Apply and extend previous understandings of numbers to the system of rational numbers. (DOK Levels 1, 2)

Tasks for this claim will ask students to place numbers on a number line (positive and negative rational numbers, including those expressed using absolute value notation). Some tasks will ask students to interpret the meaning of zero in a context related to other given quantities in the problem.

Claim 3 tasks will integrate the work of this target by incorporating students' understanding of interpretations and explanations of common misconceptions related to inequalities for negative rational numbers (e.g., explaining that $-3^{o}C$ is warmer than $-7^{o}C$). Claims 2 and 4 will include items that ask students to solve problems in the four quadrants of the coordinate plane, including distances between points with the same first and second coordinate.

Standards: 6.NS.C, 6.NS.C.5, 6.NS.C.6, 6.NS.C.7, 6.NS.C.8	**6.NS.C Apply and extend previous understandings of numbers to the system of rational numbers.** **6.NS.C.5** Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation. **6.NS.C.6** Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates. a. Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., –(–3) = 3, and that 0 is its own opposite. b. Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes. c. Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane. **6.NS.C.7** Understand ordering and absolute value of rational numbers. a. Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. *For example, interpret –3 > –7 as a statement that –3 is located to the right of –7 on a number line oriented from left to right.* b. Write, interpret, and explain statements of order for rational numbers in real-world contexts. *For example, write –3°C > –7°C to express the fact that –3°C is warmer than –7°C.* c. Understand the absolute value of a rational number as its

	distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation. *For example, for an account balance of –30 dollars, write |–30| = 30 to describe the size of the debt in dollars.* d. Distinguish comparisons of absolute value from statements about order. *For example, recognize that an account balance less than –30 dollars represents a debt greater than 30 dollars.* **6.NS.C.8** Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.
Related Below-Grade and Above-Grade Standards for Purposes of Planning for Vertical Scaling: 5.G.A, 5.G.A.1, 5.G.A.2 7.NS.A, 7.NS.A.2, 7.NS.A.3	**Related Grade 5 Standards** **5.G.A Graph points on the coordinate plane to solve real-world and mathematical problems.** **5.G.A.1** Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., *x*-axis and *x*-coordinate, *y*-axis and *y*-coordinate). **5.G.A.2** Represent real-world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation. **Related Grade 7 Standards** **7.NS.A Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.** **7.NS.A.2** Apply and extend previous understandings of multiplication and division of fractions to multiply and divide rational numbers. a. Understand that multiplication is extended from fractions to rational numbers by requiring the 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. 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. c. Apply properties of operations as strategies 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

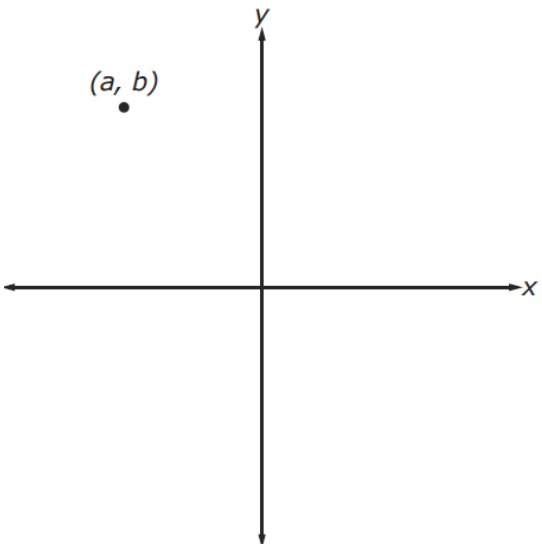
	in 0s or eventually repeats. **7.NS.A.3** Solve real-world and mathematical problems involving the four operations with rational numbers.
DOK Levels:	1, 2
Achievement Level Descriptors:	
RANGE Achievement Level Descriptor (Range ALD) Target D: Apply and extend previous understandings of numbers to the system of rational numbers.	**Level 1** Students should be able to place all integers on a number line and integer pairs on a coordinate plane with one-unit increments on both axes.
	Level 2 Students should be able to apply and extend previous understandings of whole numbers to order rational numbers and interpret statements of their order in the context of a situation. They should be able to place all rational numbers on a number line and integer pairs on a coordinate plane with various axis increments. They should be able to relate changes in sign to placements on opposite sides of the number line and understand the absolute value of a number as its distance from zero on a number line.
	Level 3 Students should be able to apply and extend previous understandings of numbers to relate statements of inequality to relative positions on a number line, place points with rational coordinates on a coordinate plane, and solve problems involving the distance between points when they share a coordinate. They should be able to understand absolute value and ordering by using number lines and models and relate reflection across axes to changes in sign.
	Level 4: No descriptor
Evidence Required:	1. The student uses positive and negative numbers to represent quantities in real-world contexts. 2. The student can identify the location of ordered pairs on the coordinate plane based on the signs of the numbers in an ordered pair. 3. The student locates and positions integers and other rational numbers on a number line. 4. The student positions ordered pairs of integers and other rational numbers on a coordinate plane. 5. [Evidence Required statement retired] 6. The student writes and interprets statements about the order of rational numbers in real-world contexts. 7. The student represents the absolute value of a rational number as the distance from zero on a number line. 8. The student can make comparisons of absolute value from statements about order. 9. The student solves real-world and mathematical problems by graphing ordered pairs on a coordinate plane and using coordinates and absolute value to find the distances between points with same first coordinate or same second coordinate.
Allowable Response Types:	Multiple Choice, single correct response; Multiple Choice, multiple correct response; Equation/Numeric; Matching Tables; Drag and

	Drop; Graphing; Hot Spot
Allowable Stimulus Materials:	horizontal and vertical number lines, coordinate planes
Construct-Relevant Vocabulary:	positive, negative, integer, absolute value, coordinate, ordered pair, coordinate grid/plane, quadrant, number line, relative position, magnitude
Allowable Tools:	None
Target-Specific Attributes:	
Non-Targeted Constructs:	
Accessibility Guidance:	Item writers should consider the following Language and Visual Element/Design guidelines[1] when developing items. Language Key Considerations: • Use simple, clear, and easy-to-understand language needed to assess the construct or aid in the understanding of the context • Avoid sentences with multiple clauses • Use vocabulary that is at or below grade level • Avoid ambiguous or obscure words, idioms, jargon, unusual names and references Visual Elements/Design Key Considerations: • Include visual elements only if the graphic is needed to assess the construct or it aids in the understanding of the context • Use the simplest graphic possible with the greatest degree of contrast, and include clear, concise labels where necessary • Avoid crowding of details and graphics Items are selected for a student's test according to the blueprint, which selects items based on Claims and targets, not task models. As such, careful consideration is given to making sure fully accessible items are available to cover the content of every Claim and target, even if some item formats are not fully accessible using current technology.[2]
Development Notes:	Claim 3 tasks will integrate the work of this target by incorporating students' understanding of interpretations and explanations of common misconceptions related to inequalities for negative rational numbers (e.g., explaining that $-3^{o}C$ is warmer than $-7^{o}C$). Claims 2 and 4 will include items that ask students to solve problems in the four quadrants of the coordinate plane, including distances between points with the same first and second coordinate.

[1] For more information, refer to the General Accessibility Guidelines at: http://www.smarterbalanced.org/wordpress/wp-content/uploads/2012/05/TaskItemSpecifications/Guidelines/AccessibilityandAccommodations/GeneralAccessibilityGuidelines.pdf

[2] For more information about student accessibility resources and policies, refer to http://www.smarterbalanced.org/wordpress/wp-content/uploads/2014/08/SmarterBalanced_Guidelines.pdf

Task Model 1 **Response Type: Equation / Numeric** **DOK Level 1** **6.NS.C.5** Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation. **Evidence Required:** 1. The student uses positive and negative numbers to represent quantities in real-world contexts. **Tools:** None	**Prompt Features:** The student is prompted to interpret negative numbers in context. **Stimulus Guidelines:** • Context should be familiar to students 11 to 13 years old. • The context should involve quantities where negative values can be interpreted in an appropriate and unambiguous way such as references to temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge. • Students use a rational number to represent a given real-world scenario. **TM1** **Stimulus:** The student is presented with a context that can be unambiguously represented by a negative number or zero. **Example Stem:** A Fahrenheit thermometer shows that the temperature is 15 degrees below zero. Enter the integer that represents the temperature in degrees Fahrenheit. **Rubric:** (1 point) The student enters the correct number (e.g., –15). **Response Type:** Equation/Numeric

Task Model 2 **Response Types: Multiple Choice, multiple correct response; Hot Spot** **DOK Level 1** **6.NS.C.6b** Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes. **Evidence Required:** 2. The student can identify the location of ordered pairs on the coordinate plane based on the signs of the numbers in an ordered pair. **Tools:** None **Version 3 Update:** Retired TM2a and TM2b. Added new TM2c. **Accessibility Note:** Graphing items are not currently able to be Brailled. Minimize the number of items developed to this TM.	**Prompt Features:** The student is prompted to locate a point in a different quadrant of the coordinate plane than a given point. **Stimulus Guidelines:** • Ordered pairs in the form ($\pm x$, $\pm y$), where x and y are rational numbers. • x and y cannot be equal to 0. **TM2c** **Stimulus:** The student is presented with coordinate axes and a point labeled (a, b) in one of the quadrants. **Example Stem:** The point that corresponds to (a, b) is shown in the coordinate plane. Use the Add Point tool to graph ($-a$, b).  **Rubric:** (1 point) The student places a point in the correct location with some tolerance. **Response Type:** Graphing

Task Model 3

Response Type: Multiple Choice, single correct response

DOK Level 1

6.NS.C.6c
Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.

Evidence Required:
3. The student locates and positions integers and other rational numbers on a number line.

Tools: None

Version 3 Update:
Retired TM3a.

Prompt Features: The student is prompted to identify a number line containing correctly plotted rational numbers.

Stimulus Guidelines:

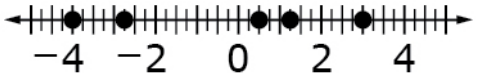
- Number lines should have tick marks and labels appropriate for the given numbers.
- Item difficulty can be adjusted via these example methods:
  - Values are integers.
  - Values are decimal numbers up to the hundredths.
  - Values are fractions/mixed numbers.
  - Values are fractions/mixed numbers and decimals.

TM3b
Stimulus: The student is presented with a list of rational numbers.

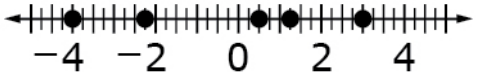
Example Stem: Which number line shows the correct positions of all the values shown?

$\frac{1}{2}$, -4, $-2\frac{3}{4}$, 3, $1\frac{1}{4}$

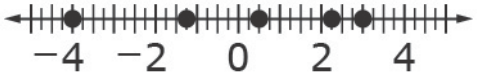
A.



B.



C.



D.

Answer Choices: Answer choices will be number lines with points plotted. Distractors will include incorrect placement of one or more numbers on a number line based on signs and/or positions of rational numbers.

Rubric: (1 point) Student selects the correct number line (e.g., A).

Response Type: Multiple Choice, single correct response

Task Model 3

Response Type: Matching Tables

DOK Level 1

6.NS.C.6c
Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.

Evidence Required:
3. The student locates and positions integers and other rational numbers on a number line.

Tools: None

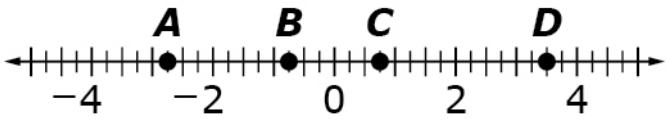
Prompt Features: The student is prompted to identify the rational numbers that occupy locations on a given number line.

Stimulus Guidelines:

- Number lines should have tick marks and labels appropriate for the given numbers.
- Item difficulty can be adjusted via these example methods:
  - Values are integers.
  - Values are decimal numbers up to the hundredths.
  - Values are fractions/mixed numbers.
  - Values are fractions/mixed numbers and decimals.

TM3c
Stimulus: The student is presented with a number line with labeled tick marks that contains 3–5 labeled points.

Example Stem: Consider the points plotted on the number line shown.



Select True or False for each statement about the number line.

Statement	True	False
The value of Point A is less than –3.		
The value of Point B is greater than the value of Point A.		
The value of Point D is $3\frac{1}{2}$.		

Rubric: (1 point) The student identifies all three statements correctly as true or false (e.g., F, T, T). Statements will include the opposite of the given number, failure to correctly plot fractions on a number line, etc.

Response Type: Matching Tables

Task Model 3

Response Type: Drag and Drop

DOK Level 1

6.NS.C.6c
Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.

6.NS.7c
Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation. *For example, for an account balance of –30 dollars, write |–30| = 30 to describe the size of the debt in dollars.*

Evidence Required:
3. The student locates and positions integers and other rational numbers on a number line.

Tools: None

Accessibility Note:
Drag and Drop items are not currently able to be Brailled. Minimize the number of items developed to this TM.

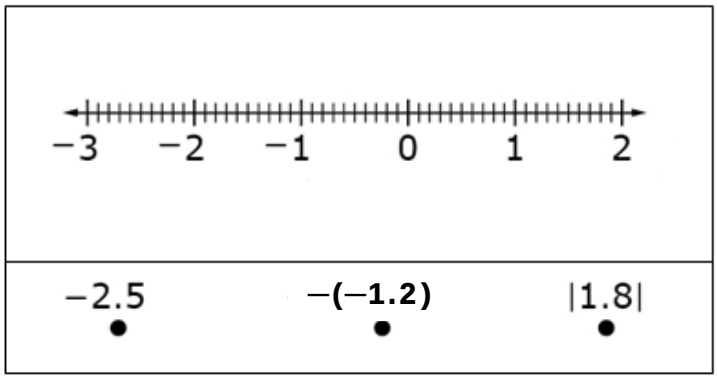
Prompt Features: The student is prompted to position rational numbers on a number line.

Stimulus Guidelines:

- At least one number should be in the form "–(–*x*)."
- The number line should be labeled appropriately.
- Numbers may be integers, fractions, or decimals. Appropriate tic marks should be identified on the number line with sufficient spacing.
- Item difficulty can be adjusted via these example methods:
  - Values are integers.
  - Values are decimal numbers up to the hundredths.
  - Values are fractions/mixed numbers.

TM3d
Stimulus: The student is presented with three rational numbers and an incomplete number line.

Example Stem: Drag each number to its correct location on the number line.



Interaction: The student uses a preplaced drag-and-drop tool. The points are labeled with a rational number value which students can drag to the number line. Use the snap-to feature for each tick mark.

Rubric: (1 point) Student plots all numbers correctly on the number line.

Response Type: Drag and Drop

Task Model 4

Response Type: Multiple Choice, single correct response

DOK Level 1

6.NS.C.6c
Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.

Evidence Required:
4. The student positions ordered pairs of integers and other rational numbers on a coordinate plane.

Tools: None

Prompt Features: The student is prompted to identify the coordinate plane showing correctly graphed ordered pairs and vice versa.

Stimulus Guidelines:

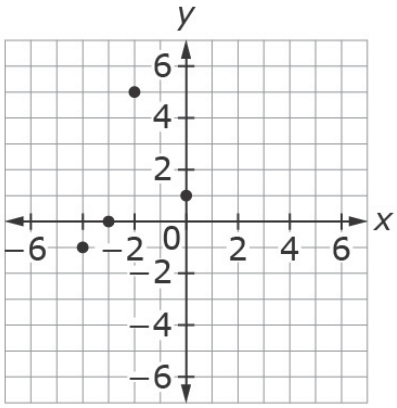
- There should be three to five total ordered pairs.
- At least two ordered pairs should contain negative coordinates.
- Ordered pairs are in the form $(\pm x, \pm y)$, where x and y may be integers and/or other rational numbers.
- For plotting rational numbers, coordinate plane scale should be such that students must use number line sense to place the points.
- Item difficulty can be adjusted via these example methods:
  - Students identify the ordered pairs for a given graph and vice versa (ordered pairs are integers).
  - Students identify the ordered pairs for a given graph and vice versa (ordered pairs include rational numbers).

TM4a
Stimulus: The student is presented with coordinates of ordered pairs and a coordinate plane with the ordered pairs plotted.

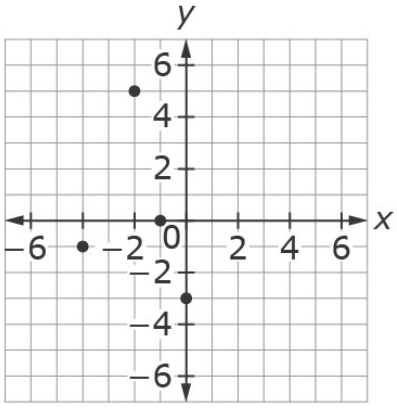
Example Stem 1: Which coordinate plane best represents the graph of these ordered pairs?

(–1, 0), (0, –3), (–4, –1), (–2, 5)

A.



B.



Task Model 4

Response Type: Multiple Choice, single correct response

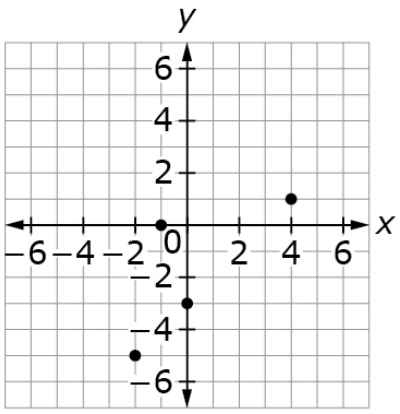
DOK Level 1

6.NS.C.6c
Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.

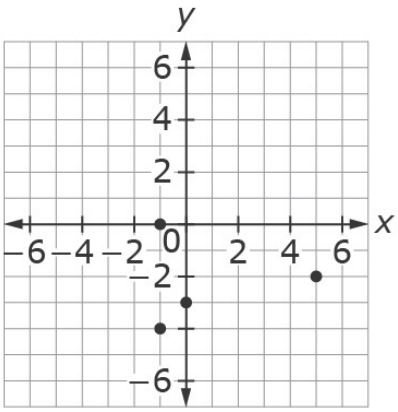
Evidence Required:
4. The student positions ordered pairs of integers and other rational numbers on a coordinate plane.

Tools: None

C.



D.



Rubric: (1 point) The student identifies the correct graph (e.g., B).

Answer Choices: Answer choices will be coordinate planes with three to five ordered pairs plotted. Distractors will include errors in signs of numbers and/or confusing *x*- and *y*-axis or coordinates.

Response Type: Multiple Choice, single correct response

Task Model 4

Response Type: Multiple Choice, single correct response

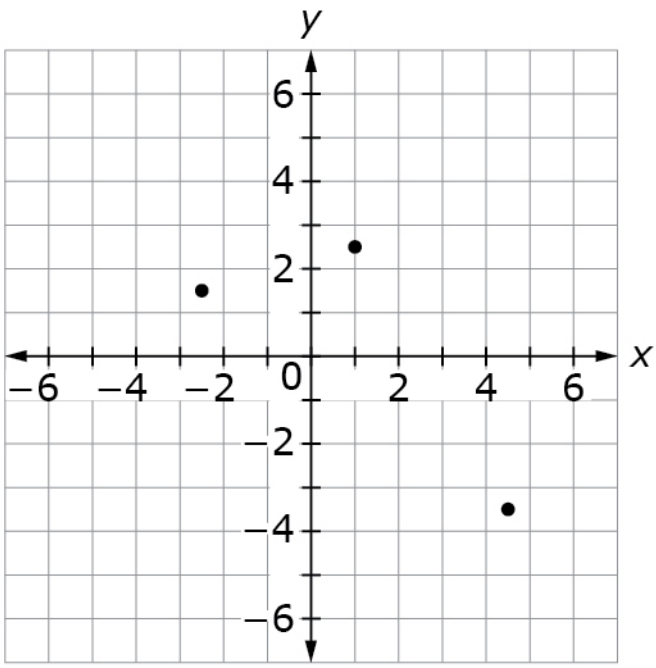
DOK Level 1

6.NS.C.6c
Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.

Evidence Required:
4. The student positions ordered pairs of integers and other rational numbers on a coordinate plane.

Tools: None

Example Stem 2: Consider the coordinate plane.



Which list of ordered pairs corresponds to the points on the coordinate plane?

A. $(-4\frac{1}{2}, -3\frac{1}{2})$, $(-1, 2\frac{1}{4})$, $(-2\frac{1}{2}, -1\frac{1}{2})$

B. $(-2\frac{1}{2}, 1\frac{1}{2})$, $(4\frac{1}{2}, -3\frac{1}{2})$, $(1, 2\frac{1}{4})$

C. $(-3\frac{1}{2}, -4\frac{1}{2})$, $(1, -2\frac{1}{4})$, $(2\frac{1}{2}, 1\frac{1}{2})$

D. $(2\frac{1}{2}, -1\frac{1}{2})$, $(4\frac{1}{2}, 3\frac{1}{2})$, $(1, -2\frac{1}{4})$

Rubric: (1 point) Student selects the correct set of ordered pairs (e.g., B).

Answer Choices: Answer choices will be lists of ordered pairs. Distractors will include errors in signs of numbers and/or confusing *x*- and *y*-axis or coordinates.

Response Type: Multiple Choice, single correct response

Task Model 4

Response Type: Graphing

DOK Level 1

6.NS.C.6c
Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.

Evidence Required:
4. The student positions ordered pairs of integers and other rational numbers on a coordinate plane.

Tools: None

Accessibility Note: Graphing items are not currently able to be Brailled. Minimize the number of items developed to this TM.

Version 3 Update: Retired Evidence Required statement 5 and TM5.

Prompt Features: The student is prompted to position ordered pairs on a coordinate plane.

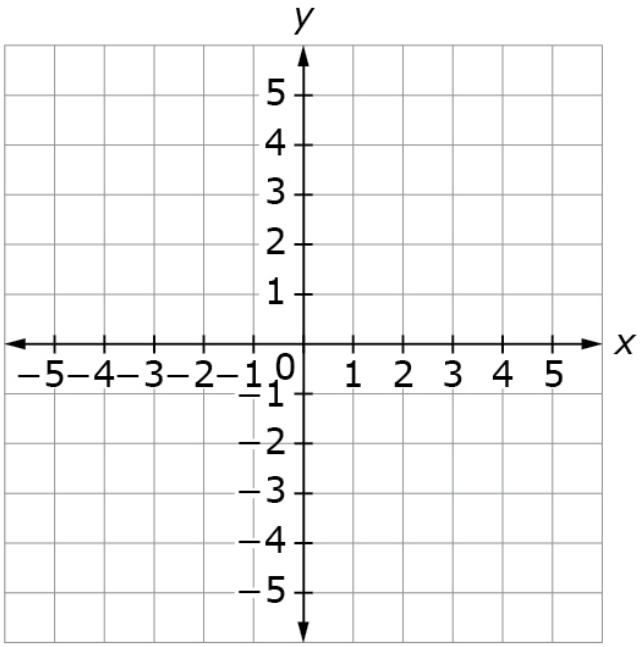
Stimulus Guidelines:

- The coordinate plane should have axes and values labeled.
- The ordered pairs may contain combinations of positive and negative integers and rational numbers that could be graphed in all four quadrants.
- For plotting rational numbers, coordinate plane scale should be such that student must use number line sense to place the points.
- Item difficulty can be adjusted via these example methods:
  - Both coordinates are positive integers.
  - At least one coordinate is a negative integer.
  - At least one coordinate is a rational number.
  - Both coordinates are rational numbers.

TM4b
Stimulus: The student is presented with three ordered pairs and a graphic of a coordinate plane.

Example Stem: Use the Add Point tool to plot these three ordered pairs on the coordinate grid:

(–2, 3)
(0, 3)
(–4, –2)



Interaction: The student uses the Add Point and Delete tools to graph the ordered pairs. Use the snap-to feature for each intersection of the grid.

Rubric: (1 point) Student plots all three points correctly on the coordinate plane.

Response Type: Graphing

Task Model 6

Response Type: Drag and Drop

DOK Level 2

6.NS.C.7b
Write, interpret, and explain statements of order for rational numbers in real-world contexts. *For example, write –3°C > –7°C to express the fact that –3°C is warmer than –7°C.*

Evidence Required:
6. The student writes and interprets statements about the order of rational numbers in real-world contexts.

Tools: None

Accessibility Note: Drag and Drop items are not currently able to be Brailled. Minimize the number of items developed to this TM.

Prompt Features: The student is prompted to order rational numbers in a real-world context.

Stimulus Guidelines:

- The context should involve opposite directions or values such as temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge.
- Context should be familiar to students 11 to 13 years old.
- Table should have three to five rows of data.
- Item difficulty can be adjusted via these example methods:
  - Numbers contain positive and negative integers.
  - Numbers contain positive and negative decimals.
  - Numbers contain positive and negative fractions/mixed numbers.
  - All numbers are fractions/mixed numbers and decimals.

TM6a
Stimulus: The student is presented with a real-world context involving rational numbers.

Example Stem: Sea level is defined as being at an elevation of 0 feet. The elevation of land is defined to be its height above or below sea level. The table shows the lowest elevations in some states.

Drag the numbers to each empty box to place the elevations in order from least to greatest.

State	Elevation
Arizona	72 ft
California	–282 ft
Louisiana	–68 ft
Tennessee	178 ft

☐ ☐ ☐ ☐

Least Greatest

72 ft -282 ft -68 ft 178 ft

Interaction: The student is given four empty boxes below the table and a palette at the bottom. The palette should contain the four numbers preplaced from the table (i.e., 72 ft, -282 ft, -68 ft, and 178 ft). Students use the drag-and-drop feature to place numbers in the boxes. Numbers may be used only once.

Rubric: (1 point) The student drags all four rational numbers in order from least to greatest.

Response Type: Drag and Drop

Task Model 6

Response Type: Matching Tables

DOK Level 2

6.NS.C.7b
Write, interpret, and explain statements of order for rational numbers in real-world contexts. *For example, write –3°C > –7°C to express the fact that –3°C is warmer than –7°C.*

Evidence Required: 6. The student writes and interprets statements about the order of rational numbers in real-world contexts.

Tools: None

Prompt Features: The student is prompted to determine whether statements relating to the order of rational numbers are true or false in a real-world context.

Stimulus Guidelines:

- The context should involve opposite directions or values such as temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge.
- Context should be familiar to students 11 to 13 years old.
- Tables should have three to five rows of data.
- Item difficulty can be adjusted via these example methods:
  - One number is negative.
  - Both integers are negative.
  - Numbers are negative decimals.
  - Numbers are negative fractions/mixed numbers.

TM6b
Stimulus: The student is presented with a real-world context involving rational numbers.

Example Stem: Sea level is defined as being at an elevation of 0 feet. The elevation of land is defined to be its height above or below sea level. This table shows the lowest elevations in some states.

State	Elevation
Arizona	72 ft
California	–282 ft
Louisiana	–68 ft
Tennessee	178 ft

Determine whether each statement about the elevations is correct. Select True or False for each statement.

Statement	True	False
California has a higher elevation than Louisiana because –282 is greater than –68.		
Tennessee's elevation is farther from 0 than Louisiana's elevation.		
Louisiana has a higher elevation than California because –68 is closer to zero than –282.		

Rubric: (1 point) The student identifies all three statements correctly as true or false (e.g., F, T, T). Statements should deal with the order of the numbers.

Response Type: Matching Tables

Task Model 6 **Response Type: Equation / Numeric** **DOK Level 2** **6.NS.C.7b** Write, interpret, and explain statements of order for rational numbers in real-world contexts. *For example, write –3°C > –7°C to express the fact that –3°C is warmer than –7°C.* **Evidence Required:** 6. The student writes and interprets statements about the order of rational numbers in real-world contexts. **Tools:** None	**Prompt Features:** The student is prompted to give an inequality based on a verbal description of a real-world context involving rational numbers. **Stimulus Guidelines:** • The context should involve opposite directions or values such as temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge. • Context should be familiar to students 11 to 13 years old. • Item difficulty can be adjusted via these example methods: o One number is negative. o Both integers are negative. o Numbers are negative decimals. o Numbers are negative fractions/mixed numbers. **TM6c** **Stimulus:** The student is presented with a real-world context involving rational numbers. **Example Stem:** Sea level is defined as being at an elevation of 0 feet. • The lowest elevation in Arizona is 72 feet. • The lowest elevation in Louisiana is –68 feet. Enter an inequality that compares these two elevations. **Rubric:** (1 point) The student enters a correct inequality statement. Students are allowed credit for putting either "–68 < 72" or "72 > –68." **Response Type:** Equation/Numeric

Task Model 7

Response Type: Drag and Drop

DOK Level 2

6.NS.C.7c
Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation.

Evidence Required:
7. The student represents the absolute value of a rational number as the distance from zero on a number line.

Tools: None

Accessibility Note: Drag and Drop items are not currently able to be Brailled. Minimize the number of items developed to this TM.

Prompt Features: The student positions numbers on the number line, including numeric expressions that involve the absolute value of numbers.

Stimulus Guidelines:

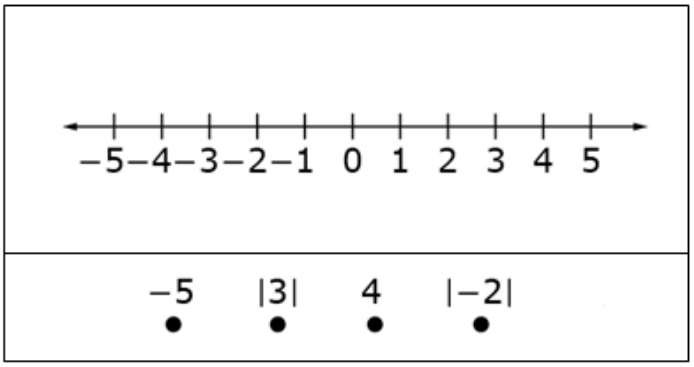
- Rational numbers should be a mixture of positive, negative, and absolute value.
- At least two of the numbers need to contain absolute values.
- Item difficulty can be adjusted via these example methods:
  - Values are integers and include absolute values.
  - Values are decimal numbers up to the hundredths and include absolute values.
  - Values are fractions/mixed numbers and include absolute values.

TM7a
Stimulus: The student is presented with a set of four or five rational numbers and a number line.

Example Stem: Consider this set of numbers.

$-5,\ |3|,\ 4,\ |-2|$

Drag the four values to their correct locations on the number line.



Interaction: The points are pre-labeled with the given rational number values and placed in a palette below the number line in which students can drag the points to the number line. Use the snap-to feature for each tick mark.

Rubric: (1 point) Student plots all four numbers correctly on the number line.

Response Type: Drag and Drop

Task Model 7

Response Type: Matching Tables

DOK Level 2

6.NS.C.7c
Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation.

Evidence Required:
7. The student represents the absolute value of a rational number as the distance from zero on a number line.

Tools: none

Prompt Features: The student is prompted to determine whether statements relating to absolute value are true or false.

Stimulus Guidelines:

- Item difficulty can be adjusted via these example methods:
  - Numbers used are integers, decimals, and fractions/mixed numbers.
  - Using two negative numbers may be more difficult than a positive and a negative.

TM7b
Stimulus: The student is presented with statements about the absolute value of numbers in relation to a number line.

Example Stem: Consider the statements in the table shown. Select True or False for each statement.

Statement	True	False
The distance from –3 to 0 is the same as the distance from 3 to 0 on the number line.		
The distance between –21 and 0 on a number line is |–21| units.		
On a number line, |4| and –4 are the same point.		

Rubric: (1 point) The student identifies all three statements correctly as true or false (e.g., T, T, F). Statements will be about the location of numbers with absolute values. False statements include statements that ignore absolute value signs and suggest an absolute value sign means “the opposite of” the number.

Response Type: Matching Tables

Task Model 8

Response Type: Matching Tables

DOK Level 1

6.NS.C.7d
Distinguish comparisons of absolute value from statements about order. *For example, recognize that an account balance less than –30 dollars represents a debt greater than 30 dollars.*

Evidence Required:
8. The student can make comparisons of absolute value from statements about order.

Tools: None

Prompt Features: The student is prompted to determine whether statements comparing numbers containing absolute value in real-world contexts are true.

Stimulus Guidelines:

- The context should involve opposite directions or values such as temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge.
- Context should be familiar to students 11 to 13 years old.
- Item difficulty can be adjusted by varying the numbers to compare absolute value, fractions, and mixed numbers.

TM8
Stimulus: The student is presented with statements involving absolute value in a real-world context.

Example Stem: Sea level is defined as being at an elevation of 0 feet. Objects can be above or below sea level.

- Submarine J is 35.6 feet below sea level.
- Submarine Q is 21.5 feet below sea level.
- Submarine Z is 43.8 feet below sea level.

Determine whether each statement comparing the submarines is true. Select True or False for each statement.

Statement	True	False
Submarine J is deeper than Submarine Q because $\|-35.6\| > \|-21.5\|$.		
Submarine Q is deeper than Submarine Z because $\|-21.5\| > \|-43.8\|$.		
Submarine J is deeper than Submarine Z because $\|-35.6\| > \|-43.8\|$.		

Rubric: (1 point) The student correctly identifies all three statements as true or false (e.g., T, F, F).

Response Type: Matching Tables

Task Model 9

Response Type: Equation / Numeric

DOK Level 2

6.NS.C.8
Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.

Evidence Required:
9. The student solves real-world and mathematical problems by graphing ordered pairs on a coordinate plane and using coordinates and absolute value to find the distances between points with same first coordinate or same second coordinate.

Tools: None

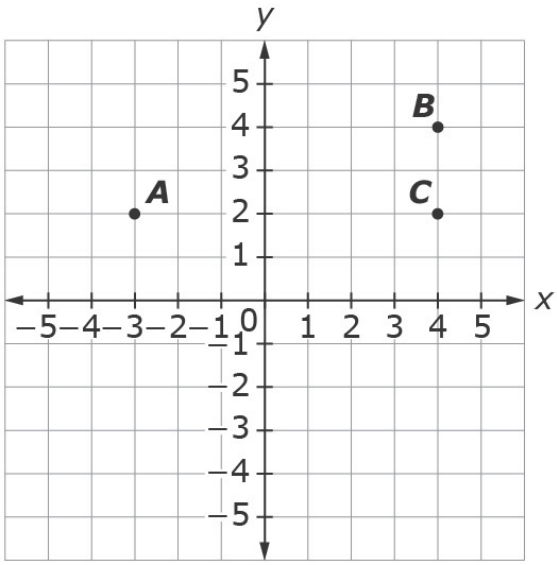
Prompt Features: The student is prompted to solve real-world or mathematical problems by using ordered pairs on a coordinate plane and absolute value to find distances between points with the same first coordinate or same second coordinate.

Stimulus Guidelines:

- Coordinates of the ordered pairs generally should be limited to integers unless appropriate for the situation.
- Multiple ordered pairs should have the same first coordinate or same second coordinate.
- If used, context should be familiar to students 11 to 13 years old.
- Item difficulty can be adjusted via these example methods:
  - Students find the distance between points in first quadrant only.
  - Students find the distance between points in adjacent quadrants.

TM9
Stimulus: The student is presented with a real-world or mathematical context and a graph of ordered pairs.

Example Stem 1: This grid shows the location of three points.



Enter the distance, in units, between point A and point C.

Rubric: (1 point) Student enters the correct numeric value for the distance (e.g., 7). Units of measure should be assumed from the stem.

Response Type: Equation/Numeric

Task Model 9

Response Type: Equation / Numeric

DOK Level 2

6.NS.C.8
Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.

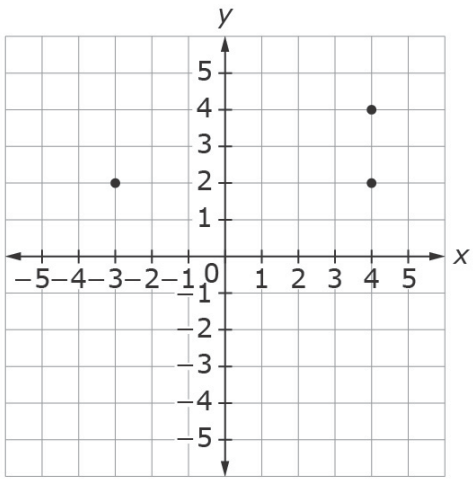
Evidence Required:
9. The student solves real-world and mathematical problems by graphing ordered pairs on a coordinate plane and using coordinates and absolute value to find the distances between points with same first coordinate or same second coordinate.

Tools: None

Version 3 Update: Added new example stem 3.

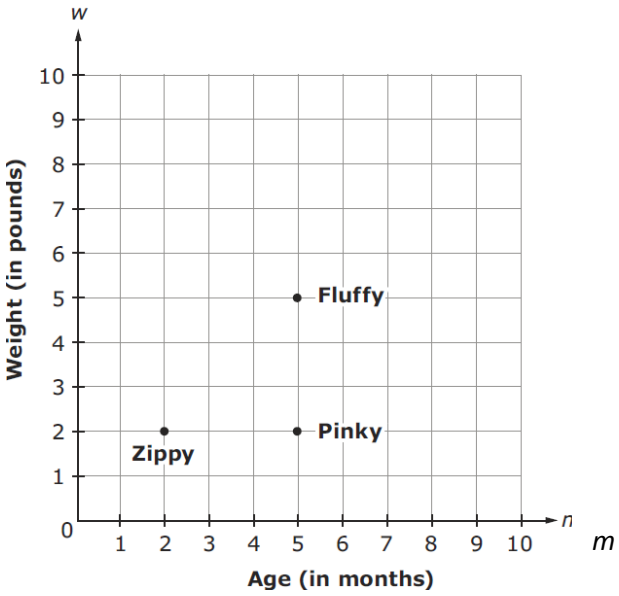
Example Stem 2: This grid represents the layout of Tom's neighborhood. Each unit on the grid represents 1 square mile.

- Tom's house is located at (4, 2)
- A store is located at (–3, 2)
- Tom's neighbors are located at (4, 4).



What is the distance, in miles, from Tom's house to the store?

Example Stem 3: Barry raises rabbits. The age, in months, and the weight, in pounds, of three of his rabbits are shown.



How many more pounds does Fluffy weigh than Pinky?

Rubric: (1 point) Student enters the correct numeric value for the distance (e.g., 7; 3). Units of measure should be assumed from the stem.

Response Type: Equation/Numeric