

<p>Claim 1: Concepts and Procedures Students can explain and apply mathematical concepts and carry out mathematical procedures with precision and fluency.</p>	
<p>Content Domain: Geometry</p>	
<p>Target J [a]: Graph points on the coordinate plane to solve real-world and mathematical problems. (DOK 1)</p> <p>Tasks for this target ask students to plot coordinate pairs in the first quadrant. Some of these tasks will be created by pairing this target with 5.OA Target B, which would raise the DOK level.</p>	
<p>Standards:</p> <p>5.G.A, 5.G.A.1, 5.G.A.2</p>	<p>5.G.A Graph points on the coordinate plane to solve real-world and mathematical problems.</p> <p>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).</p> <p>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.</p>
<p>Related Below-Grade and Above-Grade Standards for Purposes of Planning for Vertical Scaling:</p> <p>4.MD.A, 4.MD.A.4, 4.G.A, 4.G.A.1</p> <p>6.NS.C, 6.NS.C.6, 6.NS.C.6a, 6.NS.C.6b, 6.NS.C.6c, 6.NS.C.8, 6.EE.C, 6.EE.C.9, 6.G.A, 6.G.A.3</p>	<p>Grade 4 Standards</p> <p>4.MD.A Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.</p> <p>4.MD.A.4 Make a line plot to display a data set of measurements in fractions of a unit ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$). Solve problems involving addition and subtraction of fractions by using information presented in line plots. <i>For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.</i></p> <p>4.G.A Draw and identify lines and angles, and classify shapes by properties of their lines and angles.</p> <p>4.G.A.1 Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.</p> <p>Grade 6 Standards</p> <p>6.NS.C Apply and extend previous understandings of numbers to the system of rational numbers.</p>

	<p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>6.EE.C Represent and analyze quantitative relationships between dependent and independent variables.</p> <p>6.EE.C.9 Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. <i>For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation $d = 65t$ to represent the relationship between distance and time.</i></p> <p>6.G. A Solve real-world and mathematical problems involving area, surface area, and volume.</p> <p>6.G.A.3 Draw polygons in the coordinate plane given the coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.</p>
DOK Level:	1

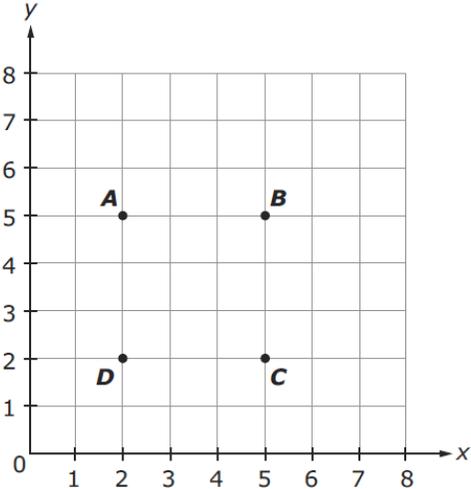
Achievement Level Descriptors:	
RANGE Achievement Level Descriptor (Range ALD) Target J: Graph points on the coordinate plane to solve real-world and mathematical problems.	Level 1 Students should be able to graph whole-number coordinate pairs in the first quadrant of a coordinate plane with unit axis increments.
	Level 2 Students should be able to graph whole-number coordinate pairs on a coordinate plane with whole-number axis increments to solve problems.
	Level 3 Students should be able to graph coordinate pairs where one term is a whole number and one is a fraction on a coordinate plane with whole-number axis increments.
	Level 4 Students should be able to graph coordinate pairs where both terms are fractions on a coordinate plane with fractional axis increments.
Evidence Required:	1. The student interprets coordinate values of points graphed on a coordinate plane, or in the context of a given situation. 2. The student graphs points on the coordinate plane representing real-world or mathematical problems.
Allowable Response Types:	Multiple Choice, single correct response; Hot Spot; Graphing; Drag and Drop
Allowable Stimulus Materials:	visual coordinate plane
Construct-Relevant Vocabulary:	origin, coordinate plane, coordinate system, coordinate pair, x-coordinate, y-coordinate, first quadrant, point, x-axis, y-axis, ordered pair
Allowable Tools:	
Target-Specific Attributes:	First quadrant only, positive numbers
Non-Targeted Constructs:	None
Accessibility Guidance:	Item writers should consider the following Language and Visual Element/Design guidelines ¹ when developing items. Language Key Considerations: <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • 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

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>

	<p>necessary</p> <ul style="list-style-type: none">• Avoid crowding of details and graphics <p>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</p>
Development Notes:	None

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

<p>Task Model 1a</p> <p>Response Type: Multiple Choice, single correct response</p> <p>DOK Level 1</p> <p>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).</p> <p>Evidence Required: 1. The student interprets coordinate values of points graphed on a coordinate plane, or in the context of a given situation.</p> <p>Tools: None</p> <p>Accessibility Note: Minimize extra, unnecessary grid space.</p>	<p>Prompt Feature: The student is prompted to identify the location of points in the first quadrant of the coordinate plane.</p> <p>Stimulus Guidelines:</p> <ul style="list-style-type: none"> • First quadrant only, positive numbers. • Item difficulty can be adjusted via these example methods: <ul style="list-style-type: none"> ○ Generate coordinate pairs using whole-number coordinate pairs with whole-number axis increments. ○ Identify an incorrectly plotted point. ○ Identify coordinate pairs where one term is a whole number and one is a fraction on a grid with whole-number axis increments. • Misreading the numbers should not be used for distractors as this is a bias issue for visually impaired students. • Construct coordinate grids so that unnecessary space is eliminated and the ordered pairs are easily discernable. <p>TM1a Stimulus: The student is presented with a mathematical context that involves points using whole-number coordinate pairs with unit axis increments.</p> <p>Example Stem: Use the graph to answer the question.</p>  <p>Which point is located at (5, 2)?</p> <p>A. Point A B. Point B C. Point C D. Point D</p> <p>Rubric: (1 point) The student correctly identifies the point located at the given coordinate (e.g., C).</p> <p>Response Type: Multiple Choice, single correct response</p>
--	---

Task Model 1b

Response Type:
Multiple Choice,
single correct
response

DOK Level 1**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).

Evidence Required:

1. The student interprets coordinate values of points graphed on a coordinate plane, or in the context of a given situation.

Tools: None

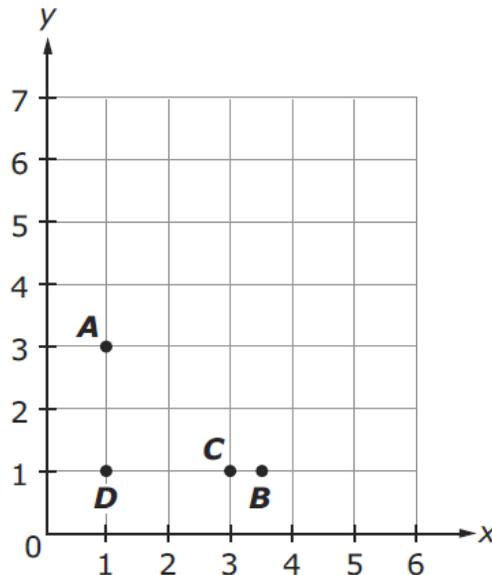
Accessibility Note:

Minimize extra, unnecessary grid space.

TM1b

Stimulus: The student is presented with a mathematical context that involves points using coordinate pairs where one term is a whole number and one is a fraction on a grid with whole-number increments.

Example Stem: Use the graph to answer the question.



Which point is located at $(3\frac{1}{2}, 1)$?

- A. Point A
- B. Point B
- C. Point C
- D. Point D

Rubric: (1 point) The student correctly identifies the point located at the given coordinate (e.g., B).

Response Type: Multiple Choice, single correct response

Task Model 1c

Response Type:
Multiple Choice,
single correct
response

DOK Level 1**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).

Evidence Required:

1. The student interprets coordinate values of points graphed on a coordinate plane, or in the context of a given situation.

Tools: None

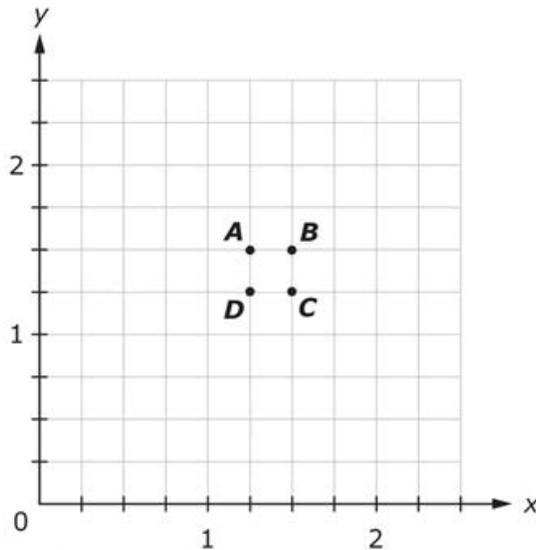
Accessibility Note:

Minimize extra, unnecessary grid space.

TM1c

Stimulus: The student is presented with a mathematical context that involves points using coordinate pairs where both terms are fractions on a grid with fractional axis increments.

Example Stem: Use the graph to answer the question.



Which point is located at $(1\frac{1}{2}, 1\frac{1}{4})$?

- A. Point A
- B. Point B
- C. Point C
- D. Point D

Rubric: (1 point) The student correctly identifies the point located at the given coordinate (e.g., C).

Response Type: Multiple Choice, single correct response

Task Model 1d

Response Type:
Multiple Choice,
single correct
response

DOK Level 1**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).

Evidence Required:

1. The student interprets coordinate values of points graphed on a coordinate plane, or in the context of a given situation.

Tools: None

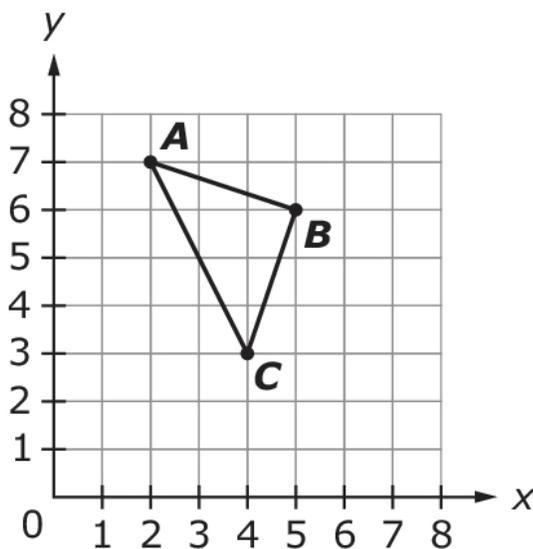
Accessibility Note:

Minimize extra, unnecessary grid space.

TM1d

Stimulus: The student is presented with a mathematical context that involves three to four points in the first quadrant of the coordinate plane.

Example Stem: Use the graph to answer the question.

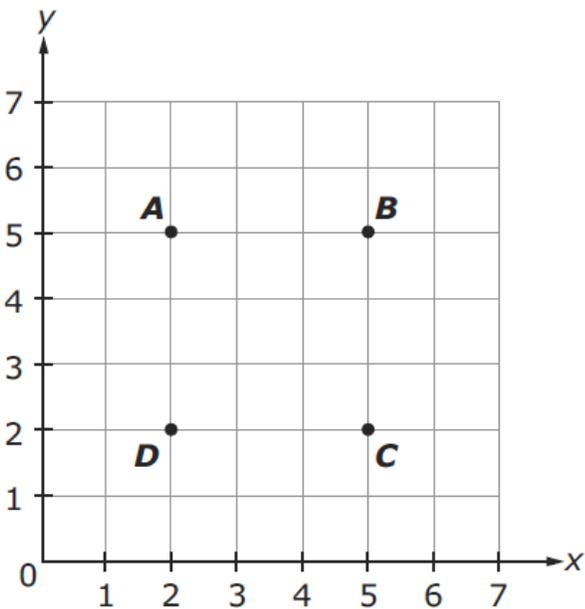


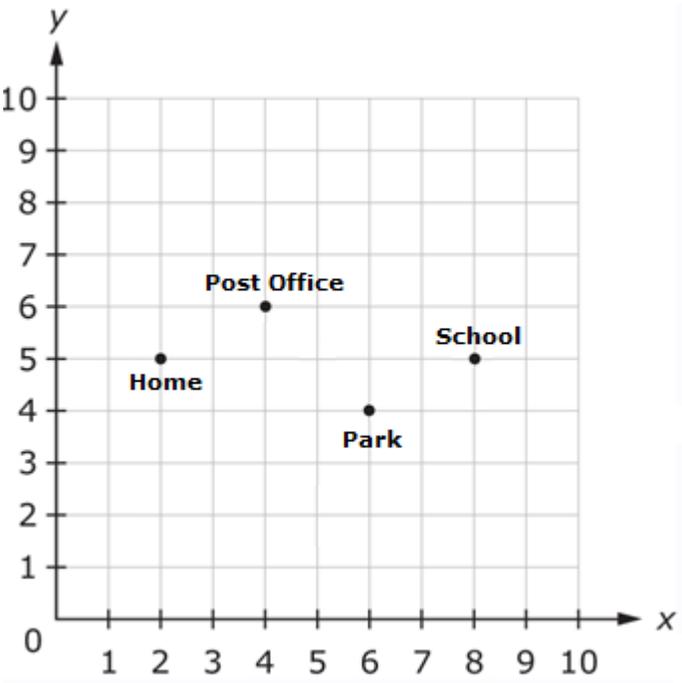
Which set of ordered pairs shows the coordinates of points A , B , and C ?

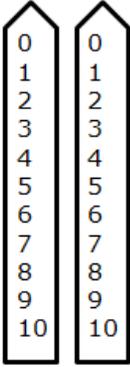
- A. $(7, 2)$, $(6, 5)$, $(3, 4)$
- B. $(7, 2)$, $(5, 6)$, $(3, 3)$
- C. $(2, 7)$, $(5, 6)$, $(4, 3)$
- D. $(2, 7)$, $(6, 5)$, $(4, 3)$

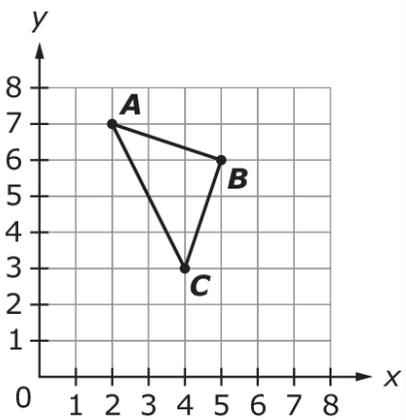
Rubric: (1 point) The student correctly identifies the ordered pairs for the figure (e.g., C).

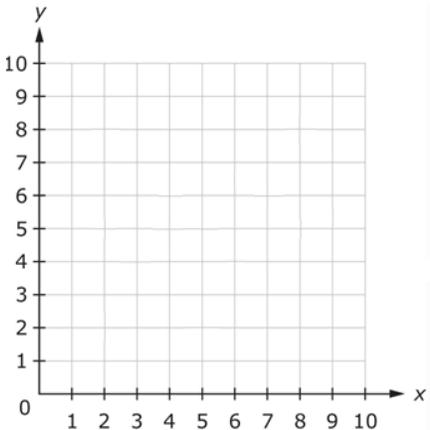
Response Type: Multiple Choice, single correct response

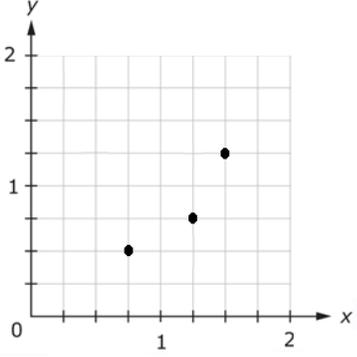
<p>Task Model 1e</p> <p>Response Type: Multiple Choice, single correct response</p> <p>DOK Level 1</p> <p>5.G.A.1 Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given 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).</p> <p>Evidence Required: 1. The student interprets coordinate values of points graphed on a coordinate plane, or in the context of a given situation.</p> <p>Tools: None</p> <p>Accessibility Note: Minimize extra, unnecessary grid space.</p>	<p>TM1e</p> <p>Stimulus: The student is presented with a mathematical context that involves points using whole-number coordinate pairs with unit axis increments.</p> <p>Example Stem: A student plots the following points:</p> <ul style="list-style-type: none"> • Point A (2, 5) • Point B (6, 5) • Point C (5, 2) • Point D (2, 2)  <p>Which point was not plotted correctly?</p> <p>A. Point A B. Point B C. Point C D. Point D</p> <p>Rubric: (1 point) The student correctly identifies the point that is incorrectly plotted (e.g., B).</p> <p>Response Type: Multiple Choice, single correct response</p>
---	---

<p>Task Model 1f</p> <p>Response Type: Hot Spot</p> <p>DOK Level 1</p> <p>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).</p> <p>Evidence Required: 1. The student interprets coordinate values of points graphed on a coordinate plane, or in the context of a given situation.</p> <p>Tools: None</p> <p>Accessibility Note: Hot spot items are not currently able to be Brailled. Minimize the number of items developed to this TM.</p>	<p>Prompt Feature: The student is prompted to identify the location of points in the first quadrant of the coordinate plane.</p> <p>Stimulus Guidelines:</p> <ul style="list-style-type: none"> • First quadrant only, positive numbers. • Item difficulty can be adjusted via these example methods: <ul style="list-style-type: none"> ◦ Generate coordinate pairs using whole-number coordinate pairs with whole-number axis increments. ◦ Identify coordinate pairs where one term is a whole number and one is a fraction on a grid with whole-number axis increments. ◦ Generate coordinate pairs on a grid with fractional axis increments. • Misreading the numbers should not be used for distractors as this is a bias issue for visually impaired students. <p>TM1f</p> <p>Stimulus: The student is presented with a real-world context that involves points using whole-number coordinate pairs with unit axis increments.</p> <p>Example Stem: The graph shows the locations of Nina's home, the park, her school, and the post office.</p> <div data-bbox="560 1102 1242 1785" data-label="Figure">  <table border="1"> <caption>Coordinates of Locations</caption> <thead> <tr> <th>Location</th> <th>x-coordinate</th> <th>y-coordinate</th> </tr> </thead> <tbody> <tr> <td>Home</td> <td>2</td> <td>5</td> </tr> <tr> <td>Park</td> <td>6</td> <td>4</td> </tr> <tr> <td>Post Office</td> <td>4</td> <td>6</td> </tr> <tr> <td>School</td> <td>8</td> <td>5</td> </tr> </tbody> </table> </div> <p>Select the numbers to create the coordinate pair that represents the location of the post office.</p>	Location	x-coordinate	y-coordinate	Home	2	5	Park	6	4	Post Office	4	6	School	8	5
Location	x-coordinate	y-coordinate														
Home	2	5														
Park	6	4														
Post Office	4	6														
School	8	5														

<p>Task Model 1f</p> <p>Response Type: Hot Spot</p> <p>DOK Level 1</p> <p>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).</p> <p>Evidence Required: 1. The student interprets coordinate values of points graphed on a coordinate plane, or in the context of a given situation.</p> <p>Tools: None</p> <p>Accessibility Note: Hot spot items are not currently able to be Brailled. Minimize the number of items developed to this TM.</p>	<p>TM1f (continued)</p> <p>(,)</p>  <p>Rubric: (1 point) The student selects the correct numbers for the coordinate pair indicated [e.g., (4, 6)].</p> <p>Response Type: Hot Spot</p>
---	---

<p>Task Model 1g</p> <p>Response Type: Drag and Drop</p> <p>DOK Level 1</p> <p>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).</p> <p>Evidence Required: 1. The student interprets coordinate values of points graphed on a coordinate plane, or in the context of a given situation.</p> <p>Tools: None</p> <p>Accessibility Note: Drag and Drop items are not currently able to be Brailled. Minimize the number of items developed to this TM.</p>	<p>Prompt Feature: The student is prompted to identify the location of points in the first quadrant of the coordinate plane.</p> <p>Stimulus Guidelines:</p> <ul style="list-style-type: none"> • First quadrant only, positive numbers. • Item difficulty can be adjusted via these example methods: <ul style="list-style-type: none"> ◦ Generate coordinate pairs using whole-number coordinate pairs with whole-number axis increments. ◦ Identify coordinate pairs where one term is a whole number and one is a fraction on a grid with whole-number axis increments. ◦ Generate coordinate pairs on a grid with fractional axis increments. • Misreading the numbers should not be used for distractors as this is a bias issue for visually impaired students. <p>TM1g Stimulus: The student is presented with a mathematical context that involves three to four points in the first quadrant of the coordinate plane.</p> <p>Example Stem: Use the graph to complete the problem.</p>  <p>Drag numbers from the palette to show the coordinates of points A, B, and C.</p> <p>Point A: (<input type="text"/>, <input type="text"/>) Point B: (<input type="text"/>, <input type="text"/>) Point C: (<input type="text"/>, <input type="text"/>)</p> <p>Rubric: (1 point) The student correctly creates all three coordinate pairs [e.g., Point A: (2, 7), Point B: (5, 6), Point C: (4, 3)].</p> <p>Response Type: Drag and Drop</p>
--	--

<p>Task Model 2</p> <p>Response Type: Graphing</p> <p>DOK Level 1</p> <p>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.</p> <p>Evidence Required: 2. The student graphs points on the coordinate plane representing real-world or mathematical problems.</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 Feature: The student is prompted to graph points in the first quadrant of the coordinate plane.</p> <p>Stimulus Guidelines:</p> <ul style="list-style-type: none"> • All numbers should be changed to create new items. • First quadrant only, positive numbers. • Item difficulty can be adjusted via these example methods: <ul style="list-style-type: none"> ○ Whole-number coordinate pairs with whole-number axis increments ○ Coordinate pairs where one coordinate is a whole number and one is a fraction on a grid with whole-number increments ○ Coordinate pairs where both coordinates are fractions on a grid with fractional axis increments <p>TM2</p> <p>Stimulus: The student is presented with a mathematical problem that involves two to three points in the first quadrant of the coordinate plane.</p> <p>Example Stem 1: Use the Add Point tool to plot each point on the coordinate plane.</p> <p>Part A: Plot the point (2, 8). Part B: Plot the point (4, 5). Part C: Plot the point (7, 6).</p> <div style="text-align: center;">  </div> <p>Rubric: (1 point) The student correctly plots all three points on the coordinate grid.</p> <p>Response Type: Graphing</p> <p>Example Stem 2: Use the Add Point tool to plot each point on the coordinate plane.</p> <p>Part A: Plot the point $(7, 6\frac{1}{2})$. Part B: Plot the point $(4, 5\frac{1}{2})$.</p>
---	--

<p>Task Model 2</p> <p>Response Type: Graphing</p> <p>DOK Level 1</p> <p>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.</p> <p>Evidence Required: 2. The student graphs points on the coordinate plane representing real-world or mathematical problems.</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>Rubric: (1 point) The student correctly plots both points on the coordinate grid.</p> <p>Response Type: Graphing</p> <p>Example Stem 3: Use the Add Point tool to plot each point on the coordinate plane.</p> <p>Part A: Plot the point $(1\frac{1}{4}, \frac{3}{4})$.</p> <p>Part B: Plot the point $(1\frac{1}{2}, 1\frac{1}{4})$.</p> <p>Part C: Plot the point $(\frac{3}{4}, \frac{1}{2})$.</p> <p>Rubric: (1 point) The student correctly plots all three points on the coordinate grid (see below).</p>  <p>Response Type: Graphing</p>
---	--