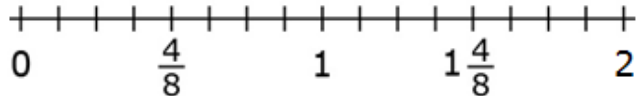|	
Claim 1: Concepts and Procedures Students can explain and apply mathematical concepts and carry out mathematical procedures with precision and fluency.	
Content Domain: **Measurement and Data**	
Target J [s]: Represent and interpret data. (DOK 1, 2) Tasks for this target will ask students to create or use a line plot and provide context for 4.NF Target G (specifically, addition and subtraction of fractions with like denominators).	
Standards: 4.MD.B, 4.MD.B.4	**4.MD.B Represent and interpret data.** **4.MD.B.4** Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Solve problems involving addition and subtraction of fractions by using information presented in line plots. *For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.*
Related Below-Grade and Above-Grade Standards for Purposes of Planning for Vertical Scaling: 3.MD.B, 3.MD.B.4 5.MD.B, 5.MD.B.2	**Related Grade 3 Standards** **3.MD.B Represent and interpret data.** **3.MD.B.4** Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters. **Related Grade 5 Standards** **5.MD.B Represent and interpret data.** **5.MD.B.2** Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots. *For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.*
DOK Levels:	1, 2
Achievement Level Descriptors:	
RANGE Achievement Level Descriptor (Range ALD) Target J: Represent and interpret data.	**Level 1** Students should be able to identify data from a given line plot using whole numbers.
	Level 2 Students should be able to use data from a given line plot using fractions 1/2, 1/4, and 1/8 to solve one-step problems.
	Level 3 Students should be able to create a line plot to represent a data set using fractions 1/2, 1/4, and 1/8, and interpret data from a line plot to solve problems involving addition and subtraction of fractions with like denominators.
	Level 4 No Descriptor
Evidence Required:	1. The student completes a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). 2. The student solves problems involving addition and subtraction of fractions with like denominators by using information presented in line plots.
Allowable Response Types:	Matching Tables; Hot Spot; Equation/Numeric

Allowable Stimulus Materials:	line plots, tables, fractions of a unit (1/2, 1/4, 1/8)
Construct-Relevant Vocabulary:	line plot, data set, interval, fractions, unit fractions, numerator, denominator, sum, difference, add, subtract
Allowable Tools:	None
Target-Specific Attributes:	Fractions of a unit are limited to denominators 1/2, 1/4, and 1/8. All contextual items should refer to objects that can be measured in fractions of a unit.
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: • 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:	Creating a line plot from scratch (where the student must partition the number line, choose an appropriate scale, and label the scale accordingly) will be assessed in Claim 4. Solving two-step addition and subtraction problems for 4.MD.B.4 will be assessed in Claim 2. Interpreting data that is presented in a line plot will be assessed in Claim 4.

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[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:
Hot Spot
 	
DOK Level 1
 	
4.MD.B.4
Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Solve problems involving addition and subtraction of fractions by using information presented in line plots. *For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.*
 	
Evidence Required:
1. The student creates a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8).
 	
Tools: None
 	
Accessibility Note:
Hot spot items are not currently able to be Brailled. Minimize the number of items developed to this TM.
	Prompt Features: The student completes a line plot that displays a given data set of measurements in fractional units.
	
	Stimulus Guidelines:
	• At least two whole number endpoints must be labeled on the scale of the line plot.
	• Measurement data may reflect classroom contexts or scientific contexts (appropriate to 4th grade), and are limited to these attributes and units:
	  o distances (km, m, cm; in, ft, yd)
	  o intervals of time (hr, min, sec)
	  o liquid volumes (L, mL)
	  o masses of objects (kg, g; lb, oz)
	• Item difficulty can be adjusted via these example methods:
	  o How many tick marks are pre-labeled or how many the student is prompted to label
	  o The number of data points listed in the data set
	  o Whether the data points are listed in order or given in a random sequence
	  o The interval spanned by the data points—both its size and the actual endpoints
	  o The form of fractions allowed as data points (e.g., proper fractions, improper fractions, mixed numbers, whole numbers)
	
	TM1
	Stimulus: The student is presented with a data set of measurements in list or table format and a number line.
	
	Example Stem: Michelle measures the mass of the books in her desk. The list shows the mass of each book in pounds.
	
	$$\frac{4}{8}, \frac{2}{8}, \frac{3}{8}, \frac{4}{8}, \frac{9}{8}, \frac{6}{8}, 1\frac{7}{8}, 2$$
	
	Click above a tick mark to complete the line plot that displays the data.

Mass of Books (lb)

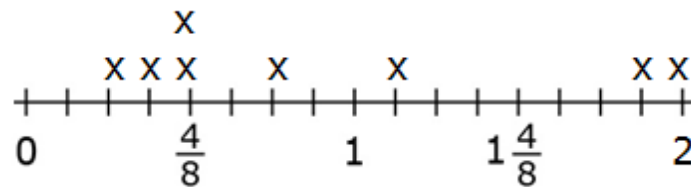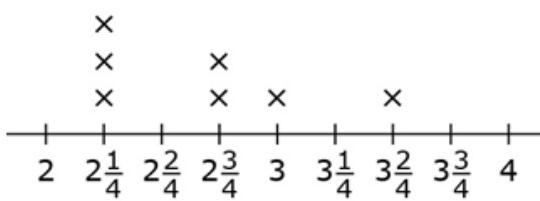| Task Model 1	TM1 (continued)
Response Type: Hot Spot	**Rubric:** (1 point) The student places all of the correct data points to complete the line plot with no incorrect or missing points (e.g., as shown below).
DOK Level 1	
4.MD.B.4 Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Solve problems involving addition and subtraction of fractions by using information presented in line plots. *For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.*	**Mass of Books (lb)**
Evidence Required: 1. The student creates a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8).	**Response Type:** Hot Spot
Tools: None	
Accessibility Note: Hot spot items are not currently able to be Brailled. Minimize the number of items developed to this TM.	

Task Model 2
 	
Response Type: Equation/Numeric
 	
DOK Level 2
 	
4.MD.B.4
Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Solve problems involving addition and subtraction of fractions by using information presented in line plots. *For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.*
 	
Evidence Required:
2. The student solves problems involving addition and subtraction of fractions with like denominators by using information presented in line plots.
 	
Tools: None
	Prompt Features: The student solves problems involving addition and subtraction of fractions with like denominators by using information presented in line plots.
	
	Stimulus Guidelines:
	• Measurement data may reflect classroom contexts or scientific contexts (appropriate to 4th grade), and are limited to these attributes and units:
	  o Distances (km, m, cm; in, ft, yd)
	  o Intervals of time (hr, min, sec)
	  o Liquid volumes (L, mL)
	  o Masses of objects (kg, g; lb, oz)
	• Item difficulty can be adjusted via these example methods:
	  o The form that the fractions take (e.g., proper fraction, improper fraction, mixed number, whole number)
	  o The number of data points plotted in the line plot
	  o What each X represents (e.g., does it stand for one measurement or multiple measurements?)
	  o The interval spanned by the data points—both its size and the actual endpoints
	  o How many of the tick marks are labeled on the line plot scale (labels must be evenly spaced)
	  o Adding/subtracting data points that come before or after one particular point
	
	TM2
	Stimulus: The student is presented with a line plot that presents measurement data and a one-step question about that data.
	
	Example Stem: A student measured how much rain fell each week. This line plot shows the amount of rain, in inches, that fell each week.
	
	How much more rain, in inches, was there during the week with the greatest amount of rain than during the week with the least amount of rain? Enter your answer in the response box.
	
	Rubric: (1 point) The student enters the correct response to solve addition or subtraction problems involving fractions based on the use of information from the line plot (e.g., $1\frac{1}{4}$).
	
	Response Type: Equation/Numeric