

Core Content

Cluster Title: Represent and interpret data.

Standard 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. For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.

MASTERY Patterns of Reasoning:**Conceptual:**

Students will understand the construction and interpretation of a line plot.
Students will understand how to interpret data to answer a word problem.

Procedural:

Students can construct a line plot using fractions as a reference.
Students can decompose a line plot to solve simple fraction problems using addition or subtraction.
Students can create a line plot for a given data set that utilizes fractions.

Representational:

Students can use models, illustrations, algorithms, and/or writing to construct and decompose a line plot to calculate the answer.

Supports for Teachers

Critical Background Knowledge**Conceptual:**

Students will understand how to read a line plot.
Students will have basic understanding of unit fractions.
Students will understand how to add and subtract fractions.
Students will understand that fractions represent a number greater than 0 but less than 1 and are located between any two whole numbers on a number line.

Procedural:

Students can place unit fractions on a number line.

<p>Students can read data from a line plot. Students can identify equivalent fractions.</p> <p>Representational: Students can represent fractions on a number line. Students can draw pictures, diagrams, or models to represent unit fractions derived from the same size whole (e.g. $\frac{1}{8}, \frac{1}{6}, \frac{1}{4}$, etc.).</p>	
<p>Academic Vocabulary and Notation</p> <p>line plot, fraction, measurement, data, data set, unit</p>	
<p>Instructional Strategies Used</p> <p>Give students a set of data to place on a line plot and interpret the data. For example, pass out 3 Cuisenaire rods to each student. Set the value for each color of rods—pink is $\frac{1}{2}$, green is $\frac{1}{3}$, and blue is $\frac{1}{4}$. Have students offer their data set while the teacher plots each data point with an “x.” When finished, use the classroom graph to discuss how to gather data, plot data, and interpret data. Ask questions that will require students to complete addition and subtraction operations using fractions. How many $\frac{1}{2}$s are shown? What is the difference in length between the pink rod and the green rod? What is the total length of all the green rods?</p>	<p>Resources Used</p> <p>Interactive Fraction Games: http://www.uen.org/3-6interactives/math.shtml#fractions</p>
<p>Assessment Tasks Used</p>	
<p>Skill-Based Task: Kwon and Miguel have an insect collection. They have measured the lengths of all their insects. Their data shows that 4 insects are $\frac{1}{8}$ inch long, 6 are $\frac{1}{4}$ inch long, 8 are</p>	<p>Problem Task: Give each student a bag containing a variety of pasta, with multiple examples of each. For the class, give the measurement of each type of pasta to use for graphing</p>

<p>1/2 inch long, 2 are 1/6 inch long, 1 is 1/12 inch long, and 5 are 1/3 inch long. Create a line plot that shows the data. How much longer is the longest insect from the shortest insect?</p>	<p>purposes (fettuccine is $\frac{1}{4}$ inch, orzo is $\frac{1}{8}$ inch, spaghetti is $\frac{1}{6}$ inch, etc). Ask the students to create a line plot that displays their set of data. Then ask the students to interpret their data set using a set of questions. What is the difference in length from the longest pasta to the shortest pasta? What is the total length of the shortest pasta?</p>
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