

X Marks the Data

Read line plots and solve with fractions.

GRADE 4 • 4.MD.B

CCSS.Math.Content.4.MD.B "Represent and interpret data."

NAME _____

DATE _____

READ EACH X

On a line plot, each X stands for one measurement. Count Xs to find how many measurements there are, and add or subtract the fractional values when the question asks about totals or differences.

WORKED EXAMPLE

A line plot shows bean plant heights in inches: $7\frac{1}{4}$: XX, $7\frac{1}{2}$: X, $7\frac{3}{4}$: XX. What is the total height of all the plants?

- Two plants are $7\frac{1}{4}$ inches: $2 \times 7\frac{1}{4} = 14\frac{1}{2}$.
- One plant is $7\frac{1}{2}$ inches.
- Two plants are $7\frac{3}{4}$ inches: $2 \times 7\frac{3}{4} = 15\frac{1}{2}$.
- Add: $14\frac{1}{2} + 7\frac{1}{2} + 15\frac{1}{2} = 37\frac{1}{2}$.

Answer: $37\frac{1}{2}$ inches

PRACTICE 6 problems

- 1** A line plot shows the masses of four science kits in kilograms: $2\frac{1}{8}$: X, $2\frac{1}{4}$: XX, $2\frac{3}{8}$: X. How many science kits are shown?

ANSWER _____

- 2** A line plot shows bird wingspans in feet: $3\frac{1}{8}$: X, $3\frac{1}{4}$: XXX, $3\frac{3}{8}$: XX. Which wingspan occurs most often?

ANSWER _____

- 3** A line plot shows rope lengths in meters: $8\frac{1}{8}$: XX, $8\frac{3}{8}$: X, $8\frac{5}{8}$: X. What is the difference between the longest and shortest rope?

ANSWER _____

- 4** A line plot shows the lengths of paper airplanes in inches: $5\frac{1}{4}$: X, $5\frac{1}{2}$: XXX, $5\frac{3}{4}$: XX. How many airplanes are longer than $5\frac{1}{4}$ inches?

ANSWER _____

- 5** A line plot shows ribbon lengths in feet: $6\frac{1}{8}$: X, $6\frac{1}{2}$: XX, $6\frac{7}{8}$: X. What is the total length of all the ribbon?

ANSWER _____

- 6** A line plot shows the heights of five toy towers in inches: $9\frac{1}{4}$: X, $9\frac{1}{2}$: XX, $9\frac{3}{4}$: XX. How many towers are at least $9\frac{1}{2}$ inches tall?

ANSWER _____

APPLY IT Show your work

- 1** At a robotics club, students recorded battery test times in minutes on a line plot: $10 \frac{1}{4}$: XX, $10 \frac{1}{2}$: X, $10 \frac{3}{4}$: X. How many minutes of battery testing were recorded altogether?

WORK SPACE

ANSWER _____

- 2** Students weighed baskets of strawberries for the school garden. Their line plot shows: $1 \frac{1}{8}$: X, $1 \frac{3}{8}$: XXX, $1 \frac{5}{8}$: XX. How many pounds more do the three baskets weighing $1 \frac{3}{8}$ pounds have altogether than the one basket weighing $1 \frac{1}{8}$ pounds?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

A line plot has 1 X at $4 \frac{1}{8}$, 2 Xs at $4 \frac{1}{4}$, and some Xs at $4 \frac{3}{8}$. The total of all the measurements is $21 \frac{3}{8}$. How many Xs are at $4 \frac{3}{8}$?

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	A line plot shows the masses of four science kits in kilograms: $2\frac{1}{8}$: X, $2\frac{1}{4}$: XX, $2\frac{3}{8}$: X. How many science kits are shown?	4 science kits
2	A line plot shows bird wingspans in feet: $3\frac{1}{8}$: X, $3\frac{1}{4}$: XXX, $3\frac{3}{8}$: XX. Which wingspan occurs most often?	$3\frac{1}{4}$ feet
3	A line plot shows rope lengths in meters: $8\frac{1}{8}$: XX, $8\frac{3}{8}$: X, $8\frac{5}{8}$: X. What is the difference between the longest and shortest rope?	$\frac{1}{2}$ meter
4	A line plot shows the lengths of paper airplanes in inches: $5\frac{1}{4}$: X, $5\frac{1}{2}$: XXX, $5\frac{3}{4}$: XX. How many airplanes are longer than $5\frac{1}{4}$ inches?	5 airplanes
5	A line plot shows ribbon lengths in feet: $6\frac{1}{8}$: X, $6\frac{1}{2}$: XX, $6\frac{7}{8}$: X. What is the total length of all the ribbon?	26 feet
6	A line plot shows the heights of five toy towers in inches: $9\frac{1}{4}$: X, $9\frac{1}{2}$: XX, $9\frac{3}{4}$: XX. How many towers are at least $9\frac{1}{2}$ inches tall?	4 towers

PART 2 • APPLY IT

- 41 $\frac{3}{4}$ minutes** Two tests lasted $10\frac{1}{4}$ minutes, for $20\frac{1}{2}$ minutes. Add $20\frac{1}{2} + 10\frac{1}{4} + 10\frac{3}{4}$ to get $41\frac{3}{4}$ minutes.
- 3 pounds** Three baskets weighing $1\frac{3}{8}$ pounds have a total mass of $4\frac{1}{8}$ pounds. Subtract $1\frac{1}{8}$ from $4\frac{1}{8}$ to get 3 pounds.

CHALLENGE

2 Xs

Accept equivalent fraction answers, such as $\frac{1}{2}$ or $\frac{4}{8}$, when they match the value. For the challenge, students may show that $21\frac{3}{8} - 12\frac{5}{8} = 8\frac{3}{4}$, and $8\frac{3}{4}$ is two groups of $4\frac{3}{8}$.