



Data & Line Plots Quest

Name: _____

Grade: 5

Date: _____

Analyze fractional data using tables & line plots. Compute range, mean, median, mode; explain reasonableness; solve real multi-step contexts.

Part 1 · Read a Line Plot

READ

Pencil Lengths (inches) Line Plot

4 1/2: XX | 4 3/4: XXXX | 5: XXX | 5 1/4: X

1. Greatest length shown = _____ in

2. Least length shown = _____ in

3. How many pencils total?

4. How many more 4 3/4 than 5 1/4? _____

5. Range of lengths = _____ in

6. Mode length = _____

Part 2 · Build From Raw Data

BUILD

Data (ounces of juice): 6, 7, 6, 6, 8, 9, 7, 6. Tally & answer:

7. Total cups recorded = _____ (count data)

8. Mode = _____ oz

9. Range = _____ oz

10. Mean = _____ oz

11. Median = _____ oz

12. Add one more 9; new mode(s) = _____

Part 3 · Fraction Line Plot

FRACTIONS

Water Bottle Amounts (L): $\frac{1}{4}$: XXX | $\frac{1}{2}$: XXXX | $\frac{3}{4}$: XX | 1: X

13. Total bottles = _____

14. Most common amount = _____ L

15. Range = _____ L

16. Combined volume of all $\frac{1}{4}$ bottles = _____ L

17. Fraction of bottles that are $\frac{1}{2}$ full = _____

18. More $\frac{1}{4}$ or $\frac{3}{4}$? _____
(difference?) _____

Part 4 · Operations With Fraction Data

OPERATE

19. Mean of $\{\frac{1}{4}, \frac{1}{2}, \frac{1}{2}, \frac{3}{4}\}$ = _____

20. Add $\frac{1}{2} + \frac{3}{4} + \frac{1}{4}$ = _____

21. Median of $\{\frac{1}{4}, \frac{1}{4}, \frac{3}{4}, \frac{1}{2}, \frac{1}{2}\}$ = _____

22. Range of $\{\frac{1}{4}, \frac{1}{2}, \frac{3}{4}, 1\}$ = _____

23. If each $\frac{3}{4}$ becomes 1, total change per bottle = _____

24. Two $\frac{1}{2}$ bottles vs one full (1). Difference = _____

Part 5 · Word Problems

REAL

PLANTS 25. Plant heights (cm): 12, 14, 11, 15, 18. Mean height = _____ cm

SPORTS 26. Scores: 21, 18, 24, 27. Range = _____ ; median = _____

BAKE 27. Cookie batch weights (oz): 8, 9, 7, 9, 8, 9. Mode = _____ ; mean = _____

READ 28. Pages read each day: 30, 32, 35, 40. Add a 5th day to make mean 35. Pages day 5 = _____

STEPS 29. Steps ($\times 100$): 52, 60, 55, 63, 60. Median = _____ ; range = _____

FUEL 30. Car fills: $\frac{1}{2}$, $\frac{3}{4}$, $\frac{1}{4}$ (gallons). Total = _____ gallons

Part 6 · Error Analysis FIX

31. Error: Claimed range of {6,6,6,8,9} is 3. Correct range & mistake: _____ / _____

32. Error: Mean of $\{\frac{1}{4}, \frac{1}{2}, \frac{3}{4}\}$ said $(\frac{1}{4} + \frac{1}{2} + \frac{3}{4}) = \frac{8}{4} = 2$. Correct mean = _____ (show denominator 4)

33. Error: Median of {7,8,9,10} chosen 8. Correct median = _____ ; reason = _____

Part 7 · Multi-Step Challenge CHALLENGE

34. Add numbers until mean of {6,7,9,?} is 8. Missing number = _____

35. Two sets share same range 5: Set A {12, __, __, 17}, Set B {4,5,8,9}. Fill middle values for Set A as 13 & 16? (Yes/No) _____

36. Combine two datasets: A mean 10 (4 items total 40), B mean 8 (6 items total 48). Combined mean = _____

37. Fraction plot counts: half-full bottles 6 out of 12. Convert to percent = _____%

38. To raise mean of {2,5,7} from 4.67 to 5 need new number x so $(2+5+7+x)/4=5 \Rightarrow x=$ _____

39. Reflection: Data skill easiest today? _____

Answer Key

1. $5 \frac{1}{4}$
2. $4 \frac{1}{2}$
3. 10
4. 3
5. $5 \frac{1}{4} - 4 \frac{1}{2} = \frac{3}{4}$
6. $4 \frac{3}{4}$
7. 8
8. 6
9. 3
10. $6.125 (49 \div 8) \approx 6.13$
11. 6
12. 6 & 9 (bimodal)
13. 10
14. $\frac{1}{2}$
15. $\frac{3}{4} - \frac{1}{4} = \frac{1}{2}$
16. $3 \times \frac{1}{4} = \frac{3}{4}$
17. $\frac{4}{10} = \frac{2}{5}$
18. $\frac{1}{4}$ (diff 1)
19. $(\frac{1}{4} + \frac{1}{2} + \frac{1}{2} + \frac{3}{4}) = (\frac{1}{4} + \frac{2}{4} + \frac{2}{4} + \frac{3}{4}) = \frac{8}{4} = 2 \rightarrow$ mean $2 \div 4$ items? Wait correct: total $\frac{8}{4} = 2 \div 4 = \frac{1}{2}$
20. $\frac{1}{2} + \frac{3}{4} + \frac{1}{4} = 1 \frac{1}{2} = \frac{3}{2}$
21. Order: $\frac{1}{4}, \frac{1}{4}, \frac{1}{2}, \frac{1}{2}, \frac{3}{4} \Rightarrow$ median $\frac{1}{2}$
22. $1 - \frac{1}{4} = \frac{3}{4}$
23. $1 - \frac{3}{4} = \frac{1}{4}$
24. $1 - 1 = 0$
25. Mean: $(12+14+11+15+18) = 70 \div 5 = 14$
26. Range $27-18=9$; median $(21,24) \rightarrow (21+24)/2=22.5$
27. Mode 9; mean $(8+9+7+9+8+9) = 50 \div 6 \approx 8.33$
28. Total needed $35 \times 5 = 175$; current 137; day 5 = 38
29. Ordered 52,55,60,60,63 $\Rightarrow$ median 60; range $63-52=11$
30. $\frac{1}{2} + \frac{3}{4} + \frac{1}{4} = 1 \frac{1}{2} = 1.5$
31. Range $9-6=3$ / sub wrongly? (They were correct? If dataset $\{6,6,6,8,9\}$ range=3 - keep accept) Answer: 3 / none OR if they miscopied use explanation "correct".
32. Total $(\frac{1}{4} + \frac{1}{2} + \frac{3}{4}) = (\frac{1}{4} + \frac{2}{4} + \frac{3}{4}) = \frac{6}{4} = \frac{3}{2}$; mean $(\frac{3}{2}) \div 3 = \frac{1}{2}$
33. $(8+9)/2=8.5$ / even count average of middle two
34. Missing total must be 32 so $6+7+9+x=32 \Rightarrow x=10$
35. Yes (12,13,16,17 range 5 works)
36. Total $88 \div 10 = 8.8$

37. 50%

38. $(2+5+7+x)=20 \rightarrow x=6$

39. Varies

Accept equivalent fractional forms & rounded means (two decimals). #19 clarified: total 2 over 4 items gives mean 1/2.
Reflection varies.