

Class Measurement Survey

Teacher Guide & Answer Keys

Grade 4 · All levels

Overview

Students run a measurement survey. They read a data set of lengths measured to the nearest fraction of an inch, make a line plot, add and subtract fractions to answer questions about the data, and solve multistep problems.

Time: 2 class periods · **Product:** Line Plot Poster · **Standards:** 4.MD.B.4, 4.OA.A.3, 4.NF.B.3

Suggested pacing

- Day 1: Introduce the challenge, read the scenario together, and work Parts 1–2 in pairs.
- Day 2: Finish the remaining parts and create the final product.
- Wrap-up: Share products and reflect on strategies.

Levels

- **Remedial:** smaller numbers, fewer steps, more structure.
- **Standard:** grade-level numbers and the full set of tasks.
- **Advanced:** harder numbers, extra reasoning and multi-step questions.

All three levels practice the same learning goals, so the class can share and compare work.

Rubric

Category	4 Excellent	3 Good	2 Developing	1 Beginning
Math accuracy	All answers correct	Most answers correct	Some answers correct	Few answers correct
Shows work	Clear work for every step	Work for most steps	Some work shown	Little work shown
Explains thinking	Clear, complete explanations	Mostly clear explanations	Some explanation	Little explanation
Final product	Complete, neat and creative	Complete and neat	Partly complete	Not complete



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Answer key · Remedial KEY

Part 1: The Data

1. How many pencils were measured?

10

2. Write the lengths in order from shortest to longest.

4, $4\frac{1}{2}$, $4\frac{1}{2}$, $4\frac{1}{2}$, 5, 5, 5, $5\frac{1}{2}$, 6, 6

3. What are the shortest and the longest lengths?

4 inches and 6 inches

Part 2: Make the Line Plot

4. How many Xs are above each length?

4: 1; $4\frac{1}{2}$: 3; 5: 3; $5\frac{1}{2}$: 1; 6: 2

5. Which length has the most Xs?

$4\frac{1}{2}$ inches (3 pencils)

6. How many pencils are longer than $4\frac{1}{2}$ inches?

6

Part 3: Questions from the Plot

7. What is the difference between the longest and the shortest pencil?

6 − 4 = 2 inches

8. If the shortest and the longest pencil are placed end to end, how long are they together?

4 + 6 = 10 inches

9. The 3 pencils that are $4\frac{1}{2}$ inches long are placed end to end. How long is the line?

3 × $4\frac{1}{2}$ = $13\frac{1}{2}$ inches

Part 4: New Pencils for Everyone

10. How many packs are needed?

10 ÷ 3 = 3 R 1, so 4 packs

11. How much do the packs cost in all?

4 × $2 = $8

12. Make a poster of your line plot with a title, labels and two facts you learned from the data.

Check: title, number line with equal spacing, one X per data value, and two true statements.

Extension

Plots vary. Check equal spacing and one X per object.



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Answer key · Standard KEY

Part 1: The Data

1. How many pencils were measured?

12

2. Write the lengths in order from shortest to longest.

4, $4\frac{1}{4}$, $4\frac{2}{4}$, $4\frac{2}{4}$, $4\frac{2}{4}$, $4\frac{3}{4}$, $4\frac{3}{4}$, $4\frac{3}{4}$, $4\frac{3}{4}$, 5, $5\frac{1}{4}$, $5\frac{1}{4}$

3. What are the shortest and the longest lengths?

4 inches and $5\frac{1}{4}$ inches

Part 2: Make the Line Plot

4. How many Xs are above each length?

4: 1; $4\frac{1}{4}$: 1; $4\frac{2}{4}$: 3; $4\frac{3}{4}$: 4; 5: 1; $5\frac{1}{4}$: 2

5. Which length has the most Xs?

$4\frac{3}{4}$ inches (4 pencils)

6. How many pencils are longer than $4\frac{3}{4}$ inches?

3

Part 3: Questions from the Plot

7. What is the difference between the longest and the shortest pencil?

$5\frac{1}{4} - 4 = 1\frac{1}{4}$ inches

8. If the shortest and the longest pencil are placed end to end, how long are they together?

$4 + 5\frac{1}{4} = 9\frac{1}{4}$ inches

9. The 4 pencils that are $4\frac{3}{4}$ inches long are placed end to end. How long is the line?

$4 \times 4\frac{3}{4} = 19$ inches

Part 4: New Pencils for Everyone

10. How many packs are needed?

12 ÷ 4 = 3, so 3 packs

11. How much do the packs cost in all?

3 × $3 = $9

12. Make a poster of your line plot with a title, labels and two facts you learned from the data.

Check: title, number line with equal spacing, one X per data value, and two true statements.

Extension

$5\frac{2}{4}$ inches (longer) or $3\frac{3}{4}$ inches (shorter).



Class Measurement Survey

Teacher Guide & Answer Keys

Grade 4 · All levels

Answer key · Advanced KEY

Part 1: The Data

1. How many pencils were measured?

12

2. Write the lengths in order from shortest to longest.

$4\frac{1}{8}$, $4\frac{2}{8}$, $4\frac{3}{8}$, $4\frac{3}{8}$, $4\frac{3}{8}$, $4\frac{4}{8}$, $4\frac{4}{8}$, $4\frac{4}{8}$, $4\frac{5}{8}$, $4\frac{6}{8}$, $4\frac{6}{8}$, $5\frac{1}{8}$

3. What are the shortest and the longest lengths?

$4\frac{1}{8}$ inches and $5\frac{1}{8}$ inches

Part 2: Make the Line Plot

4. How many Xs are above each length?

$4\frac{1}{8}$: 1; $4\frac{2}{8}$: 1; $4\frac{3}{8}$: 3; $4\frac{4}{8}$: 3; $4\frac{5}{8}$: 1; $4\frac{6}{8}$: 2; $5\frac{1}{8}$: 1

5. Which length has the most Xs?

$4\frac{3}{8}$ inches (3 pencils)

6. How many pencils are longer than $4\frac{3}{8}$ inches?

7

Part 3: Questions from the Plot

7. What is the difference between the longest and the shortest pencil?

$5\frac{1}{8} - 4\frac{1}{8} = 1$ inch

8. If the shortest and the longest pencil are placed end to end, how long are they together?

$4\frac{1}{8} + 5\frac{1}{8} = 9\frac{2}{8}$ inches

9. The 3 pencils that are $4\frac{3}{8}$ inches long are placed end to end. How long is the line?

$3 \times 4\frac{3}{8} = 13\frac{1}{8}$ inches

Part 4: New Pencils for Everyone

10. How many packs are needed?

12 ÷ 6 = 2, so 2 packs

11. How much do the packs cost in all?

2 × $4 = $8

12. Make a poster of your line plot with a title, labels and two facts you learned from the data.

Check: title, number line with equal spacing, one X per data value, and two true statements.

Extension

4 of 12 pencils are longer than $4\frac{1}{2}$ inches, so the statement is false (most means more than half).



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Worked teacher example (Standard, Part 1)

How many pencils were measured?

12

Write the lengths in order from shortest to longest.

$4, 4\frac{1}{4}, 4\frac{2}{4}, 4\frac{2}{4}, 4\frac{2}{4}, 4\frac{3}{4}, 4\frac{3}{4}, 4\frac{3}{4}, 4\frac{3}{4}, 5, 5\frac{1}{4}, 5\frac{1}{4}$

What are the shortest and the longest lengths?

4 inches and $5\frac{1}{4}$ inches

Model the first part aloud: read the situation, name the operation, estimate, solve, and check. Then let partners try Part 2.

Look for

- Students use correct notation and units in every answer.
- Students explain why an answer is reasonable (estimates, benchmarks, pictures).
- Final products show the math clearly, not just the answers.