Stem-and-Leaf Plots

Stem-and-Leaf Plots: Find, Fix, and Work Backward

Name _____ **Date** _____ **Score** _____ / 8

QUICK REVIEW

Read the key before decoding a row. Each leaf is one observation, even when two leaves match. Keep leaves sorted within each stem. Range is the greatest value minus the least.

Worked example

A student writes $2 \mid 1\ 7\ 4$ with key $2 \mid 1 = 21$ cm. Fix the order and read the middle length.

1. The 3 leaves are $1, 7, 4$. Sort them to get $1, 4, 7$.
2. The middle entry is $2 \mid 4$, or $20 + 4 = 24$ cm.
Answer: $2 \mid 1\ 4\ 7$; middle length 24 cm.

Practice Problems

Show your thinking.

1. The key is $3 \mid 8 = 38$ min. Nia reads $4 \mid 7$ as 4.7 min. Correct her reading and find how many minutes longer it is than $3 \mid 8$.

2. The quickest time is 16 min and the range is 28 min. The longest time has a missing leaf in stem 4. Recover the time and leaf.

Stem	Leaves
1	6 8
2	3 7
3	4
4	?

Key: $1 \mid 6 = 16$ min

3. The raw readings are $14, 29, 17, 21, 14, 35$ cm. The plot loses one reading. Repair its row and give the corrected total number of leaves.

Stem	Leaves
1	4 7
2	1 9
3	5

Key: $1 \mid 4 = 14$ cm

4. One listed time of 27 min was a typo for 31 min. Rewrite the affected rows and tell whether the count of observations changes.

Stem	Leaves
2	2 7 9
3	0 5

Key: $2 \mid 7 = 27$ min

5. The five plant heights total 109 cm. One leaf in stem 2 is missing. Find the missing height and write its entry.

Stem	Leaves
1	4 6
2	1 ?
3	1

Key: $2 \mid 1 = 21$ cm

6. A student counts only the two times in stem 2 as below 32 min. Correct the count and identify the overlooked times.

Stem	Leaves
2	3 9
3	0 1 2 6
4	4

Key: $3 \mid 2 = 32$ min

7. The key is $2 \mid 4 = 2.4$ m. Tia says $2 \mid 4$ and $3 \mid 4$ are equal because the leaves match. Read both and find their difference.

8. Five sessions are plotted and one is missing. Exactly half of all six times were at least 30 min. Is the missing entry $2 \mid 9$ or $3 \mid 5$?

Stem	Leaves
1	4 8
2	6
3	0
4	1

Key: $3 \mid 0 = 30$ min

Answer Key

1. 47 min; 9 min longer.
2. 44 min; leaf 4 in stem 4.
3. $1 \mid 4\ 4\ 7$; 6 leaves.
4. $2 \mid 2\ 9$ and $3 \mid 0\ 1\ 5$; still 5 observations.
5. 27 cm; $2 \mid 7$.
6. 4 times; 30 and 31 min were overlooked.
7. 2.4 m and 3.4 m; difference 1 m.
8. $3 \mid 5$, or 35 min.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. Stem 4 means 40 and leaf 7 means 7, so $40 + 7 = 47$ min.

2. The bar is not a decimal point. The difference is $47 - 38 = 9$ min.

Problem 2

1. The longest time is the shortest plus the range: $16 + 28 = 44$ min.

2. $44 = 40 + 4$, so the entry is $4 \mid 4$.

Problem 3

1. The readings include 14 twice, so stem 1 needs two leaves 4.

2. The corrected row has 3 leaves; the others have 2 and 1. Total: $3 + 2 + 1 = 6$.

Problem 4

1. Remove leaf 7 from stem 2. Its 3 leaves become 2.

2. Insert leaf 1 between 0 and 5 in stem 3. Now $2 + 3 = 5$ leaves, as before.

Problem 5

1. Visible heights total $14 + 16 + 21 + 31 = 82$ cm.

2. The missing height is $109 - 82 = 27$ cm, so enter leaf 7 under stem 2.

Problem 6

1. Stem 2 gives $23, 29$ min. In stem 3, 30 and 31 are also below 32.

2. Total: $2 + 2 = 4$ times. Exactly 32 min does not count.

Problem 7

1. The stem is whole meters and the leaf is tenths: $2 + 0.4 = 2.4$ and $3 + 0.4 = 3.4$.

2. The stems differ, so $3.4 - 2.4 = 1$ m.

Problem 8

1. Half of 6 is 3. The visible times at least 30 are 30 and 41, only 2.

2. One more must qualify. $35 \geq 30$ but $29 < 30$, so choose $3 \mid 5$.

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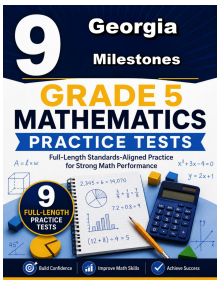

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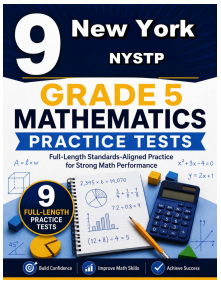

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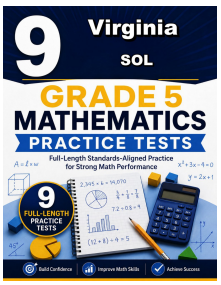

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