# Stem-and-Leaf Plots

Explore ideas and representations

**Name** _____ **Date** _____ **Score** _____ / 6

**QUICK REVIEW**

Read place value from the key: $5|2 = 52$ uses tens and ones. Sort leaves within each stem. Each leaf represents one observation, even if a digit or a value repeats.

**Worked example**

Read $5|2\ 5\ 5$ and $6|0$ with key $5|2 = 52$. Find how many values exceed $53$.

**1.** Stem $5$ gives $52, 55, 55$; stem $6$ gives $60$.
**2.** Keep both leaves $5$ in stem $5$: both values of $55$ exceed $53$.
**3.** The $60$ also exceeds $53$. The count is $2 + 1 = 3$.
**Answer:** $3$ values exceed $53$.

## Practice Problems

Show your thinking.

**1.** Read every value in order. Keep all duplicate observations. Key $2|3 = 23$.

| stem | leaves |
|---|---|
| 1 | 4 6 6 |
| 2 | 2 9 |
| 3 | 3 |

**2.** Find the two middle positions and the median of these observations. Key $2|3 = 23$.

| stem | leaves |
|---|---|
| 0 | 8 |
| 1 | 1 7 9 |
| 2 | 4 |
| 3 | 5 |

**3.** Find the minimum, maximum, and range. Key $2|3 = 23$.

| stem | leaves |
|---|---|
| 1 | 0 2 8 |
| 2 | 3 3 7 |
| 3 | 6 9 |

**4.** How many observations are at least $20$? Give their fraction of all observations. Key $2|3 = 23$.

| stem | leaves |
|---|---|
| 1 | 3 7 9 |
| 2 | 0 0 8 |
| 4 | 1 |

**5.** Complete the stem-and-leaf table for $42, 25, 17, 25, 30, 22, 19$. Sort the leaves, keep repeats, and include a key.

| stem | leaves |
|---|---|
| 1 | ? |
| 2 | ? |
| 3 | ? |
| 4 | ? |

**6.** Find the mode and its frequency. Key $2|3 = 23$.

| stem | leaves |
|---|---|
| 0 | 7 7 |
| 1 | 3 9 |
| 2 | 7 7 7 |
| 3 | 6 |

# Answer Key

1. $14, 16, 16, 22, 29, 33$.
2. Positions $3$ and $4$; median $18$.
3. Minimum $10$; maximum $39$; range $29$.
4. $4$ observations; $\frac{4}{7}$ of the total.
5. $1|7\ 9$; $2|2\ 5\ 5$; $3|0$; $4|2$. Key $2|5 = 25$.
6. Mode $27$; frequency $3$.

## Step-by-Step Solutions

Follow each calculation, then check your own work.

### Problem 1

**1.** Stem $1$ and leaves $4, 6, 6$ give $14, 16, 16$. Each $6$ is a separate observation.

**2.** Stem $2$ gives $22, 29$.

**3.** Stem $3$ and leaf $3$ give $3(10) + 3 = 33$. There are $3 + 2 + 1 = 6$ leaves in all.

### Problem 2

**1.** The $6$ ordered values are $8, 11, 17, 19, 24, 35$.

**2.** The middle positions are $6/2 = 3$ and $3 + 1 = 4$, with values $17$ and $19$.

**3.** Average those two: $(17 + 19)/2 = 18$.

### Problem 3

**1.** The first stem and leaf give $1(10) + 0 = 10$.

**2.** The last stem and leaf give $3(10) + 9 = 39$.

**3.** Subtract the minimum from the maximum: $39 - 10 = 29$.

### Problem 4

**1.** At least $20$ includes both leaves $0$ in stem $2$.

**2.** The values that count are $20, 20, 28, 41$: $3 + 1 = 4$ leaves.

**3.** There are $7$ leaves altogether, so the fraction is $4/7$.

### Problem 5

**1.** Use tens as stems. The teens $17, 19$ go in stem $1$, with leaves $7, 9$.

**2.** For stem $2$, sort $22, 25, 25$ to get leaves $2, 5, 5$. Both $5$s belong.

**3.** Enter $0$ on stem $3$ and $2$ on stem $4$. Key: $2|5 = 25$.

| stem | leaves |
|---|---|
| 1 | 7 9 |
| 2 | 2 5 5 |
| 3 | 0 |
| 4 | 2 |

### Problem 6

**1.** Compare complete values, not just leaf digits. Stem $0$ with leaf $7$ represents $7$.

**2.** In stem $2$, leaf $7$ represents $2(10) + 7 = 27$, and it occurs $3$ times.

**3.** The value $7$ appears $2$ times and all others fewer than $3$, so $27$ is the mode.

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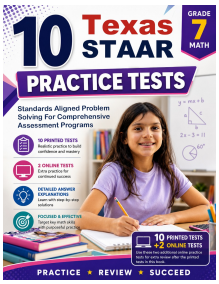


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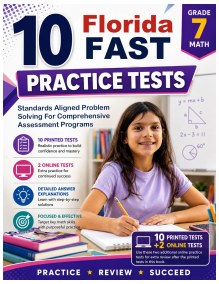


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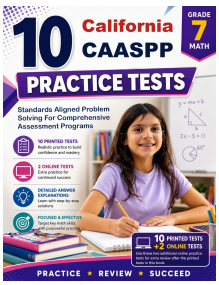


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