Dot Plots and Histograms

Dot plots and histograms: Models and calculations

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

QUICK REVIEW

A dot plot shows one dot for every observation, including repeats: $1, 2, 2, 4$ gives frequencies $1:1, 2:2, 4:1$. A histogram groups values into intervals and uses touching bars. For intervals $0 \le x < 5$ and $5 \le x < 10$, data $2, 5, 7$ give counts $1, 2$; the boundary value 5 enters the second interval.

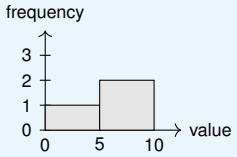
Worked example

Group the three measurements. Intervals are $0 \le x < 5$, $5 \le x < 10$. Data: $2, 5, 7$. Draw touching bars and give their heights.

1. Count data in each interval: $0 \le x < 5 : 1$; $5 \le x < 10 : 2$.

2. Total frequency $= 1 + 2 = 3$. Boundary values enter the interval beginning at that value, not the preceding one.

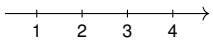
Answer: Bar heights $1, 2$; total 3.



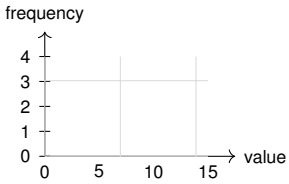
Practice Problems

Show your thinking.

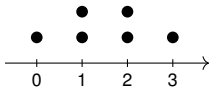
1. Build a dot plot from the list. Data: $1, 2, 2, 3, 4, 4, 4$. Draw one dot per observation, then give every nonzero frequency.



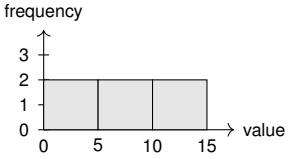
2. Build a histogram from the list. Intervals are $0 \le x < 5$, $5 \le x < 10$, $10 \le x < 15$. Data: $1, 3, 5, 6, 9, 11, 13$. Draw touching bars and give their heights.



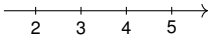
3. Use dot heights to describe the counts. Read the display and give every nonzero frequency, the total count, and the range.



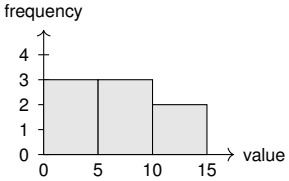
4. The observations include boundary values 5 and 10. Explain which bin holds each. Intervals are $0 \le x < 5$, $5 \le x < 10$, $10 \le x < 15$. Read every bar height and the total number of observations.



5. A club records books read. Model the list as dots. Data: $2, 3, 3, 4, 5, 5$. Draw one dot per observation, then give every nonzero frequency.



6. A student totals the bars as 7. Read and correct the count. Intervals are $0 \le x < 5$, $5 \le x < 10$, $10 \le x < 15$. Read every bar height and the total number of observations.



Answer Key

1. Value:frequency $1:1, 2:2, 3:1, 4:3$; total 7; range 3.
2. Bar heights $2, 3, 2$; total 7.
3. Value:frequency $0:1, 1:2, 2:2, 3:1$; total 6; range 3.
4. Bar heights $2, 2, 2$; total 6. The 5 goes in $5 \le x < 10$; the 10 goes in $10 \le x < 15$.
5. Value:frequency $2:1, 3:2, 4:1, 5:2$; total 6; range 3.
6. Bar heights $3, 3, 2$; total 8.

Step-by-Step Solutions

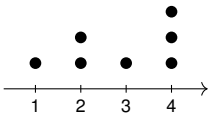
Follow each calculation, then check your own work.

Problem 1

1. Tally each value separately: $1:1, 2:2, 3:1, 4:3$.

2. Total dots $= 1 + 2 + 1 + 3 = 7$; repeated values each contribute a dot.

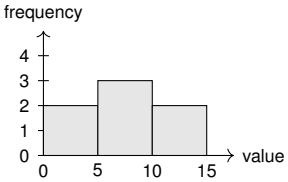
3. Range $= 4 - 1 = 3$.



Problem 2

1. Count data in each interval: $0 \le x < 5 : 2$; $5 \le x < 10 : 3$; $10 \le x < 15 : 2$.

2. Total frequency $= 2 + 3 + 2 = 7$. Boundary values enter the interval beginning at that value, not the preceding one.



Problem 3

1. Tally each value separately: $0:1, 1:2, 2:2, 3:1$.

2. Total dots $= 1 + 2 + 2 + 1 = 6$; repeated values each contribute a dot.

3. Range $= 3 - 0 = 3$.

Problem 4

1. Read each bar: $0 \le x < 5 : 2$; $5 \le x < 10 : 2$; $10 \le x < 15 : 2$.

2. Total frequency $= 2 + 2 + 2 = 6$. Boundary values enter the interval beginning at that value, not the preceding one.

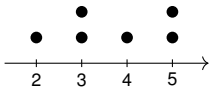
3. 5 is excluded from $0 \le x < 5$ and starts the next interval. 10 is excluded from $5 \le x < 10$ and starts $10 \le x < 15$.

Problem 5

1. Tally each value separately: $2:1, 3:2, 4:1, 5:2$.

2. Total dots $= 1 + 2 + 1 + 2 = 6$; repeated values each contribute a dot.

3. Range $= 5 - 2 = 3$.



Problem 6

1. Read each bar: $0 \le x < 5 : 3$; $5 \le x < 10 : 3$; $10 \le x < 15 : 2$.

2. Total frequency $= 3 + 3 + 2 = 8$. Boundary values enter the interval beginning at that value, not the preceding one.

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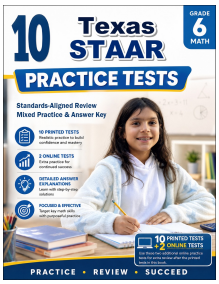

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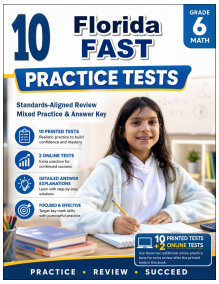

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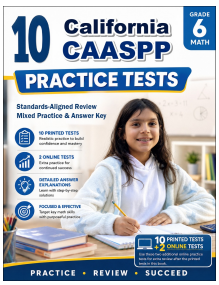

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