Two Views of One Dataset

Make a dot plot and an equal-width histogram from the same data

Name: _____ Date: _____

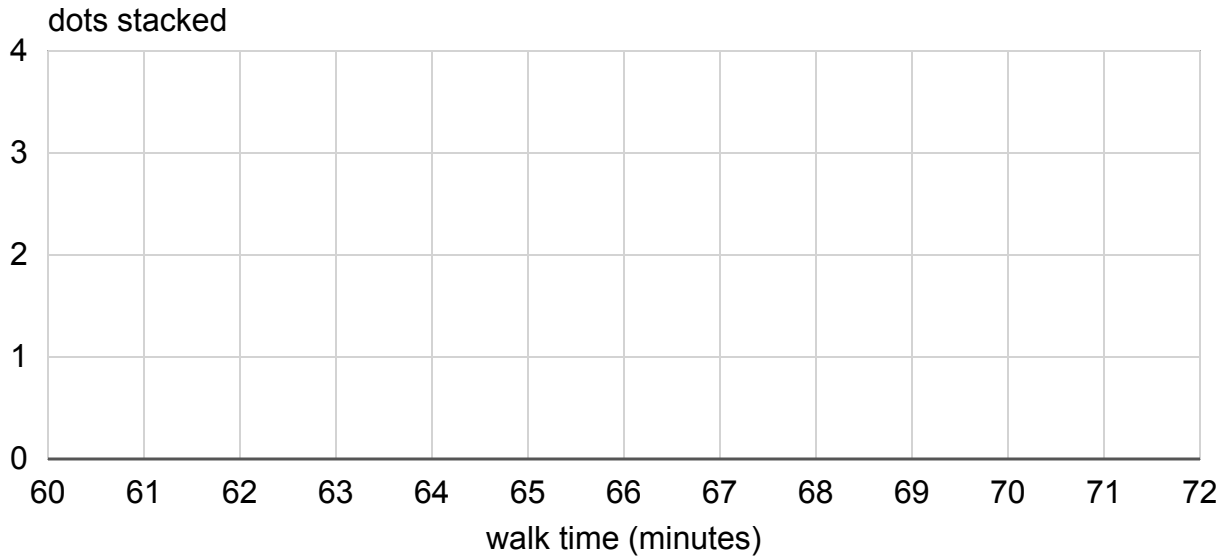
Part 1: Dot Plot - Individual Values

Practice dataset (created for this worksheet): Twelve fictional walk-to-school times, in minutes:

60, 61, 62, 62, 63, 64, 64, 64, 66, 67, 68, 70

1. Make a dot plot. Place one dot above each time. Stack dots when a time repeats. Then complete the frequency row. Your frequencies must add to the number of values in the dataset.

Time (min)	60	61	62	63	64	65	66	67	68	69	70
Frequency											



2. How many dots are on your plot? _____ Does that match the raw dataset? _____

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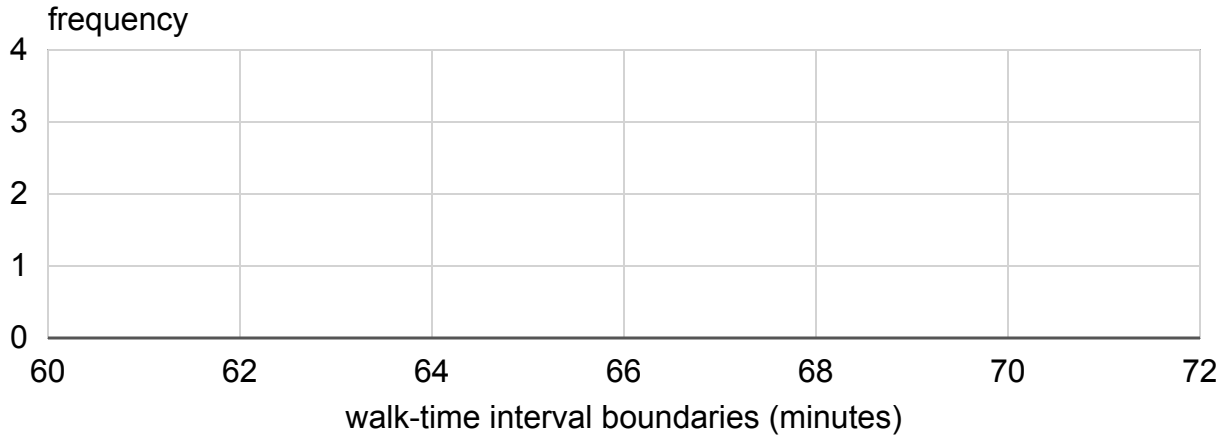
Part 2: Histogram - Intervals

Use the same practice dataset: 60, 61, 62, 62, 63, 64, 64, 64, 66, 67, 68, 70.

3. Listen while your teacher reviews how a boundary is counted. Complete the frequency table. Each interval has width 2 minutes. A value on a left boundary belongs in that interval; a value at the right endpoint does not.

Interval, in minutes	Frequency
60 <= time < 62	
62 <= time < 64	
64 <= time < 66	
66 <= time < 68	
68 <= time < 70	
70 <= time < 72	

4. Draw one connected bar for each interval. The bar height is its frequency.



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Part 3: Compare the Displays

5. Look back at your completed dot plot and histogram.

Name one detail the dot plot shows clearly and one detail the histogram shows clearly. Use numbers or intervals from the dataset in your response.

Check: Your dot-plot frequencies should total 12. Your histogram frequencies should also total 12.

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Answer Key and Teaching Notes

Materials supplied: student pages with raw data, a blank dot-plot grid, equal-width histogram bins, a blank histogram grid, and comparison response space. **Additionally needed:** pencil and straightedge. Optional: document camera or board for a class check.

Exact setup: Print and supply all student pages, keeping teacher-key pages separate. Give each student a pencil and straightedge. Display no completed graph before students finish Part 1. Have students keep Part 1 visible when beginning Part 2 and use both completed displays for Part 3.

Teaching script: Say, “A dot plot keeps every individual value visible. Put one dot at each value and stack repeated values.” Before Part 2, say, “These histogram intervals are all 2 minutes wide. Read 60 <= time < 62 as including 60 but not 62. Therefore, 62 starts the next interval. This rule prevents double-counting.” Say, “A histogram combines nearby values into intervals, so individual values inside a bar are not visible.”

Observation method: Circulate after Item 1 and count one student's dots against the 12 raw values. At Item 3, ask the student to point to where 62 and 70 belong. Accept work only if each raw value is counted once, the dot-plot total is 12, histogram frequencies total 12, bars span the listed 2-minute intervals without gaps or overlaps, and bar heights match the table.

Answers:
1. Frequencies for 60 through 70: 1, 1, 2, 1, 3, 0, 1, 1, 1, 0, 1. Dot locations: (60,1), (61,1), (62,1), (62,2), (63,1), (64,1), (64,2), (64,3), (66,1), (67,1), (68,1), (70,1).
2. 12; yes.
3. Histogram frequencies, in listed order: 2, 3, 3, 2, 1, 1.
4. Bars have those heights over [60,62), [62,64), [64,66), [66,68), [68,70), and [70,72).
5. Sample response: “The dot plot shows that 64 occurs three times and that no one has a time of 65 or 69. The histogram shows that the largest groups are 62 to under 64 and 64 to under 66 minutes.” Award credit for one accurate dot-plot detail and one accurate interval/grouping detail.

Source credit: New York Next Generation Mathematics standard AI-S.ID.1, “Represent data with plots on the real number line.” Task source: https://lessonmakerpro.com/standards/ny-nextgen-math/ai-s-id-1