

Plot It Right

Build and read dot plots, histograms, and box plots.

HIGH SCHOOL • HSS-ID.A.1

CCSS.Math.Content.HSS-ID.A.1 "Represent data with plots on the real number line (dot plots, histograms, and box plots)."

NAME _____

DATE _____

CHOOSE THE PLOT

A dot plot uses one x for each data value. A histogram groups numerical data into equal intervals, and a box plot shows the minimum, Q1, median, Q3, and maximum. For a box plot, sort the data first, then find Q1 and Q3 from the lower and upper halves, leaving out the overall median when there is an odd number of values.

WORKED EXAMPLE

Make a dot plot for the data: 13, 15, 15, 17, 19.

1. Put the values in order: 13, 15, 15, 17, 19.
2. Write each value on the number line.
3. Place one x for each occurrence, stacking two x's at 15.

Answer: 13: x; 15: xx; 17: x; 19: x

PRACTICE 6 problems

- 1** Make a dot plot for the data. Use the format value: x's. Data: 1, 2, 2, 4, 4, 4, 6.

ANSWER _____

- 2** Make a dot plot from this frequency table. Use the format value: x's. Value 0 occurs 2 times, value 2 occurs 3 times, and value 5 occurs 1 time.

ANSWER _____

- 3** Make a histogram for the data using these intervals: 20-24, 25-29, 30-34, and 35-39. Write each bar as interval: x's. Data: 22, 24, 26, 27, 29, 31, 33, 34, 36, 38.

ANSWER _____

- 4** Make a histogram for the data using these intervals: 50-54, 55-59, 60-64, and 65-69. Write each bar as interval: x's. Data: 51, 53, 54, 57, 58, 62, 63, 67.

ANSWER _____

- 5** The data are already sorted: 2, 5, 7, 9, 12, 16, 18, 21, 25. Give the five-number summary needed to make a box plot.

ANSWER _____

- 6** A data set has this five-number summary: minimum 0, Q1 3, median 5, Q3 8, maximum 11. Describe the box plot by naming the whisker endpoints, box endpoints, and median line.

ANSWER _____

APPLY IT Show your work

- 1** A student media club records the number of photos uploaded by eight members in one week: 32, 35, 37, 41, 42, 44, 48, 49. Make a histogram with intervals 30-34, 35-39, 40-44, and 45-49. Write each bar as interval: x's.

WORK SPACE

ANSWER _____

- 2** A track team records the number of minutes needed by nine runners to finish a training route: 41, 44, 48, 52, 55, 61, 66, 70, 74. Make a box plot. Give the five-number summary and describe the box and whiskers.

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

The sorted data are 6, 9, 11, 14, 18, 22, 23, 27, 30, 35. Make a box plot. Give the five-number summary and describe where the box, median line, and whiskers belong.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Make a dot plot for the data. Use the format value: x's. Data: 1, 2, 2, 4, 4, 4, 6.	1: x; 2: xx; 4: xxx; 6: x
2	Make a dot plot from this frequency table. Use the format value: x's. Value 0 occurs 2 times, value 2 occurs 3 times, and value 5 occurs 1 time.	0: xx; 2: xxx; 5: x
3	Make a histogram for the data using these intervals: 20-24, 25-29, 30-34, and 35-39. Write each bar as interval: x's. Data: 22, 24, 26, 27, 29, 31, 33, 34, 36, 38.	20-24: xx; 25-29: xxx; 30-34: xxx; 35-39: xx
4	Make a histogram for the data using these intervals: 50-54, 55-59, 60-64, and 65-69. Write each bar as interval: x's. Data: 51, 53, 54, 57, 58, 62, 63, 67.	50-54: xxx; 55-59: xx; 60-64: xx; 65-69: x
5	The data are already sorted: 2, 5, 7, 9, 12, 16, 18, 21, 25. Give the five-number summary needed to make a box plot.	Minimum 2, Q1 6, median 12, Q3 39/2, maximum 25
6	A data set has this five-number summary: minimum 0, Q1 3, median 5, Q3 8, maximum 11. Describe the box plot by naming the whisker endpoints, box endpoints, and median line.	Whiskers end at 0 and 11. The box runs from 3 to 8. The median line is at 5.

PART 2 • APPLY IT

- 30-34: x; 35-39: xx; 40-44: xxx; 45-49: xx** Sort each upload total into its interval. The interval frequencies are 1, 2, 3, and 2.
- Minimum 41, Q1 46, median 55, Q3 68, maximum 74. Whiskers end at 41 and 74, and the box runs from 46 to 68 with a median line at 55.** The middle value is 55. The lower-half median is $(44 + 48)/2 = 46$, and the upper-half median is $(66 + 70)/2 = 68$.

CHALLENGE

Minimum 6, Q1 11, median 20, Q3 27, maximum 35. Whiskers end at 6 and 35, the box runs from 11 to 27, and the median line is at 20.

Accept equivalent dot plots with dots stacked vertically and equivalent histogram bars with the correct heights. For box plots, use the median-of-halves method stated in the concept box.