LESSON MAKER PRO

One Dataset, Many Views

Represent the observations, then explain the evidence.

GRADE 6 · TEKS 6.12

6.12 "Excerpt: represent numeric data graphically, including dot plots, stem-and-leaf plots, histograms, and box plots"

NAME _____ DATE _____

Make every observation count

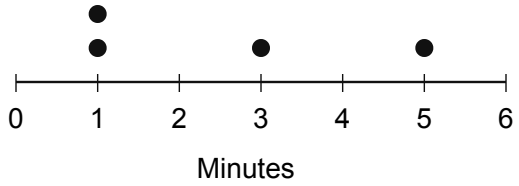
Dot and stem-and-leaf plots retain observations. Histograms group values; boxplots summarize positions. Different displays help explain center, spread and shape.

Worked example

Plot the waits 1, 1, 3, 5 minutes.

Stack two dots at 1. Place one each at 3 and 5. Four separate dots preserve all four observations.

Practice waits



Key: one dot = one wait

Simulated data. Use a pencil and ruler. Show your reasoning.

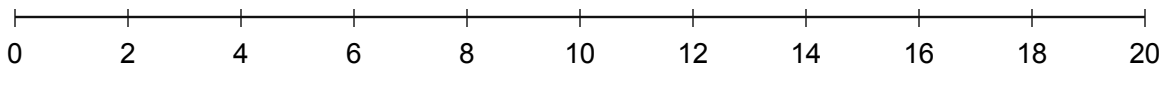
1. Keep every observation

Plot all 12 waits below. Add a title and complete the axis label and dot key. Stack repeated observations.

Twelve simulated bus waits, in minutes

1. 2	2. 4	3. 4	4. 6
5. 6	6. 6	7. 8	8. 8
9. 10	10. 10	11. 12	12. 20

Plot title: _____



Horizontal axis: _____

Key: one dot = _____

2. Organize stems and leaves

Use the same waits from task 1. Add a title, write leaves in increasing order and complete the key.

Plot title: _____

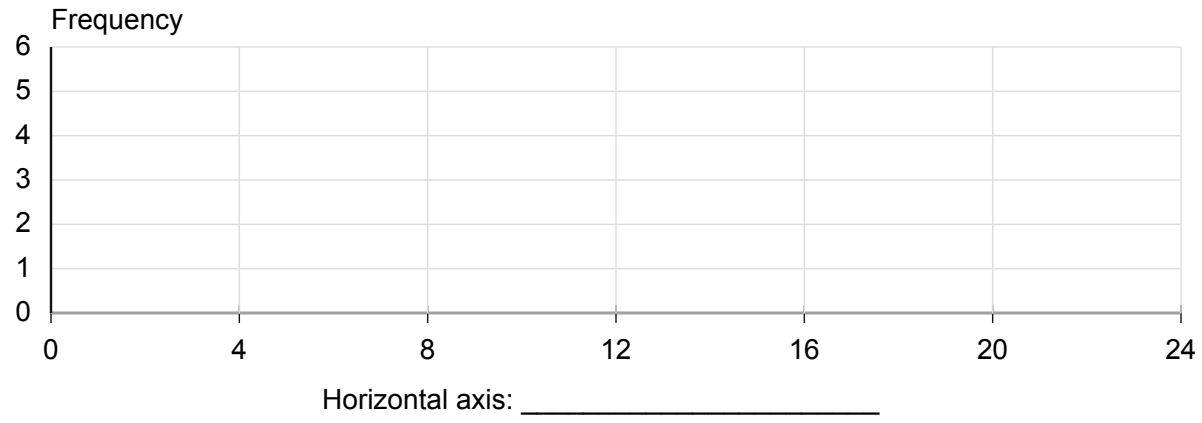
Stem	Leaves
0	
1	
2	

Key: 1 \| 2 = _____ minutes

3. Group the waits

Construct a histogram of the same waits using the supplied four-minute intervals. Add a title and horizontal-axis label. An interval includes its left endpoint but excludes its right endpoint.

Plot title: _____



Intervals include the left endpoint and exclude the right endpoint.

4. Calculate center and spread

Complete the summaries for the original waits; show the mean and IQR calculations. For quartiles, sort the waits and find the median of each half. For an odd-sized dataset, exclude the middle observation from both halves.

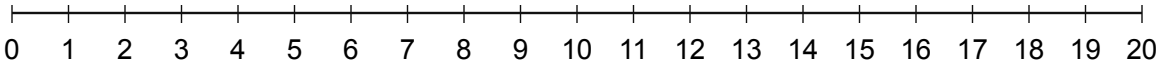
Bus wait summaries (all values in minutes)

Measure	Mean	Median	Range
Minutes			
Measure	Q1	Q3	IQR
Minutes			

5. Construct a boxplot

Use your summaries to draw the boxplot. Add a title and axis label. Whiskers end at the minimum and maximum. The axis marks every minute.

Plot title: _____



Horizontal axis: _____

6. Describe the numerical distribution

Use the displays and summaries to describe a typical wait, the spread and the shape. Explain why the mean exceeds the median.

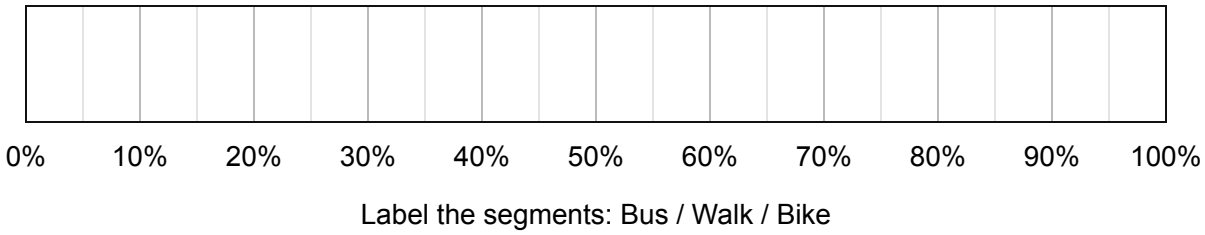
7. Summarize categorical data

A separate travel survey has 20 replies. Complete the table and percent bar, adding a title and segment labels. Name the mode and describe the largest and smallest shares. These are categories, not wait times.

Travel survey

Choice	Count	Percent
Bus	12	
Walk	6	
Bike	2	
Total		

Graph title: _____



8. Compare groups fairly

A different group of 40 students has 18 Bus, 16 Walk and 6 Bike replies. Find its Bus percentage and mode. Which group has more Bus replies, and which has the greater Bus share?

One Dataset, Many Views

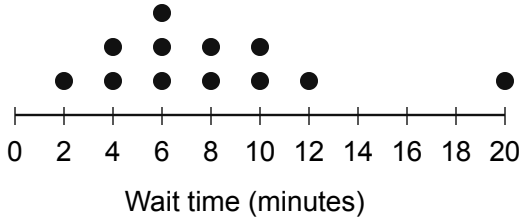
TEACHER NOTES

Accept equivalent titles and units. Check repeated observations, ordered leaves and the stated dataset. Predictions need evidence, not certainty. Keep completed plots in this key.

TASK 1

Dots: 2(1), 4(2), 6(3), 8(2), 10(2), 12(1), 20(1). Axis: Wait time (minutes). One dot = one wait.

Bus waits



Key: one dot = one wait

TASK 2

Stem rows: 0 | 2 4 4 6 6 6 8 8; 1 | 0 0 2; 2 | 0. Key: 1 | 2 = 12 minutes.

Bus waits

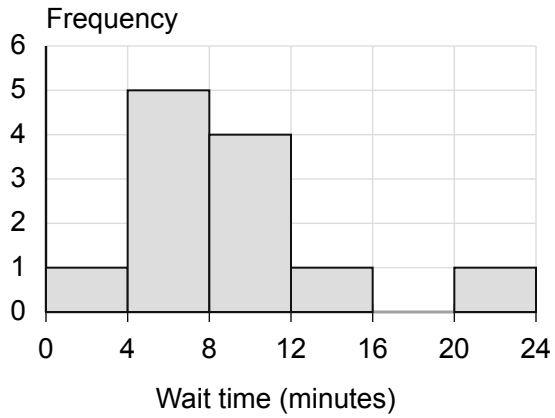
STEM	LEAVES
0	2 4 4 6 6 6 8 8
1	0 0 2
2	0

Key: 1 | 2 = 12 minutes

TASK 3

Frequencies for [0,4), [4,8), [8,12), [12,16), [16,20), [20,24): 1, 5, 4, 1, 0, 1. Bars touch at interval boundaries; the empty interval has height zero.

Bus waits grouped in four-minute intervals



Intervals include the left endpoint and exclude the right endpoint.

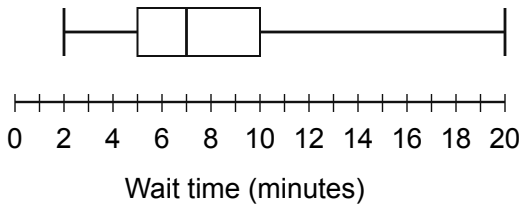
TASK 4

Sum 96, count 12, mean 8. Median 7, range 18, Q1 5, Q3 10, IQR 5. Mean: 96 / 12 = 8. IQR: 10 - 5 = 5.

TASK 5

Five-number summary: minimum 2, Q1 5, median 7, Q3 10, maximum 20. Box from 5 to 10, median line at 7, whiskers to 2 and 20.

Bus wait summary



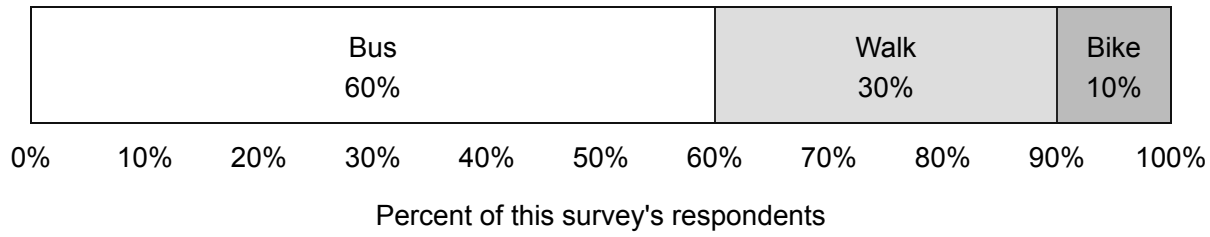
TASK 6

A typical wait is around 7-8 minutes. Waits range from 2 to 20 (range 18); the middle half is from 5 to 10 (IQR 5). Most waits are short, with a longer right tail and one wait at 20, pulling the mean 8 above the median 7. Use the named data and scale.

TASK 7

Bus 60%, Walk 30%, Bike 10%; total 20 and 100%. Bus is the mode and largest share; Bike is smallest. Bar boundaries: 0, 60, 90, 100%. Show numerical evidence.

Travel choice shares



TASK 8

18 / 40 x 100 = 45%; Bus is still the mode. The larger group has more Bus replies (18 versus 12), but the first group has the greater Bus share (60% versus 45%).