

UNIT 4 • DESCRIBING DATA

Lesson 1: Working with a Single Measurement Variable

Instruction

Guided Practice 4.1.2

Example 1

A pharmacy records the number of customers each hour that the pharmacy is open. The staff is using the information to determine how many people need to be working at the pharmacy at each time of day. The number of customers is in the table below. Use the table to create a histogram to help the pharmacy staff understand how many customers are in the pharmacy at each time of day.

Time frame	Number of customers
8:00 A.M.–9:00 A.M.	2
9:00 A.M.–10:00 A.M.	0
10:00 A.M.–11:00 A.M.	8
11:00 A.M.–12:00 P.M.	14
12:00 P.M.–1:00 P.M.	23
1:00 P.M.–2:00 P.M.	12
2:00 P.M.–3:00 P.M.	7
3:00 P.M.–4:00 P.M.	3
4:00 P.M.–5:00 P.M.	5

1. Draw a number line on an x -axis that corresponds to the range of the data.

The x -axis for this data will show the times the customers were counted. The number line for the pharmacy must include the times from 8:00 A.M. until 5:00 P.M. If using a number line that counts by twos, extend the number line to 6:00 P.M.



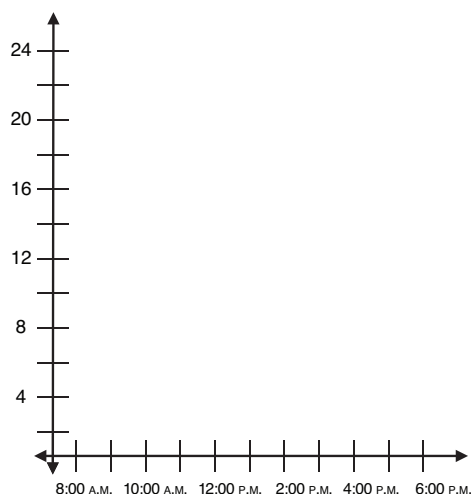
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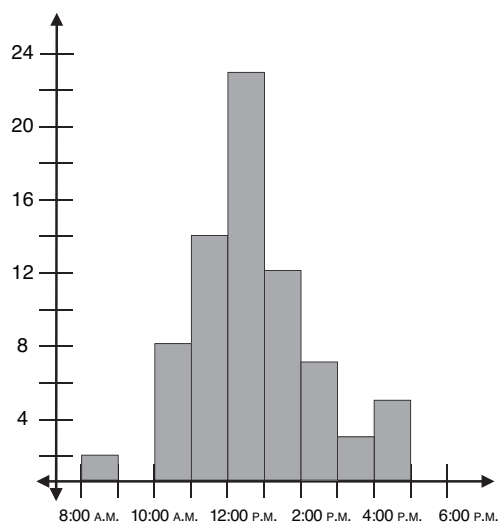
2. Draw a y -axis that corresponds to the least and greatest number of times a data value is repeated. The y -axis should be to the left of the labeled x -axis.

The number of customers arriving in each time frame ranges from 0 customers to 23 customers. The y -axis needs to show values from 0 to 23. If using a number line that counts by twos, extend the number line to 24.



3. Create a rectangle at each value showing the number of data points at each data value.

The rectangles will each span an hour, and will show the number of customers in that hour. There will be no rectangle from 9:00 A.M. to 10:00 A.M., because there were no customers at that hour.



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Instruction**Example 2**

Anna and Ethan watch 20 thirty-minute shows during the month of June. They record the number of commercials that air during each show in the table below. Create a dot plot to display the number of commercials that aired during the 20 shows.

Television show	Number of commercials
A	17
B	17
C	15
D	17
E	14
F	17
G	15
H	19
I	15
J	16
K	12
L	14
M	15
N	17
O	18
P	18
Q	18
R	18
S	13
T	14

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1. Arrange the data from least to greatest.

Television show	Number of commercials
K	12
S	13
E	14
L	14
T	14
C	15
G	15
I	15
M	15
J	16
A	17
B	17
D	17
F	17
N	17
O	18
P	18
Q	18
R	18
H	19

2. Draw a number line on an x -axis that corresponds to the range of the data values.

The x -axis for this data will show the number of commercials during a 30-minute television show. The number line must include values from 12 to 19. If counting by twos, extend the number line to 20.

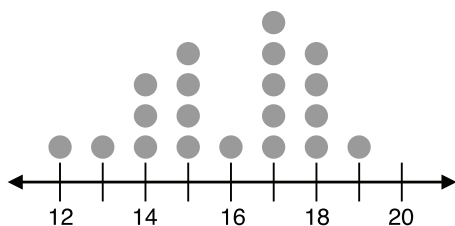


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3. Draw each data value as a dot above the number line. The number of dots above each data value should show the number of times that value occurs in the data set.



Example 3

The website Rate My Phone conducts reviews of smartphones. One aspect of the phones that is tested is battery life. The minutes of battery life for the newest 25 phones is recorded in the table below.

Draw a box plot to represent the data.

Smartphone	Minutes of battery life	Smartphone	Minutes of battery life
A	380	N	470
B	530	O	280
C	350	P	300
D	390	Q	440
E	520	R	490
F	520	S	530
G	430	T	340
H	330	U	250
I	550	V	260
J	290	W	730
K	360	X	520
L	550	Y	320
M	370		

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1. Order the data from least to greatest. Note the minimum and maximum data values.

Smartphone	Minutes of battery life	Smartphone	Minutes of battery life
U	250	G	430
V	260	Q	440
O	280	N	470
J	290	R	490
P	300	X	510
Y	320	E	520
H	330	F	520
T	340	B	530
C	350	S	530
K	360	I	550
M	370	L	550
A	380	W	730
D	390		

The minimum data value is 250, and the maximum data value is 730.

2. Find the median of the data.

The median is the middle-most data value. There are an odd number of data values, so the median is the 13th data value, 390.

3. Find the first quartile of the data.

The first quartile is the middle-most value of the lower half of the data. There are 12 data values in the lower half of the data, so the first quartile is the average of the sixth and seventh data values (320 and 330).

$$\frac{320 + 330}{2} = 325$$

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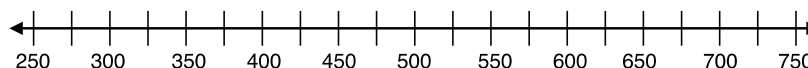
4. Find the third quartile of the data.

The third quartile is the middle-most value of the upper half of the data. There are 12 data values in the upper half of the data, so the third quartile is the average of the 19th and 20th data values (520 and 520).

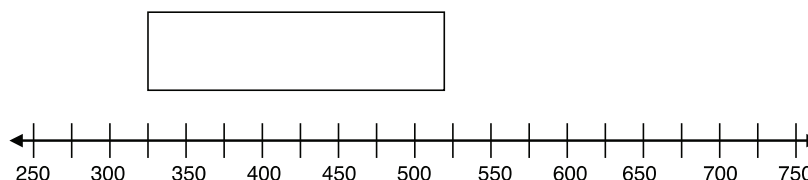
$$\frac{520 + 520}{2} = 520$$

5. Draw a number line that includes the minimum and maximum data values.

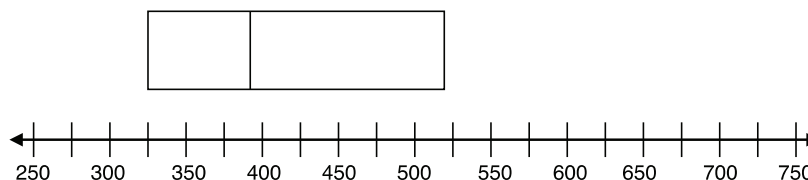
The minimum data value is 250, and the maximum data value is 730. If counting by 50s, extend the number line to 750.



6. Draw a box, beginning at the first quartile (325) and ending at the third quartile (520).



7. Draw a line in the box at the median (390).

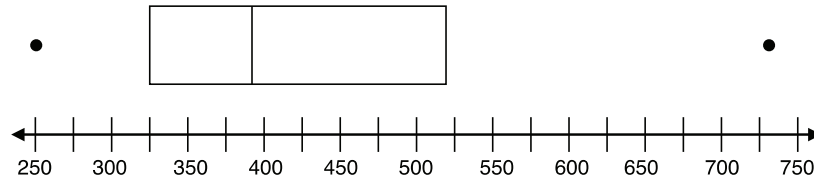


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8. Draw a point at the minimum and maximum data values (250 and 730).



9. Connect the minimum and maximum data values to the box.

