Instruction

Guided Practice 6.1.1

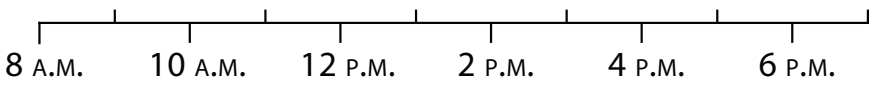
Example 1

A doctor's office records the number of unscheduled patients that arrive each hour the office is open. This information will help determine scheduling for the 3 doctors and 8 nurses that work there. The number of patients arriving each hour is listed in the following table. Use the table to create a histogram that will help the office staff understand how many unscheduled patients arrive at each time of day.

Time frame	Number of unscheduled patients
8:00 A.M. – 9:00 A.M.	4
9:00 A.M. – 10:00 A.M.	0
10:00 A.M. – 11:00 A.M.	0
11:00 A.M. – 12:00 P.M.	1
12:00 P.M. – 1:00 P.M.	3
1:00 P.M. – 2:00 P.M.	2
2:00 P.M. – 3:00 P.M.	1
3:00 P.M. – 4:00 P.M.	5
4:00 P.M. – 5:00 P.M.	5
5:00 P.M. – 6:00 P.M.	8

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 unscheduled patients were counted. The number line for the office must include the times from 8:00 A.M. until 6:00 P.M.



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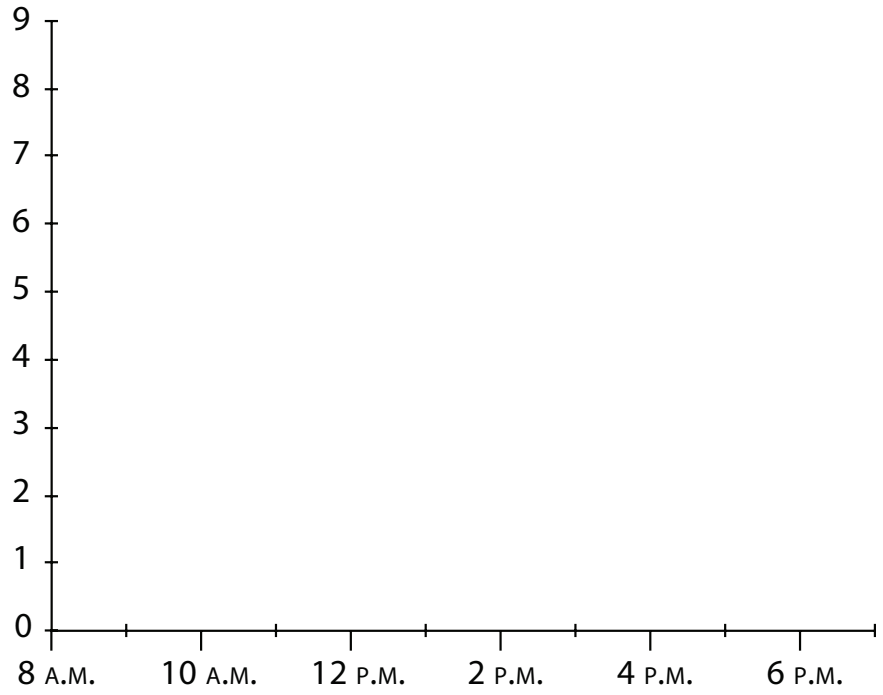
2. Draw a *y*-axis that corresponds to the least and greatest number of times a data value is repeated. The *y*-axis should be to the left of the labeled *x*-axis.

   The number of unscheduled patients arriving in each time frame ranges from 0 to 8 patients. The *y*-axis needs to show values from 0 to 8. You can extend the number line to 9 so that the maximum fits within the graph.



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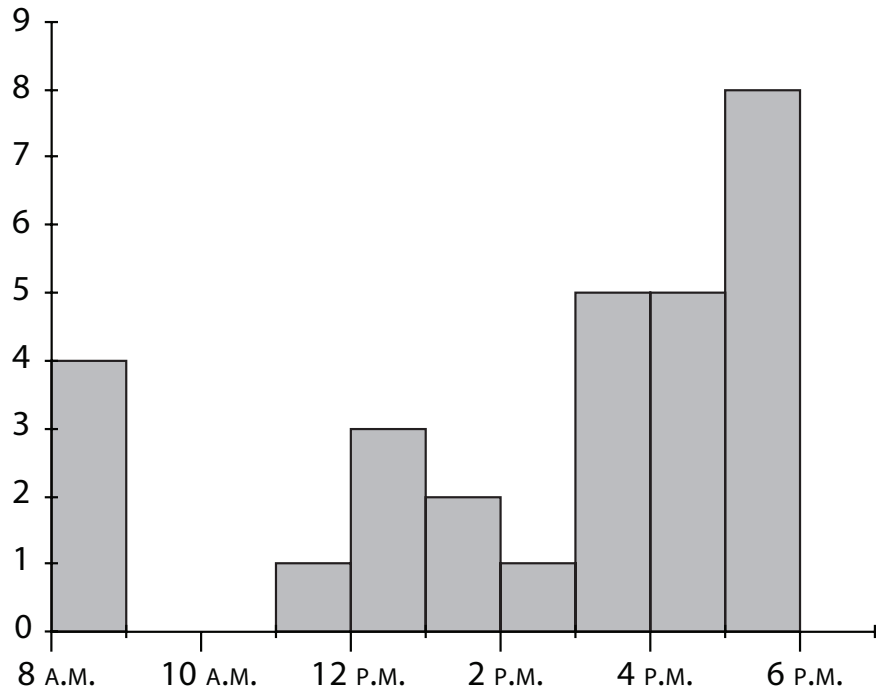
3. Create a rectangle at each value showing the number of data points at each data value.

   The rectangles will each span an hour, and they will show the number of unscheduled patients who arrived in that hour. There will be no rectangles from 9:00 A.M. to 10:00 A.M. or from 10:00 A.M. to 11:00 A.M. because no patients arrived during those hours.



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Example 2

Veronica and Eli are reading a book for literature class. They have noticed the author uses the word "bombastic" rather more than they would expect. Create a dot plot to display the number of times the word is used per page.

Page	Uses of "bombastic"	Page	Uses of "bombastic"
1	0	11	3
2	4	12	5
3	1	13	3
4	0	14	8
5	10	15	1
6	2	16	1
7	0	17	9
8	0	18	0
9	0	19	0
10	4	20	1

1. Arrange the data from least to greatest.

Page	Uses of "bombastic"	Page	Uses of "bombastic"
1	0	20	1
4	0	6	2
7	0	11	3
8	0	13	3
9	0	2	4
18	0	10	4
19	0	12	5
3	1	14	8
15	1	17	9
16	1	5	10

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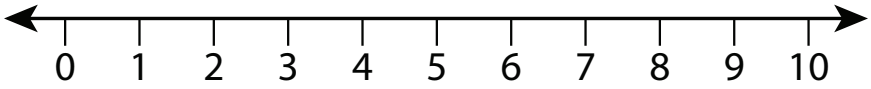
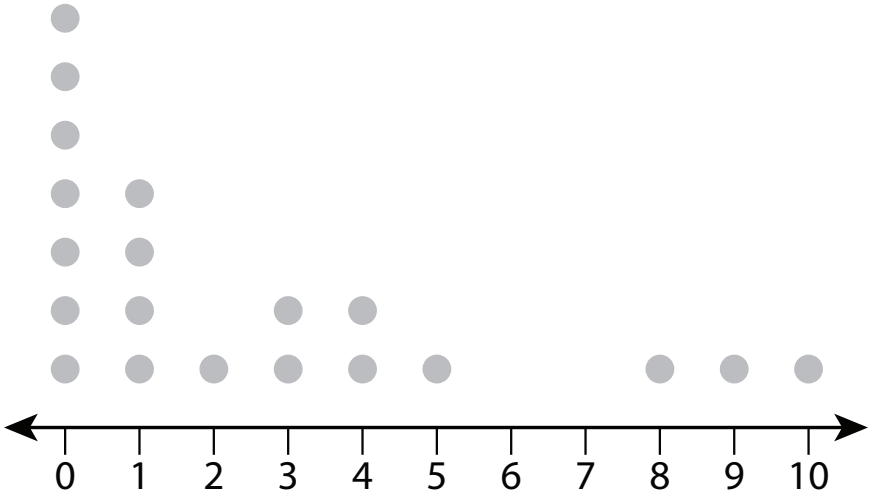
2. Draw a number line on an x-axis that corresponds to the range of the data values.

   The x-axis for this data will show the number of uses of the word "bombastic" on a single page in the book. The number line must include values from 0 to 10.



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



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Example 3

Shiloh is analyzing her favorite songs. The length of each of her top 25 favorite songs is recorded in the following table. Draw a box plot to represent the data.

Song	Length (seconds)	Song	Length (seconds)	Song	Length (seconds)
A	150	J	289	R	602
B	230	K	225	S	380
C	301	L	230	T	422
D	161	M	300	U	154
E	270	N	294	V	903
F	266	O	305	W	1,226
G	177	P	281	X	272
H	330	Q	145	Y	224
I	392				

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

Song	Length (seconds)	Song	Length (seconds)	Song	Length (seconds)
Q	145	F	266	O	305
A	150	E	270	H	330
U	154	X	272	S	380
D	161	P	281	I	392
G	177	J	289	T	422
Y	224	N	294	R	602
K	225	M	300	V	903
B	230	C	301	W	1,226
L	230				

The minimum data value is 145, and the maximum data value is 1,226.

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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, 281.

3. Find the first quartile of the data.

   The first quartile is the median value of the lower half of the data. Excluding the middle value of the whole data set, the lower half of the data has 12 data values. The first quartile will be the average of the sixth and seventh data values (224 and 225).

$$\frac{224 + 225}{2} = 224.5$$

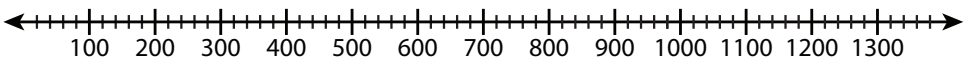
4. Find the third quartile of the data.

   The third quartile is the median value of the upper half of the data. Excluding the middle value of the whole data set, the upper half of the data has 12 data values. The third quartile will be the average of the 19th and 20th data values (330 and 380).

$$\frac{330 + 380}{2} = 355$$

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

   The minimum data value is 145, and the maximum value is 1,226. If counting by hundreds, extend the number line to 100 on the left and 1,300 on the right.



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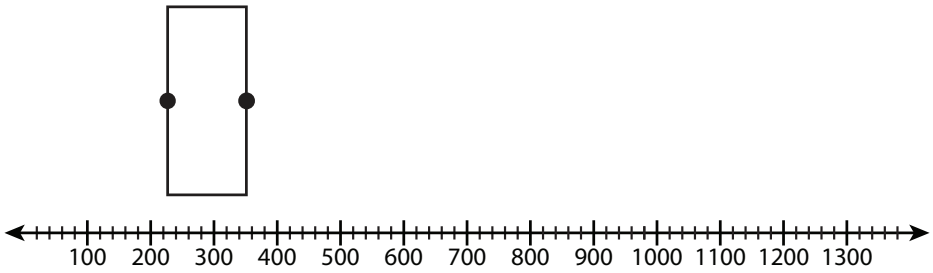
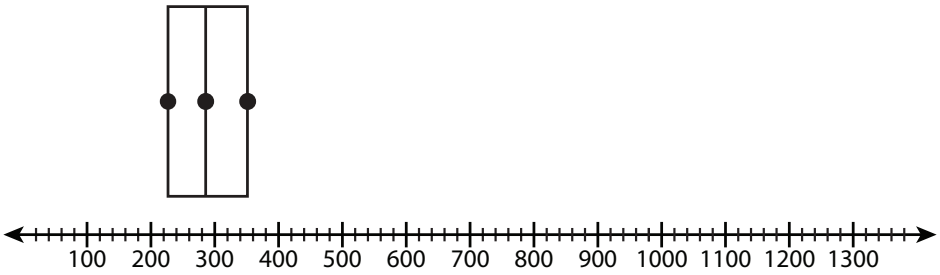
6. Draw a box, beginning at the first quartile and ending at the third quartile.

   The first quartile is 224.5 and the third quartile is 355.



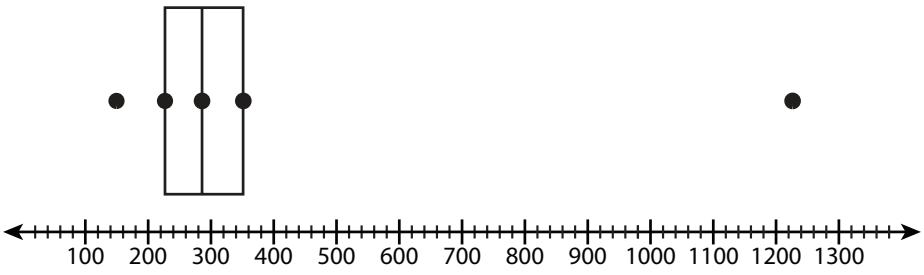
7. Draw a line in the box at the median.

   The median is 281.



8. Draw a point at the minimum and maximum data values.

   The minimum is 145 and the maximum is 1,226.



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