LESSON 10-2 Practice A
Frequency and Histograms

1. The number of rushing yards completed by a running back on a professional football team in each of the 16 regular season games is given. Use the data to make a stem-and-leaf plot with a title and a key.

Rushing Yards							
43	52	98	96	74	32	73	54
57	48	65	78	72	83	54	68

Rushing Yards

stem	leaves
3	2
4	3 8
5	2 4 4 7
6	5 8
7	2 3 4 8
8	3
9	6 8

Key: 4|3 means 43

2. The test scores for two Algebra classes are shown in the stem-and-leaf plot.

Period 5		Period 3
4 2 0 0	5	3
6 5 2	6	8 9
7 7 4 2	7	2 9 9
8 3	8	4 4 4
9 3 1	9	1 3 3 6
	10	0 0

Key: 6|8 means 68
3|8| means 83

a. How many students scored 100? 2

b. How many students in Period 5 scored greater than 80? 5

c. What was the lowest score in Period 3? 53

d. Which Period had more scores? How many more? Period 5; 1

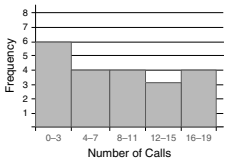
3. The number of calls per day to a fire and rescue service for three weeks is given below. Use the data to complete the frequency table.

Calls for Service										
5	17	2	12	0	6	3	8	15	1	4
19	16	8	2	11	13	18	3	10	6	

Fire and Rescue Service	
Number of Calls	Frequency
0 - 3	6
4 - 7	4
8 - 11	4
12 - 15	3
16 - 19	4

4. Use the frequency table in Exercise 3 to make a histogram with a title and axis labels.

Fire and Rescue Service



5. Which intervals have the same frequency?

4–7, 8–11, 16–19

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LESSON 10-2 Practice B
Frequency and Histograms

1. Heights of two groups of plants after two weeks are given at right.

Group A		Group B
	1	2
	2	3 4
9 7 3 3	3	5 5 8
8 1	4	1
0	5	

Key: 2|3 means 2.3
1|4| means 1.4

a. Which group had the tallest plant? What was its height? A; 5.0

b. One group had twice as much sunlight as the other. Which group do you think it was? Explain.

A; most of the heights are greater than group B.

2. The receiving yards completed by two wide receivers on different professional football teams in each of the 16 regular season games is given. Use the data to make a back-to-back stem-and-leaf plot.

Player A: 32, 17, 94, 79, 68, 73, 63, 84, 72, 73, 45, 69, 94, 89, 84, 34

Player B: 79, 12, 97, 73, 54, 82, 21, 32, 28, 67, 74, 88, 41, 38, 78, 67

Receiving Yards

Player B		Player A
2	1	7
8 1	2	
8 2	3	2 4
1	4	5
4	5	
7 7	6	3 8 9
9 8 4 3	7	2 3 3 9
8 2	8	4 4 9
7	9	4 4

Key: 3|2 means 32
3|7| means 73

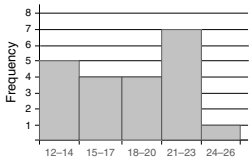
3. The number of calls per day received by a traveling Vet Van service for three weeks is given below. Use the data to make a frequency table with intervals.

Number of Calls						
18	22	13	15	16	21	22
26	17	14	12	13	18	14
16	22	23	20	21	18	22

Vet Van	
Number of Calls	Frequency
12 - 14	5
15 - 17	4
18 - 20	4
21 - 23	7
24 - 26	1

4. Use the frequency table in Exercise 3 to make a histogram.

Vet Van



5. Complete the "third column" for the table in Exercise 3 to make it a cumulative frequency table.

Cumulative Frequency
5
9
13
20
21

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LESSON 10-2 Practice C
Frequency and Histograms

1. The costs of houses in one neighborhood, in hundred thousands, is given at right.

Cost of Housing

1	8 8
2	2 3 7
3	5
4	0

Key: 2|3 means 230,000

a. Which cost occurs twice? 180,000

b. What is the cost of the most expensive house? 400,000

2. The total team rushing yards for two professional football teams in each of the 16 regular season games is given. Use the data to make a back-to-back stem-and-leaf plot.

Team A: 112 198 176 154 101 132 137 149 189 172 117 119 173 154 149 177

Team B: 192 167 155 147 138 142 151 168 188 112 108 139 141 154 126 138

Rushing Yards

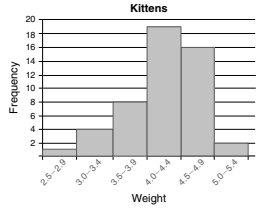
Team B		Team A
8	10	1
2	11	2 7 9
6	12	
9 8 8	13	2 7
7 2 1	14	9 9
5 4 1	15	4 4
8 7	16	
	17	2 3 6 7
8	18	9
2	19	8

Key: 13|2 means 132
8|18| means 188

3. The weights of 50 kittens are given below. Use the data to make a histogram. Use 2.5 – 2.9 for the first interval.

Weights (lbs)									
4.0	4.5	4.8	4.3	5.2	4.6	4.7	2.6	4.0	4.6
4.8	4.2	4.5	4.3	4.2	4.1	4.7	4.5	3.1	4.0
4.0	4.2	4.1	5.4	4.5	3.2	4.4	3.5	4.8	3.9
4.9	4.8	4.7	4.0	3.6	4.0	3.9	3.2	4.1	3.7
4.1	3.3	4.9	4.2	3.8	3.9	4.9	4.2	3.7	4.4

Kittens



4. Several people were asked how many miles their workplace is from home. The results are shown below.

Distance to Work (mi)					
11	21	14	39	1	18
37	24	2	93	12	26
10	6	41	7	52	30

Distance to Work		
Miles	Frequency	Cumulative Frequency
0 - 19	9	9
20 - 39	6	15
40 - 59	2	17
60 - 79	0	17
80 - 99	1	18

a. Use the data to make a cumulative frequency table.

b. What percent of people surveyed work less than 40 miles from home? ≈ 83%

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LESSON 10-2 Reteach
Frequency and Histograms

A **stem-and-leaf plot** arranges data by dividing each data value into two parts: a leaf (the last digit), and a stem (the digit or digits other than the last digit).

The amount of money collected by each student for the drama club is shown below. Use the data to make a stem-and-leaf plot.

55, 82, 90, 113, 100, 90, 93, 68, 66, 108, 116, 56, 85, 89, 102, 103

Step 1: List the stems.

The least value is 55, the greatest value is 116. List stems from 5 to 11. Do not omit any stems.

Step 2: List the leaves.

For each stem, write the ones digit from least to greatest.

Step 3: Write a key explaining one value.

Stems	Leaves
5	5 6
6	6 8
7	
8	2 5 9
9	0 0 3
10	0 2 3 8
11	3 6

Key: 8|2 means 82

The test scores from two different math classes are shown below. Use the data to make a back-to-back stem-and-leaf plot.

Class A: 50, 68, 95, 80, 92, 100, 98, 85, 82, 81
Class B: 75, 81, 100, 63, 52, 94, 100, 100, 87, 99

Step 1: List the stems.

The lowest value is 50, the highest value is 100. List stems from 5 to 10. Do not omit any stems.

Step 2: List the leaves.

For each stem, write the ones digit from least to greatest.

Step 3: Write a key explaining one value from each side.

Leaves (Class A)	Stems	Leaves (Class B)
	5	2
8	6	3
	7	5
5 2 1 0	8	1 7
8 5 2	9	4 9
	10	0 0 0

Key: |8|1 means 81
5|9| means 95

1. The daily low temperatures in degrees Fahrenheit in a town in the Northeast are given below. Use the data to make a back-to-back stem-and-leaf plot.

Daily Low Temperatures (°F)					
40	56	50	60	62	63
49	48	49	40	36	59
57	52	53	42	44	39

Daily High Temperatures (°F)					
70	84	71	73	71	70
73	78	76	65	65	67
66	76	69	70	70	58

Low Temp		High Temp
	9 6	3
9 9 8 4 2 0 0	4	
9 7 6 3 2 0	5	8
3 2 0	6	5 5 6 7 9
	7	0 0 0 0 1 1 3 3 6 6 8
	8	4

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LESSON 10-2 Reteach

Frequency and Histograms (continued)

The ages of people visiting a water park during a certain time period are given below. Use the data to make a frequency table with intervals. Then make a histogram.

5, 12, 22, 15, 17, 13, 25, 34, 7, 9, 12, 32, 12, 15, 18

Step 1: Find the difference between the greatest and least values.

Least: 5 Greatest: 34

$34 - 5 = 29$

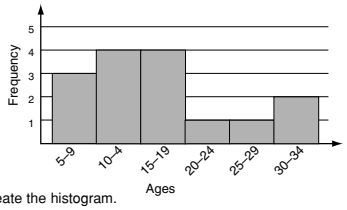
Step 2: Use the difference to decide on intervals. ⟹

Try different widths for your intervals to determine the number of bars in the histogram.

Finding the Interval		
If width of interval is:	Then divide:	The number of intervals is:
10	$\frac{29}{10} = 2.9$	3 (too few)
3	$\frac{29}{3} \approx 9.7$	10 (too many)
5	$\frac{29}{5} = 5.8$	6 (good)

Step 3: Create the frequency table.

Ages of Visitors	
Age	Frequency
5 - 9	3
10 - 14	4
15 - 19	4
20 - 24	1
25 - 29	1
30 - 34	2

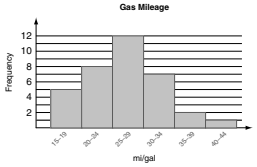


Step 4: Use the frequency table to create the histogram. Draw each bar to the corresponding frequency.

2. The estimated miles per gallon for selected cars are shown in the table. Use the data to make a frequency table with intervals. Then make a histogram.

26	28	32	33	26	15	21
35	17	18	25	29	30	26
27	30	24	25	24	32	25
19	22	32	25	31	28	23
27	23	24	20	38	44	18

Car Gas Mileage	
mi/gal	Frequency
15-19	5
20-24	8
25-29	12
30-34	7
35-39	2
40-44	1



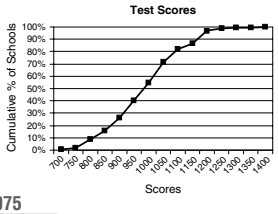
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LESSON 10-2 Challenge

Ogives

You have learned how to create a cumulative frequency table. A graph of a cumulative frequency table is called an **ogive**. Ogives are often presented in terms of percentage.

The test scores of 280 schools are shown. Use the graph to estimate your answers below.



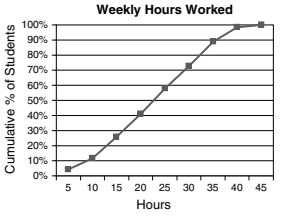
1. What percent of schools had scores less than 1000? 55%
2. How many schools had scores less than 1000? 154
3. What percent of schools scored less than 850? 18%
4. What is the median score? 980
5. Seventy-five percent of schools scored less than what score? 1075
6. A survey was taken of 546 students with jobs. They were asked how many hours they worked per week, on average. Complete the table. Round to the nearest whole percent.

Average Weekly Hours	Frequency	Cumulative Frequency	Cumulative Percentage
0-4	22	22	4%
5-9	40	62	11%
10-14	78	140	26%
15-19	85	225	41%
20-24	90	315	58%
25-29	83	398	73%
30-34	88	486	89%
35-39	52	538	99%
40-44	8	546	100%

7. Draw the ogive.

Use the ogive to answer the following.

8. In which interval does the rate of change increase by the least amount? 40–44
9. Give the range of hours in which the rate of increase appears constant. 10–34



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LESSON 10-2 Problem Solving

Frequency and Histograms

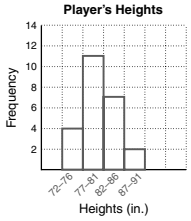
The heights in inches of the 2005 NBA All-Star Game players are given below.

Player's Heights (in.)											
75	78	80	87	72	80	81	83	85	78	76	81
77	78	83	83	78	82	79	80	75	84	82	90

1. Use the data to make a frequency table with intervals. Use an interval of 5.

Player's Heights	
Heights (in.)	Frequency
72–76	4
77–81	11
82–86	7
87–91	2

2. Use your frequency table to make a histogram for the data.



Select the best answer.

3. The stem-and-leaf plot below gives the file sizes of the songs on two albums after being converted to mp3 files. What is the largest file size for Album 1?

MP3 File Sizes (megabytes)

Album 1		Album 2
0	5	0 1 2 4 5 5 8
6 6 5 3 1	6	0 6 7
7 3 0	7	3 6 8
3 1	8	6
8 7 2 0	9	9

Key: 1 8 | 6 *means 8.6 MB*

1 | 8 1 *means 8.1 MB*

A 6.6 MB **C** 9.8 MB
B 8.9 MB **D** 9.9 MB

4. The cumulative frequency table below gives the scores of 100 students on a standardized mathematics test. How many students scored between 400 and 499?

Standardized Test Scores	
Scores	Cumulative Frequency
200–299	1
300–399	3
400–499	19
500–599	50
600–699	85
700–799	100

F 15 **H** 19
G 16 **J** 31

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LESSON 10-2 Reading Strategies

Use a Model

When creating or reading a stem-and-leaf plot, it is important to identify the correct stems and leaves. Use the models below as a guide.

The **stems** must be in order. No stem can be skipped, even if there is no leaf.

Ages

1	1 1 5 6
2	0 8 8
3	
4	8 9 9
5	5 6
6	2

The **key** identifies the values of the numbers in the plot.

Key: | 4 | 8 means 48

No matter what the data, the **leaves** represent the last digit and the stems are the rest of the number.

A **back-to-back stem-and-leaf plot** has the same stem for both sets of data.

Group 1			Group 2			
4	3	1	4	2	5	5
9	7	5	0	3	7	8
		6	1			
	2	7	4	4	6	
6	1	0	8	3	9	

Key: | 7 | 4 means 0.74 g
2 | 7 | means 0.72 g

Each leaf represents a value from a data set. Therefore, the number of leaves is equal to the number of data values.

The leaves increase in order as they get further from the stem.

Complete the following.

1. Look at the first stem-and-leaf plot. Which stem has no leaf? 3
   List the ages from least to greatest. 11, 11, 15, 16, 20, 28, 28, 48, 49, 49, 55, 56, 62
2. Look at the back-to-back stem-and-leaf plot.
   Which group has more data values? Group 2 How many more? 4
3. What would the stems be if a stem-and-leaf plot were created for the data set:
   39, 52, 67, 68, 71, 75, 84, 84, 86, 88, 91, 100? 3, 4, 5, 6, 7, 8, 9, 10
   How many leaves would be on the stem labeled 8? 4
4. The weights, in pounds, of wrestlers competing in a certain weight class at a competition are given below. Create a stem-and-leaf plot of the data. Include a key.

145, 139, 150, 144, 146, 150, 138, 143, 148, 144, 149, 151, 146, 139, 142

Weights

13	8 9 9
14	2 3 4 4 5 6 6 8 9
15	0 0 1

Key: 14 | 2 means 142 lb

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