

## TOPIC: FREQUENCY DISTRIBUTIONS AND HISTOGRAMS

### Frequency Distributions

"frequency"

"classes"

◆ **Frequency Distribution Table:** Table showing \_\_\_\_\_ of measurements across \_\_\_\_\_ of data.

**New**

**Frequency Distribution**

| Recorded Speed of Cars on Highway |    |    |    |    |    |    |    |    |    |    |    |
|-----------------------------------|----|----|----|----|----|----|----|----|----|----|----|
| 74                                | 68 | 51 | 68 | 87 | 50 | 82 | 60 | 65 | 51 | 59 | 86 |

| Speed in mph<br>(Class Intervals) | Tally | Frequency |
|-----------------------------------|-------|-----------|
| 50 – 59                           |       |           |
| 60 – 69                           |       |           |
| 70 – 79                           |       |           |
| 80 – 89                           |       |           |

(A) How many drivers were going 59 mph or less?

(B) How many drivers were going 60 mph or above?

◆ When choosing class intervals for a frequency distribution, they should be *evenly* spaced and NOT overlap.

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### EXAMPLE

Below is the afternoon temperatures (in °C) that were recorded over 15 days. Construct a frequency distribution table using the given class intervals.

18, 22, 25, 21, 27,  
30, 24, 19, 26, 23,  
28, 20, 31, 29, 22

| Class Interval (°C) | Tally | Frequency |
|---------------------|-------|-----------|
| 18 – 20             |       |           |
| 21 – 23             |       |           |
| 24 – 26             |       |           |
| 27 – 29             |       |           |
| 30 – 32             |       |           |
| Total               |       |           |

### EXAMPLE

A gardener measured the heights (in centimeters) of 25 sunflower plants. Construct a frequency distribution table using the given class intervals. Include the tally marks and class frequencies.

42, 47, 51, 45, 53,  
49, 56, 44, 58, 52,  
46, 55, 43, 54, 50,  
48, 57, 41, 59, 45,  
47, 53, 51, 56, 49

| Class Interval (cm) | Tally | Frequency |
|---------------------|-------|-----------|
| 40 – 43             |       |           |
| 44 – 47             |       |           |
| 48 – 51             |       |           |
| 52 – 55             |       |           |
| 56 – 59             |       |           |
| Total               |       |           |

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### PRACTICE

The frequency distribution table below lists the salary of various workers in the Chicago area.

| Class Interval (\$1000) | Tally | Frequency |
|-------------------------|-------|-----------|
| 50 – 59                 |       | 2         |
| 60 – 69                 |       | 3         |
| 70 – 79                 | –     | 6         |
| 80 – 89                 |       | 5         |
| 90 – 99                 |       | 3         |
| Total                   |       | 19        |

(A) How many individuals are making 80k or more annually?

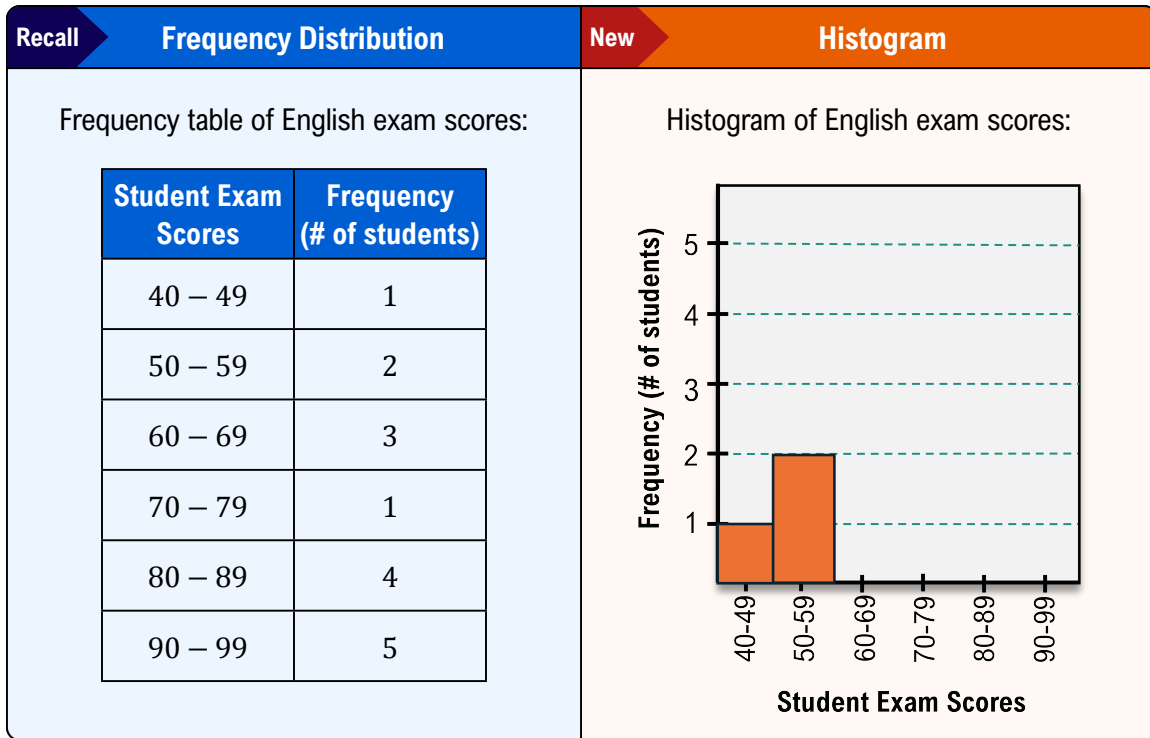
(B) What is the most common average salary range in the area?

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### Histograms

◆ **Histogram:** A bar graph based on a frequency distribution where bars are touching.

► In a **histogram**, the [ **HORIZ. | VERTICAL** ] axis is the class while the [ **HORIZ. | VERTICAL** ] axis is frequency.

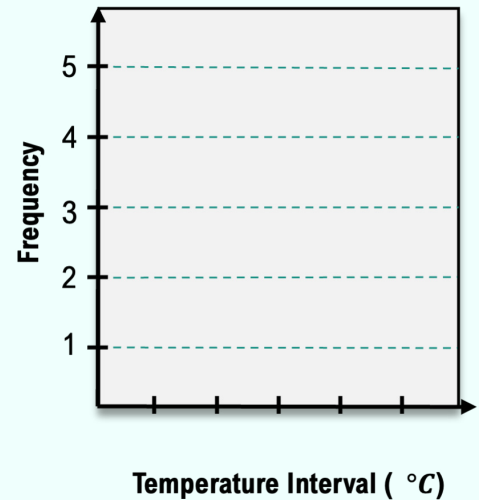


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### EXAMPLE

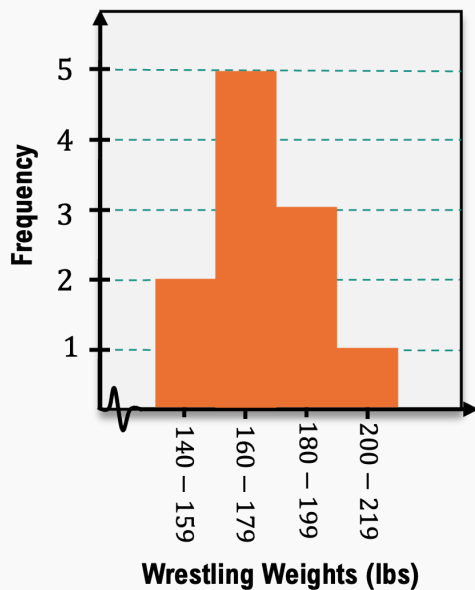
The frequency distribution table shows the afternoon temperature in various cities. Use this table to construct a histogram.

| Class Interval ( $^{\circ}\text{C}$ ) | Tally | Frequency |
|---------------------------------------|-------|-----------|
| 18 – 20                               |       | 1         |
| 21 – 23                               |       | 5         |
| 24 – 26                               |       | 4         |
| 27 – 29                               |       | 3         |
| 30 – 32                               |       | 2         |
| Total                                 |       | 15        |



### PRACTICE

The weights of a group of college wrestlers were recorded based on the histogram below:



- (A) Estimate how many athletes are between 180 and 199 pounds.
- (B) What is the most common weight range amongst athletes?
- (C) Estimate how many athletes are under 200 pounds.