

## CHAPTER 2

### Displaying Descriptive Statistics

#### 2.1

- a)  $2^7 = 128 > 100$  therefore use 7 classes.  
 b)  $2^9 = 512 > 300$  therefore use 9 classes.  
 c)  $2^{10} = 1,024 > 1,000$  therefore use 10 classes.  
 d)  $2^{11} = 2,048 > 2,000$  therefore use 11 classes.

2.2  $2^6 = 64 > 50$  therefore use 6 classes.

$$\text{Estimated Class Width} = \frac{74-16}{6} = 9.7 \approx 10$$

- a) 16-25, 26-35, 36-45, 46-55, 56-65, 66-75  
 b) 16 to under 26, 26 to under 36, 36 to under 46,  
 46 to under 56, 56 to under 66, 66 to under 76

#### 2.3

| Number       | Frequency | Relative Frequency | Cumulative Relative Frequency |
|--------------|-----------|--------------------|-------------------------------|
| 1            | 6         | 0.250              | 0.250                         |
| 2            | 6         | 0.250              | 0.500                         |
| 3            | 5         | 0.208              | 0.708                         |
| 4            | 4         | 0.167              | 0.875                         |
| 5            | 3         | 0.125              | 1.00                          |
| <b>Total</b> | <b>24</b> | <b>1.00</b>        |                               |

2.4  $2^5 = 32 > 30$  therefore use 5 classes.

$$\text{Estimated Class Width} = \frac{42.8-13.9}{5} = 5.8 \approx 6$$

| Class              | Frequency | Relative Frequency | Cumulative Relative Frequency |
|--------------------|-----------|--------------------|-------------------------------|
| 13 to less than 19 | 6         | 0.200              | 0.200                         |
| 19 to less than 25 | 11        | 0.367              | 0.567                         |
| 25 to less than 31 | 4         | 0.133              | 0.700                         |
| 31 to less than 37 | 7         | 0.233              | 0.933                         |
| 37 to less than 43 | 2         | 0.067              | 1.0                           |
| <b>Total</b>       | <b>30</b> | <b>1.00</b>        |                               |

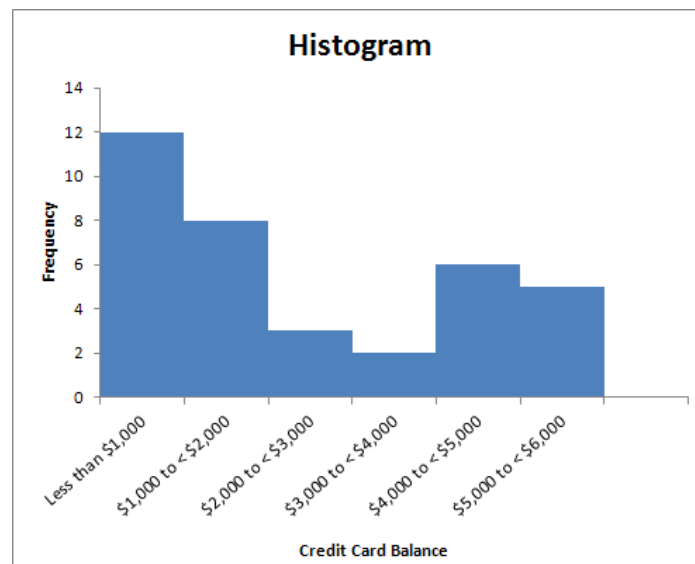
**2.5**  $2^6 = 64 > 36$  therefore use 6 classes.

$$\text{Estimated Class Width} = \frac{\$5,927 - \$162}{6} = \$960 \approx \$1,000$$

**a, b, c)**

| Class                        | Frequency | Relative Frequency | Cumulative Relative Frequency |
|------------------------------|-----------|--------------------|-------------------------------|
| Less than \$1,000            | 12        | 0.333              | 0.333                         |
| \$1,000 to less than \$2,000 | 8         | 0.222              | 0.555                         |
| \$2,000 to less than \$3,000 | 3         | 0.083              | 0.638                         |
| \$3,000 to less than \$4,000 | 2         | 0.056              | 0.694                         |
| \$4,000 to less than \$5,000 | 6         | 0.167              | 0.861                         |
| \$5,000 to less than \$6,000 | 5         | 0.139              | 1.000                         |
| <b>Total</b>                 | <b>36</b> | <b>1.000</b>       |                               |

**d)** The following histogram was constructed using bins \$999, \$1,999, \$2,999, \$3,999, \$4,999, and \$5,999.



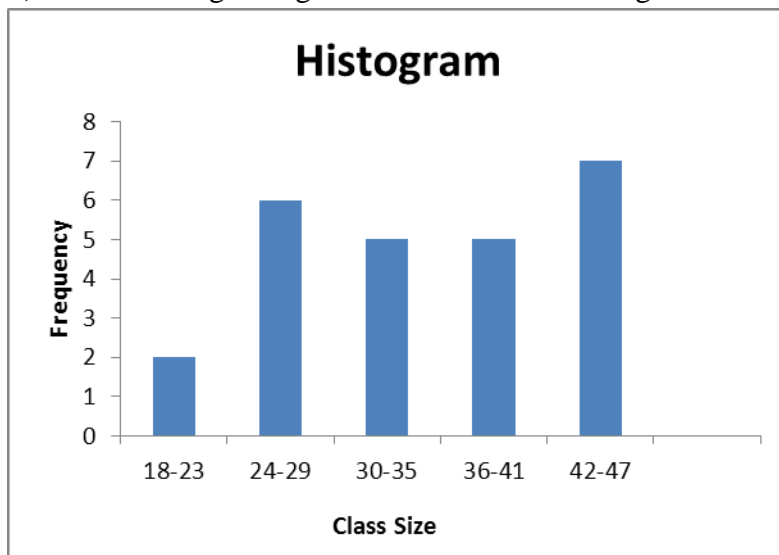
**2.6**  $2^5 = 32 > 25$  therefore use 5 classes.

$$\text{Estimated Class Width} = \frac{46-18}{5} = 5.6 \approx 6$$

**a, b, c)**

| <b>Class</b> | <b>Frequency</b> | <b>Relative<br/>Frequency</b> | <b>Cumulative<br/>Relative<br/>Frequency</b> |
|--------------|------------------|-------------------------------|--|
| 18-23        | 2                | 0.08                          | 0.08   |
| 24-29        | 6                | 0.24                          | 0.32   |
| 30-35        | 5                | 0.20                          | 0.52   |
| 36-41        | 5                | 0.20                          | 0.72   |
| 42-47        | 7                | 0.28                          | 1.00   |
| <b>Total</b> | <b>25</b>        | <b>1.00</b>                   |  |

**d)** The following histogram was constructed using bins 22.9, 28.9, 34.9, 40.9, and 46.9.

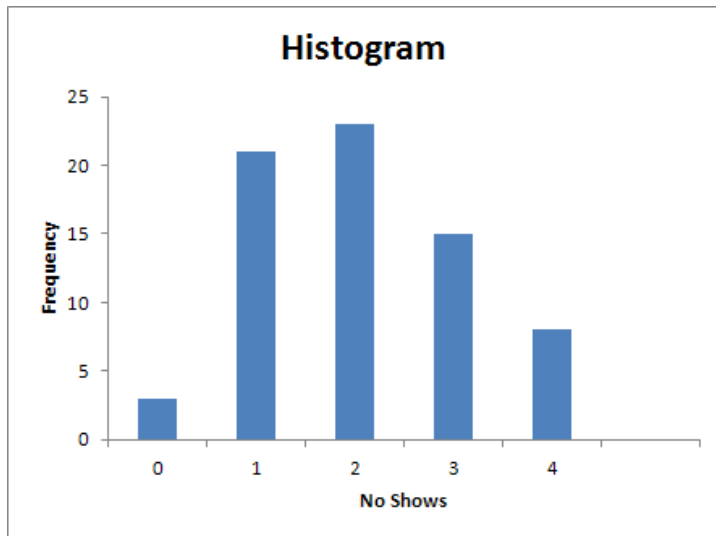


## 2.7

a, b, c)

| Number       | Frequency | Relative Frequency | Cumulative Relative Frequency |
|--------------|-----------|--------------------|-------------------------------|
| 0            | 3         | 0.043              | 0.043                         |
| 1            | 21        | 0.300              | 0.343                         |
| 2            | 23        | 0.329              | 0.672                         |
| 3            | 15        | 0.214              | 0.886                         |
| 4            | 8         | 0.114              | 1.000                         |
| <b>Total</b> | <b>70</b> | <b>1.000</b>       |                               |

d) The following histogram was constructed using bins 0, 1, 2, 3, and 4.



2.8  $2^6 = 64 > 40$  therefore use 6 classes.

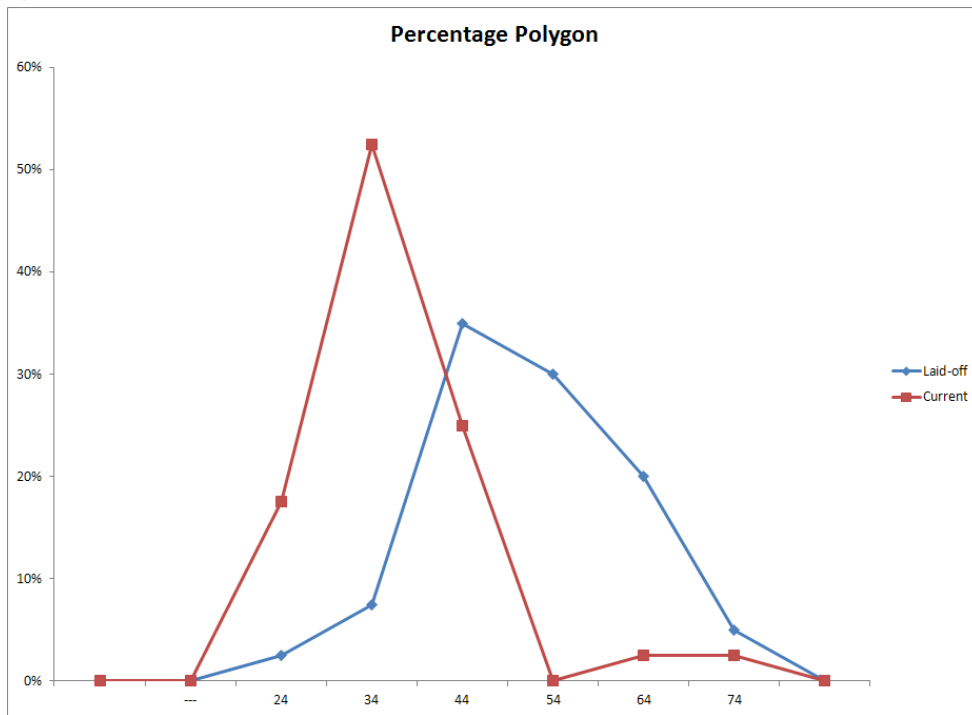
$$\text{Estimated Class Width (Current)} = \frac{76-19}{6} = 9.5 \approx 10$$

Results would be similar using the laid-off ages.

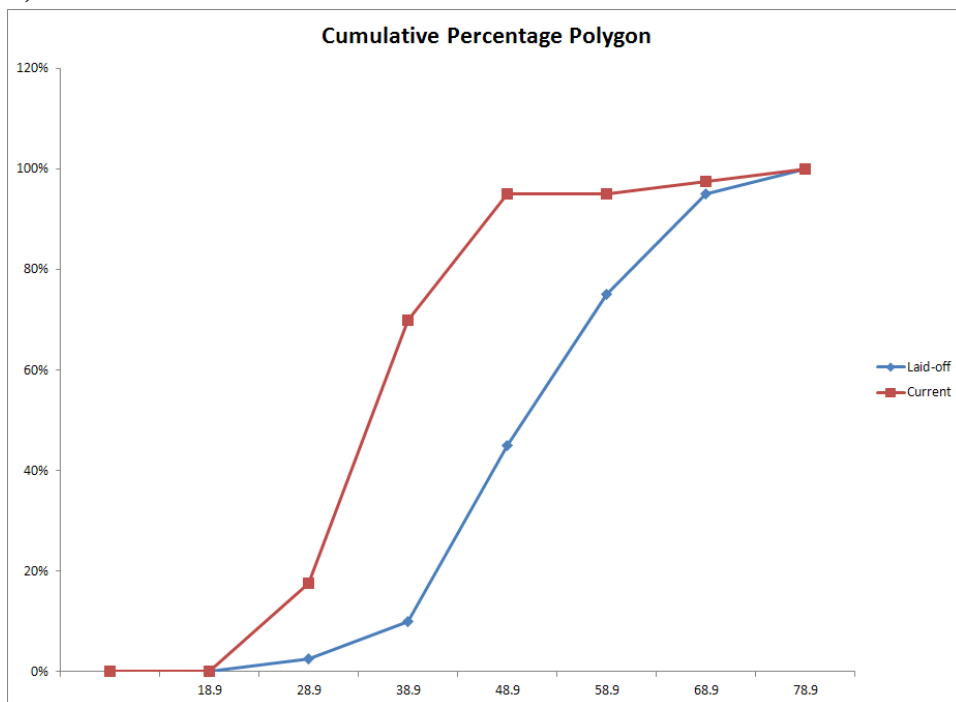
| Class              | Bins | Midpoint |
|--------------------|------|----------|
| 19 to less than 29 | 28.9 | 24       |
| 29 to less than 39 | 38.9 | 34       |
| 39 to less than 49 | 48.9 | 44       |
| 49 to less than 59 | 58.9 | 54       |
| 59 to less than 69 | 68.9 | 64       |
| 69 to less than 79 | 78.9 | 74       |

An extra bin (18.9) was added to Excel to provide the open-ended class required by PHStat2.

a)



b)



c) According to these polygons, it appears that the current workforce is younger than the laid-off employees. It appears that the laid-off employees may have a case for age discrimination.

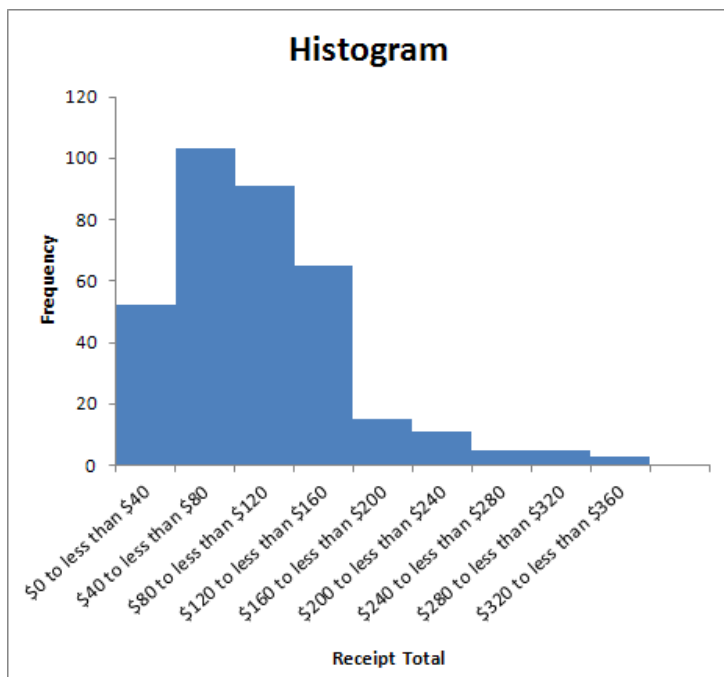
2.9  $2^9 = 512 > 350$  therefore use 9 classes.

$$\text{Estimated Class Width} = \frac{\$349.99 - \$2.19}{9} = \$38.64 \approx \$40$$

a, b, c)

| Class                    | Frequency  | Relative Frequency | Cumulative Relative Frequency |
|--------------------------|------------|--------------------|-------------------------------|
| Less than \$40           | 52         | 0.149              | 0.149                         |
| \$40 to less than \$80   | 103        | 0.294              | 0.443                         |
| \$80 to less than \$120  | 91         | 0.260              | 0.703                         |
| \$120 to less than \$160 | 65         | 0.186              | 0.889                         |
| \$160 to less than \$200 | 15         | 0.043              | 0.932                         |
| \$200 to less than \$240 | 11         | 0.031              | 0.963                         |
| \$240 to less than \$280 | 5          | 0.014              | 0.977                         |
| \$280 to less than \$320 | 5          | 0.014              | 0.991                         |
| \$320 to less than \$360 | 3          | 0.009              | 1.000                         |
| <b>Total</b>             | <b>350</b> | <b>1.000</b>       |                               |

d) The following histogram was constructed using bins 39.999, 79.999, 119.999, 159.999, 199.999, 239.999, 279.999, 319.999, and 359.999.



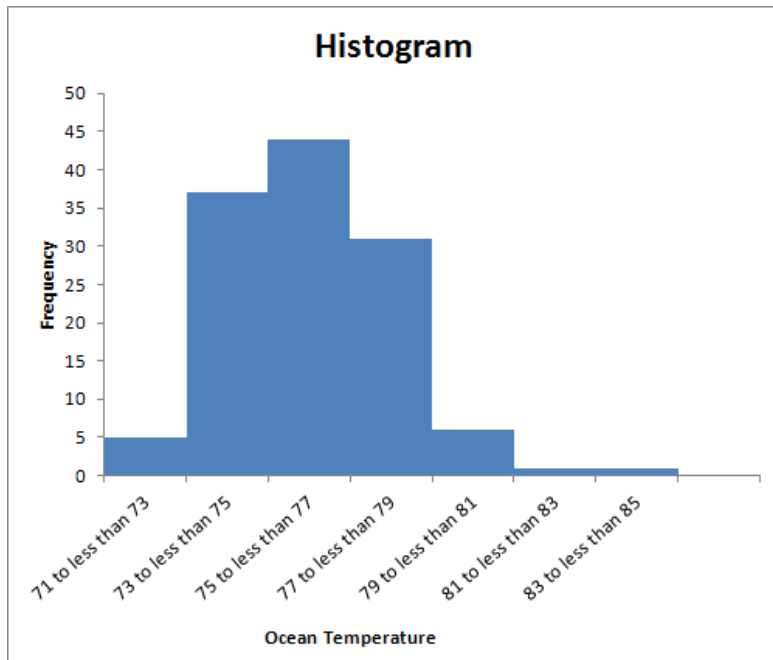
**2.10**  $2^7 = 128 > 125$  therefore use 7 classes.

$$\text{Estimated Class Width} = \frac{83.2 - 71.0}{7} = 1.7 \approx 2$$

**a, b, c)**

| <b>Class</b>       | <b>Frequency</b> | <b>Relative Frequency</b> | <b>Cumulative Relative Frequency</b> |
|--------------------|------------------|---------------------------|--------------------------------------|
| 71 to less than 73 | 5                | 0.040                     | 0.040                                |
| 73 to less than 75 | 37               | 0.296                     | 0.336                                |
| 75 to less than 77 | 44               | 0.352                     | 0.688                                |
| 77 to less than 79 | 31               | 0.248                     | 0.936                                |
| 79 to less than 81 | 6                | 0.048                     | 0.984                                |
| 81 to less than 83 | 1                | 0.008                     | 0.992                                |
| 83 to less than 85 | 1                | 0.008                     | 1.000                                |
| <b>Total</b>       | <b>125</b>       | <b>1.000</b>              |                                      |

**d)** The following histogram was constructed using bins 72.99, 74.99, 76.99, 78.99, 80.99, 82.99, and 84.99.



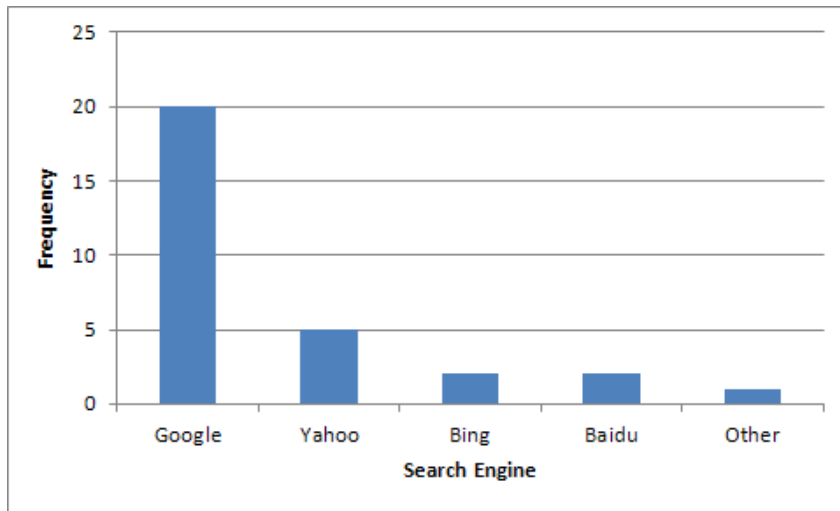
**e)** For 68.8% of the days, ocean temps were lower than 70 degrees.

## 2.11

a, b, c)

| Category     | Frequency | Relative Frequency | Cumulative Relative Frequency |
|--------------|-----------|--------------------|-------------------------------|
| Google       | 20        | 0.667              | 0.667                         |
| Yahoo        | 5         | 0.167              | 0.833                         |
| Bing         | 2         | 0.067              | 0.900                         |
| Baidu        | 2         | 0.067              | 0.967                         |
| Other        | 1         | 0.033              | 1.000                         |
| <b>Total</b> | <b>30</b> | <b>1.000</b>       |                               |

d)



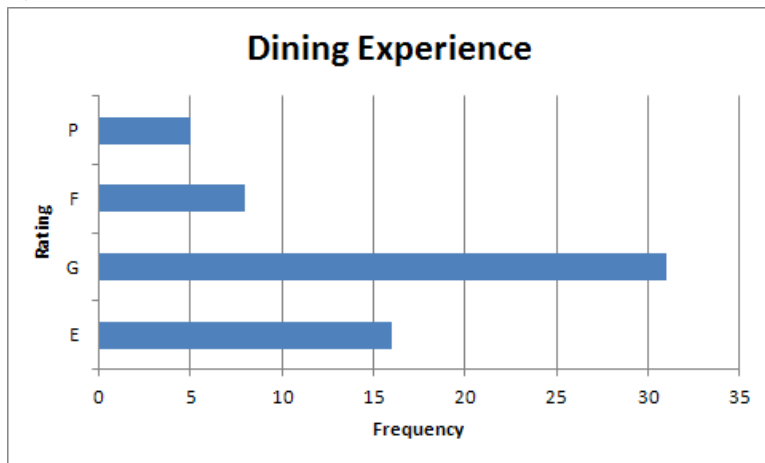
## 2.12

a, b, c)

| Category     | Frequency | Relative Frequency | Cumulative Relative Frequency |
|--------------|-----------|--------------------|-------------------------------|
| Excellent    | 16        | 0.267              | 0.267                         |
| Good         | 31        | 0.517              | 0.783                         |
| Fair         | 8         | 0.133              | 0.917                         |
| Poor         | 5         | 0.083              | 1.000                         |
| <b>Total</b> | <b>60</b> | <b>1.000</b>       |                               |

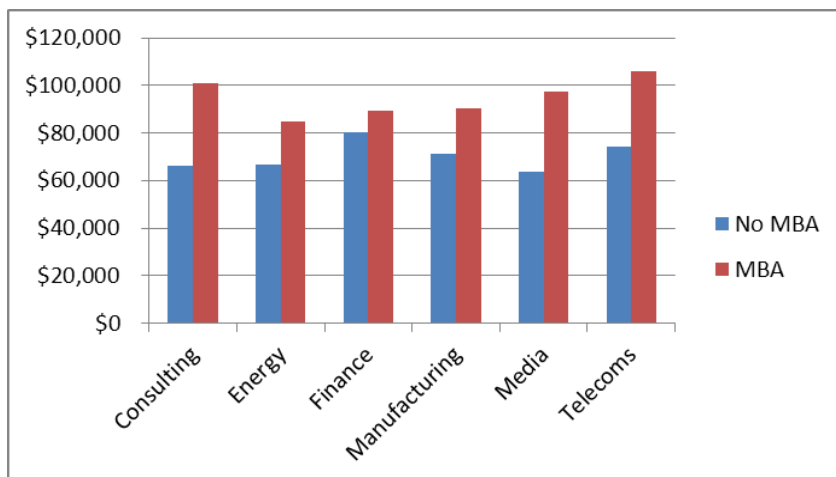


d)

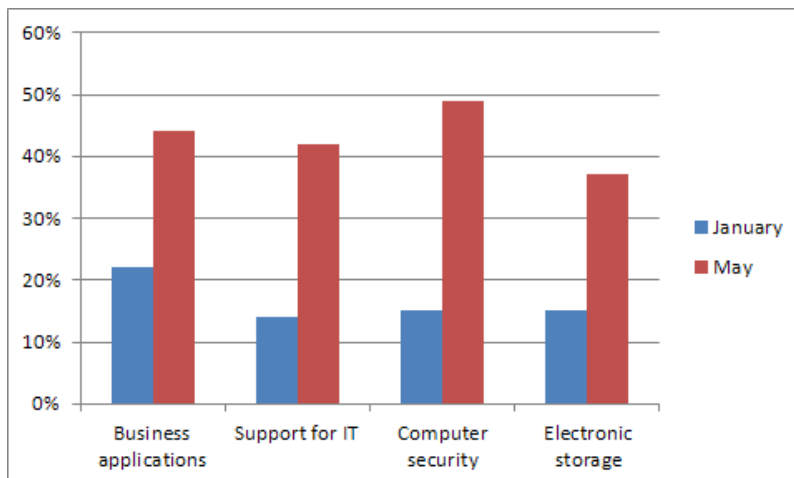


e) 78.3% rated their dining experience as either Excellent or Good.

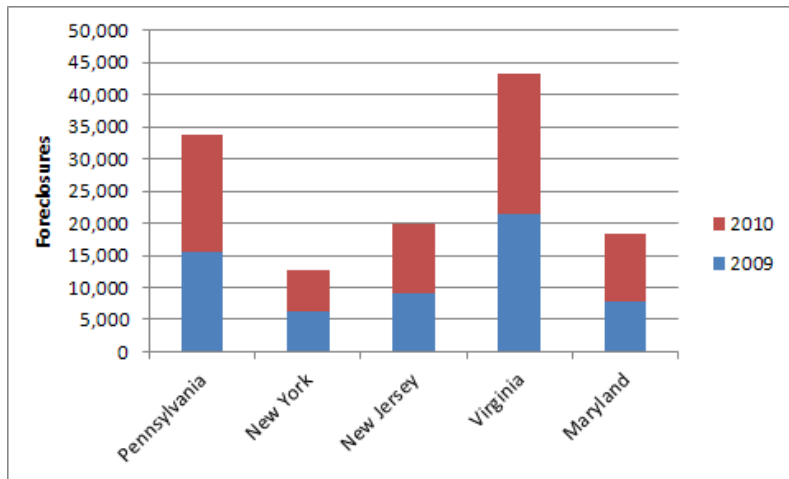
## 2.13



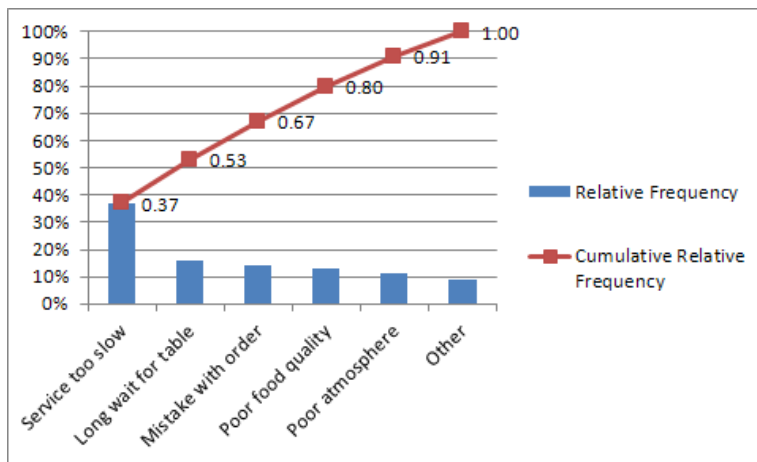
## 2.14



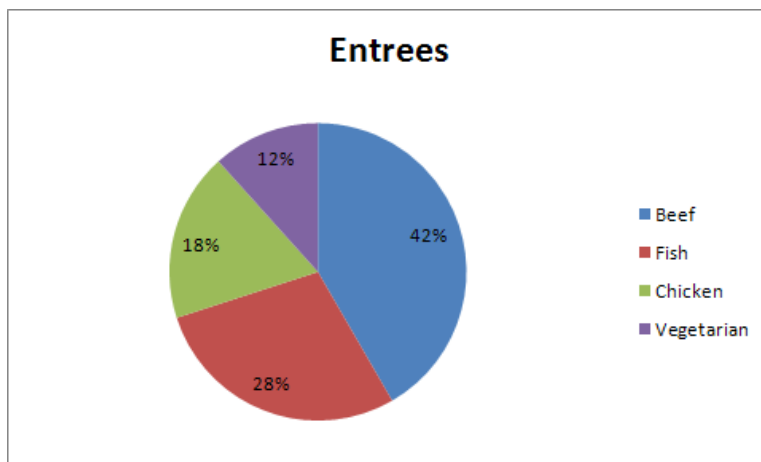
## 2.15



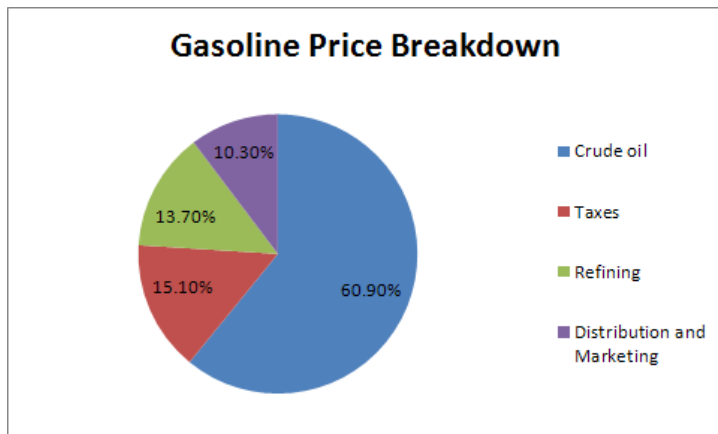
## 2.16



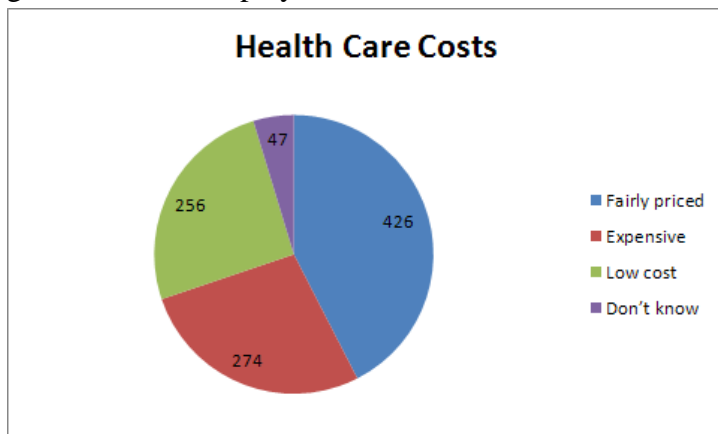
## 2.17



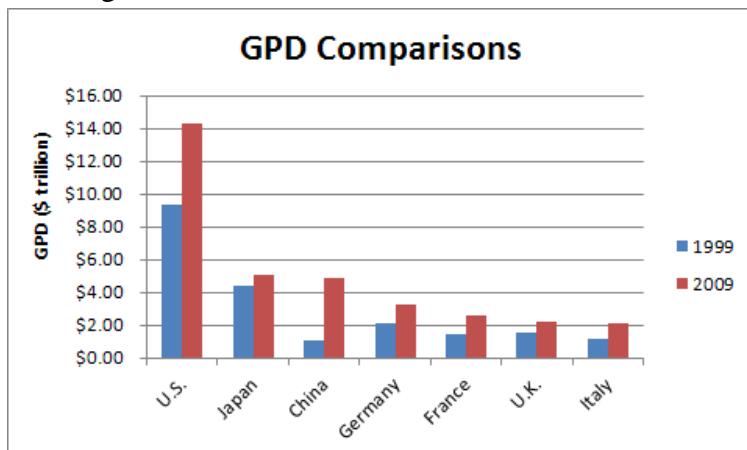
2.18



2.19 Because all the possible categories appear to be included in the data, a pie chart would be a good choice to display this data.



2.20 Because we are comparing data from a sample of countries over different time periods, a clustered bar chart would be a good choice to display this data. A stacked bar chart would not be the best choice because adding the GDPs for 2 time periods that are 10 years apart is not very meaningful.



### 2.21

| Grade | Female | Male | Total |
|-------|--------|------|-------|
| A     | 5      | 2    | 7     |
| B     | 5      | 7    | 12    |
| C     | 2      | 3    | 5     |
| Total | 12     | 12   | 24    |

71% (5/7) of the As were earned by females even though they comprise of 50% (12/24) of the students in the class. The females appear to have done better grade-wise than the males.

### 2.22

| Rating | Darby | Exton | Media | Total |
|--------|-------|-------|-------|-------|
| 1      | 0     | 2     | 3     | 5     |
| 2      | 2     | 3     | 8     | 13    |
| 3      | 6     | 7     | 7     | 20    |
| 4      | 7     | 3     | 2     | 12    |
| Total  | 15    | 15    | 20    | 50    |

Darby received 58% (7/12) of the 4-star ratings even though they were only 30% (15/50) of the surveyed customers. Darby appears to have higher customer satisfaction when compared to the other two locations.

### 2.23

7 | 1 2 3 4 5 8 8 9  
8 | 0 3 6 6 7 7  
9 | 0 0 4 7 9  
10 | 0 1 7 7  
11 | 0 1 1 2 5 6 8  
12 | 0 0 2 5 6  
13 | 0 4 4 7 9

### 2.24

10 | 0 2 5 8 8 9  
11 | 0 1 2 3 3 4 4 5  
12 | 1 1 1 2 3 3 5 6 7 7 9  
13 | 0 2 2 6 7 7 7 9  
14 | 0 0 2 5 6  
15 | 0

**2.25 a)**

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

**b)**

1 (0) | 3  
1 (5) | 6  
2 (0) | 1 2 3 4  
2 (5) | 7 9  
3 (0) |  
3 (5) | 5 7 7 7 8  
4 (0) | 0 0 1 2 3 3 4 4  
4 (5) | 5 5 7 8 8 9  
5 (0) | 0 0 1 1 2 2 4  
5 (5) | 5 8 9  
6 (0) | 4  
6 (5) | 7

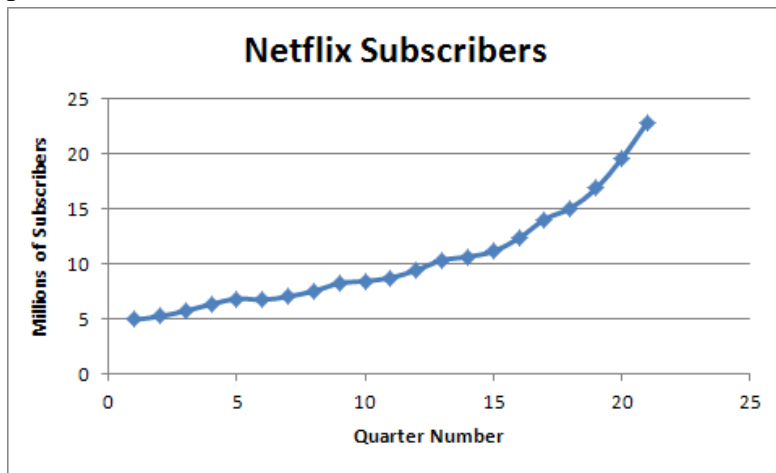
**2.26 a)**

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

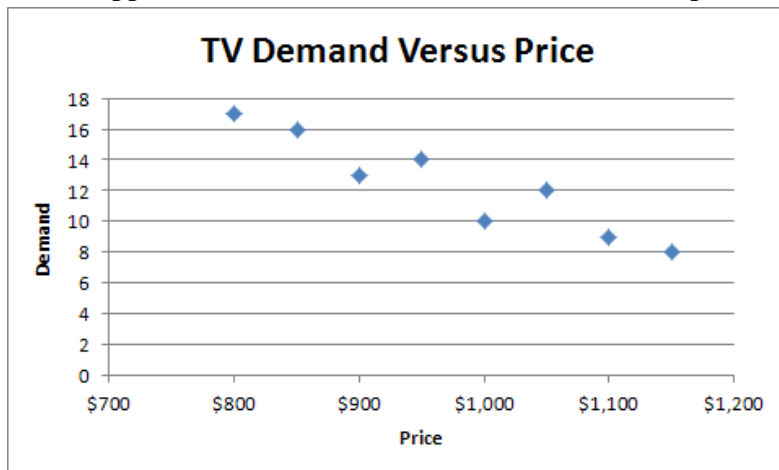
**b)**

1 (0) |  
1 (5) | 6  
2 (0) | 1  
2 (5) | 6 6 7 7 8 8 8 9  
3 (0) | 1 1 2 3  
3 (5) | 5 5 5 6 6 7 9  
4 (0) | 0 0  
4 (5) | 5  
5 (0) |  
5 (5) | 9

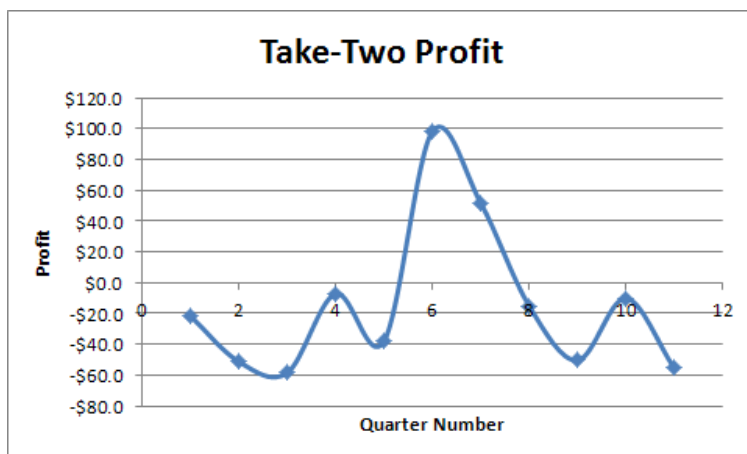
**2.27** It appears that the number of Netflix subscribers is increasing significantly during this time period.



**2.28** It appears that the demand for TVs decreases as price increases.



**2.29**



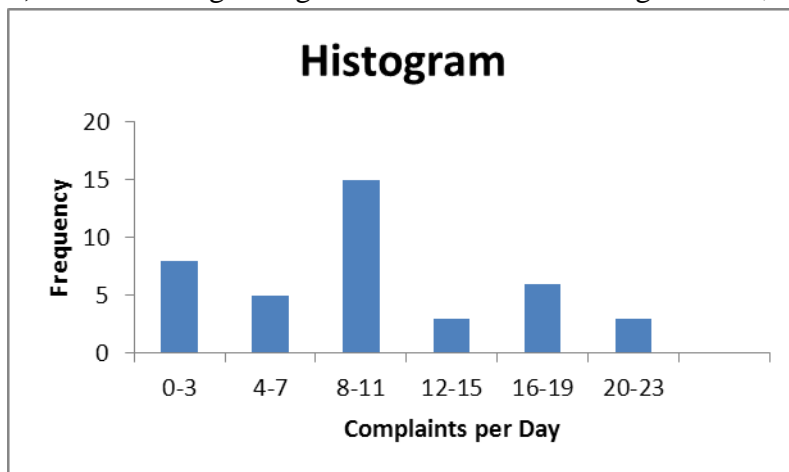
**2.30**  $2^6 = 64 > 40$  therefore use 6 classes.

$$\text{Estimated Class Width} = \frac{23-0}{6} = 3.8 \approx 4$$

**a, b, c)**

| <b>Class</b> | <b>Frequency</b> | <b>Relative Frequency</b> | <b>Cumulative Relative Frequency</b> |
|--------------|------------------|---------------------------|--------------------------------------|
| 0-3          | 8                | 0.200                     | 0.200                                |
| 4-7          | 5                | 0.125                     | 0.325                                |
| 8-11         | 15               | 0.375                     | 0.700                                |
| 12-15        | 3                | 0.075                     | 0.775                                |
| 16-19        | 6                | 0.150                     | 0.925                                |
| 20-23        | 3                | 0.075                     | 1.000                                |
| <b>Total</b> | <b>40</b>        | <b>1.000</b>              |                                      |

**d)** The following histogram was constructed using bins 2.9, 6.9, 10.9, 14.9, 18.9, and 22.9.

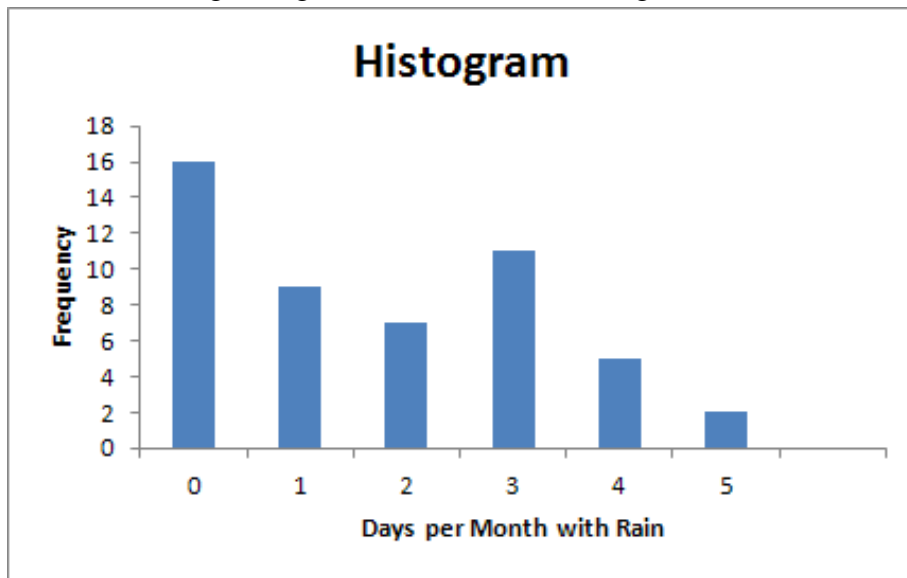


**2.31**

**a, b, c)**

| <b>Number</b> | <b>Frequency</b> | <b>Relative Frequency</b> | <b>Cumulative Relative Frequency</b> |
|---------------|------------------|---------------------------|--------------------------------------|
| 0             | 16               | 0.32                      | 0.32                                 |
| 1             | 9                | 0.18                      | 0.50                                 |
| 2             | 7                | 0.14                      | 0.64                                 |
| 3             | 11               | 0.22                      | 0.86                                 |
| 4             | 5                | 0.10                      | 0.96                                 |
| 5             | 2                | 0.04                      | 1.00                                 |
| <b>Total</b>  | <b>50</b>        | <b>1.00</b>               |                                      |

d) The following histogram was constructed using bins 0, 1, 2, 3, 4, and 5.



e) 50%

2.32  $2^6 = 64 > 48$  therefore use 6 classes.

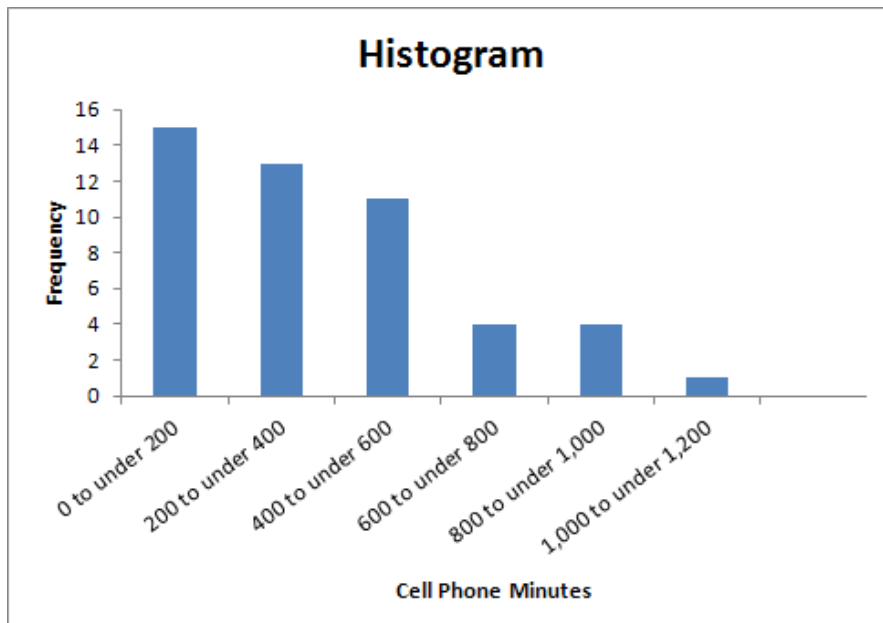
$$\text{Estimated Class Width} = \frac{1,187 - 43}{6} = 190.7 \approx 200$$

a, b, c)

| Class                | Frequency | Relative Frequency | Cumulative Relative Frequency |
|----------------------|-----------|--------------------|-------------------------------|
| 0 to under 200       | 15        | 0.313              | 0.313                         |
| 200 to under 400     | 13        | 0.271              | 0.584                         |
| 400 to under 600     | 11        | 0.229              | 0.813                         |
| 600 to under 800     | 4         | 0.083              | 0.896                         |
| 800 to under 1,000   | 4         | 0.083              | 0.979                         |
| 1,000 to under 1,200 | 1         | 0.021              | 1.000                         |
| <b>Total</b>         | <b>48</b> | <b>1.000</b>       |                               |



d) The following histogram was constructed using bins 199.9, 399.9, 599.9, 799.9, 999.9, and 1,199.9.



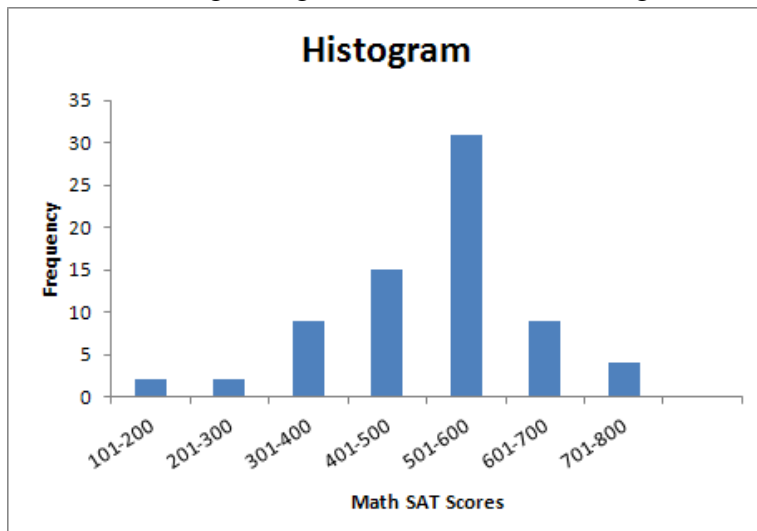
**2.33**  $2^7 = 128 > 72$  therefore use 7 classes.

$$\text{Estimated Class Width} = \frac{795 - 190}{7} = 86.4 \approx 100$$

a, b, c)

| Class        | Frequency | Relative Frequency | Cumulative Relative Frequency |
|--------------|-----------|--------------------|-------------------------------|
| 101-200      | 2         | 0.028              | 0.028                         |
| 201-300      | 2         | 0.028              | 0.056                         |
| 301-400      | 9         | 0.125              | 0.181                         |
| 401-500      | 15        | 0.208              | 0.389                         |
| 501-600      | 31        | 0.431              | 0.820                         |
| 601-700      | 9         | 0.125              | 0.945                         |
| 701-800      | 4         | 0.056              | 1.001                         |
| <b>Total</b> | <b>72</b> | <b>1.001</b>       |                               |

d) The following histogram was constructed using bins 200, 300, 400, 500, 600, 700, and 800.



**2.34**  $2^5 = 32 > 30$  therefore use 5 classes.

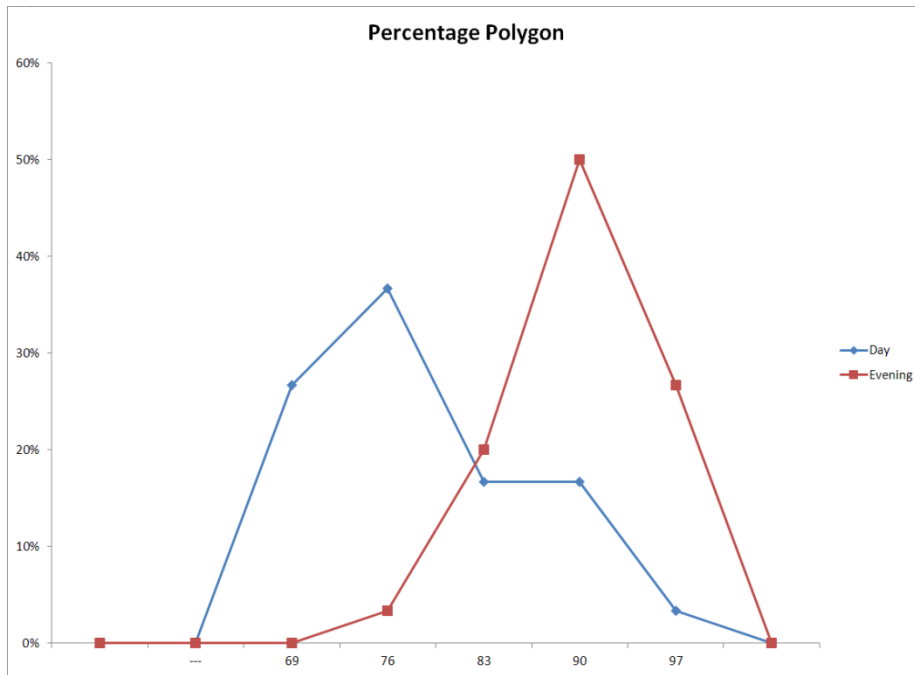
$$\text{Estimated Class Width (Day)} = \frac{100 - 66}{5} = 6.8 \approx 7$$

Results would be similar using the evening grades.

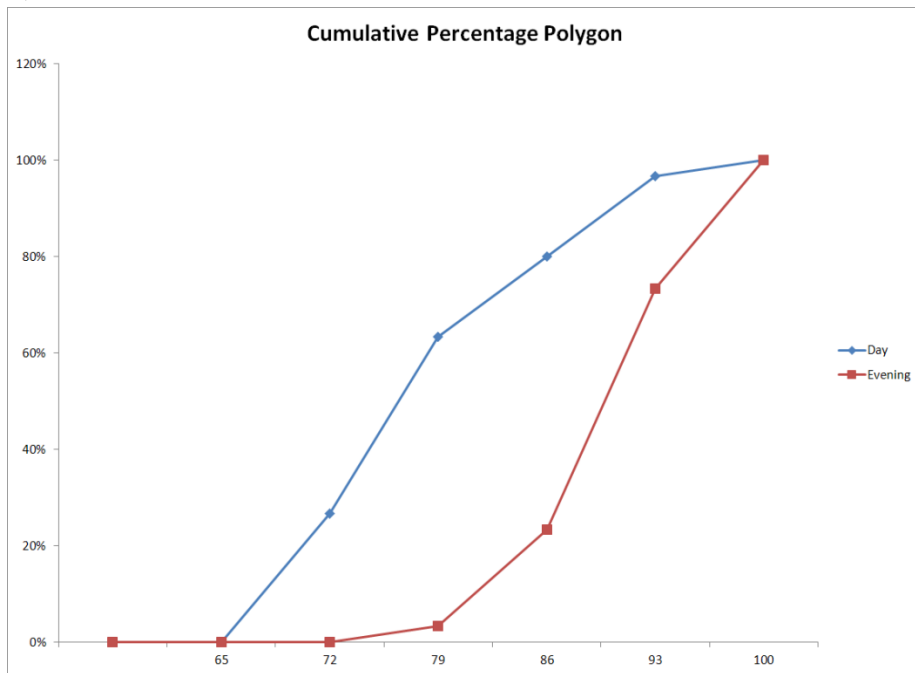
| Class  | Bins | Midpoint |
|--------|------|----------|
| 66-72  | 72   | 69       |
| 73-79  | 79   | 76       |
| 80-86  | 86   | 83       |
| 87-93  | 93   | 90       |
| 94-100 | 100  | 97       |

An extra bin (65) was added to Excel to provide the open-ended class required by PHStat2.

a)



b)



c) The evening class grades appear to be noticeably higher than the day class grades.

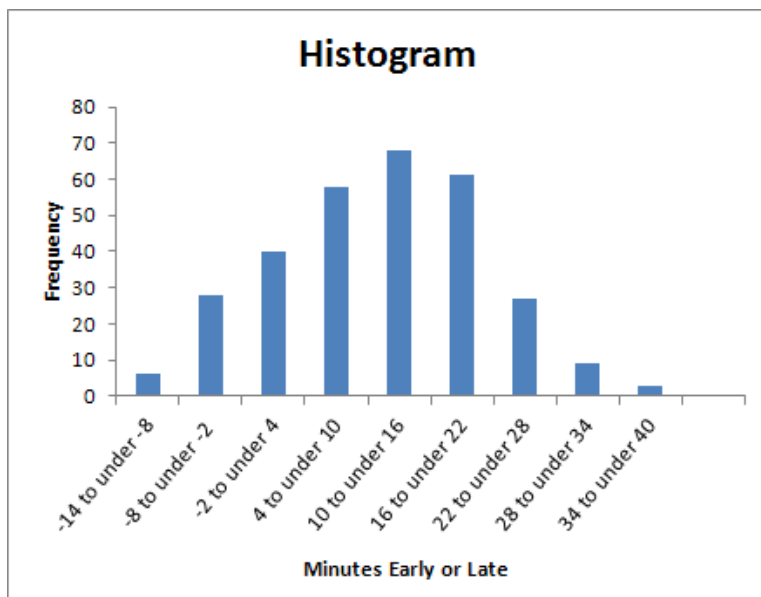
**2.35**  $2^9 = 512 > 300$  therefore use 9 classes.

$$\text{Estimated Class Width} = \frac{39 - (-14)}{9} = 5.9 \approx 6$$

**a, b, c)**

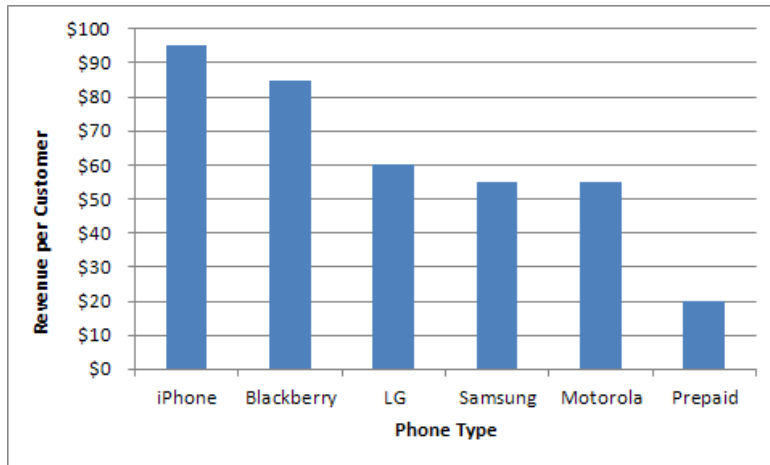
| <b>Class</b>      | <b>Frequency</b> | <b>Relative Frequency</b> | <b>Relative Cumulative Frequency</b> |
|-------------------|------------------|---------------------------|--------------------------------------|
| -14 to under -8.1 | 6                | 0.020                     | 0.020                                |
| -8 to under -2.1  | 28               | 0.093                     | 0.113                                |
| -2 to under 4     | 40               | 0.133                     | 0.246                                |
| 4 to under 10     | 58               | 0.193                     | 0.439                                |
| 10 to under 16    | 68               | 0.227                     | 0.666                                |
| 16 to under 22    | 61               | 0.203                     | 0.869                                |
| 22 to under 28    | 27               | 0.090                     | 0.959                                |
| 28 to under 34    | 9                | 0.030                     | 0.989                                |
| 34 to under 40    | 3                | 0.010                     | 0.999                                |
| <b>Total</b>      | <b>300</b>       | <b>0.999</b>              |                                      |

**d)** The following histogram was constructed using bins -8.1, -2.1, 3.9, 9.9, 15.9, 21.9, 27.9, 33.9, and 39.9.

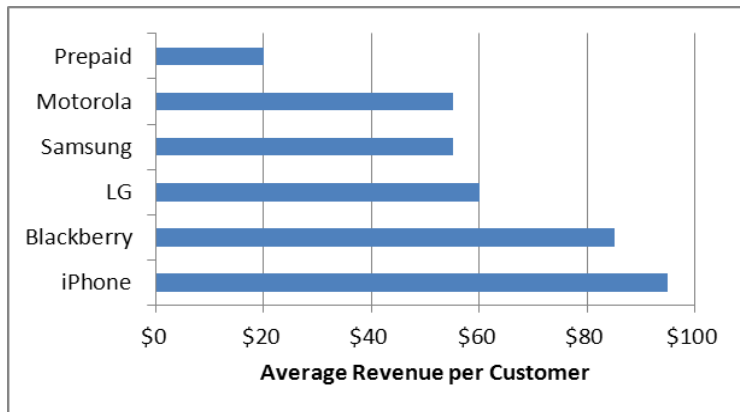


**e)** Approximately 74 out of 300 flights were not late (24.7%).

**2.36 a)**



**b)**



**2.37**  $2^7 = 128 > 100$  therefore use 7 classes.

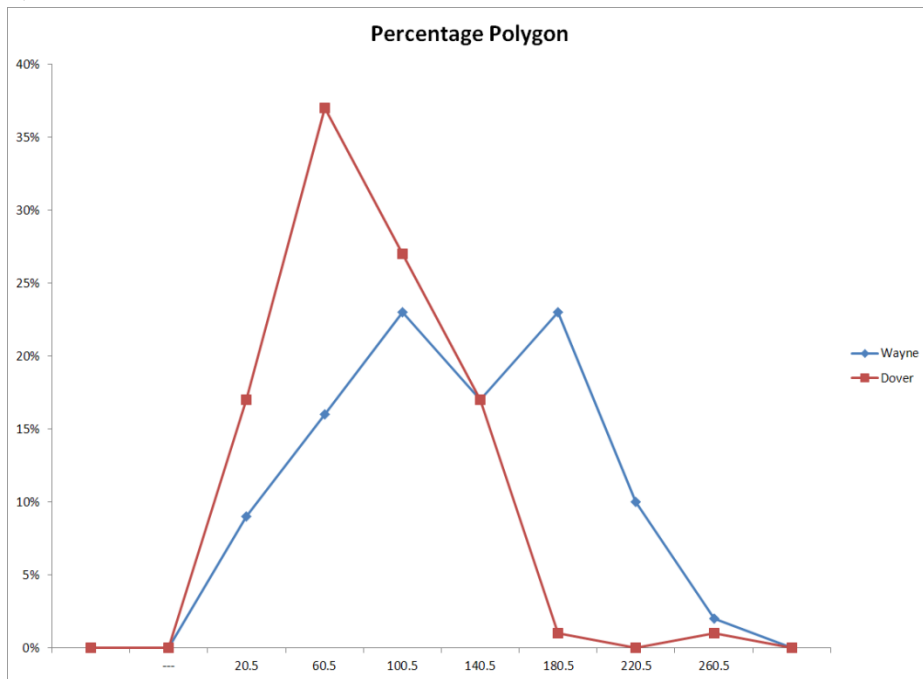
$$\text{Estimated Class Width (Wayne)} = \frac{259 - 12}{7} = 35.3 \approx 40$$

Results would be similar using the Dover data.

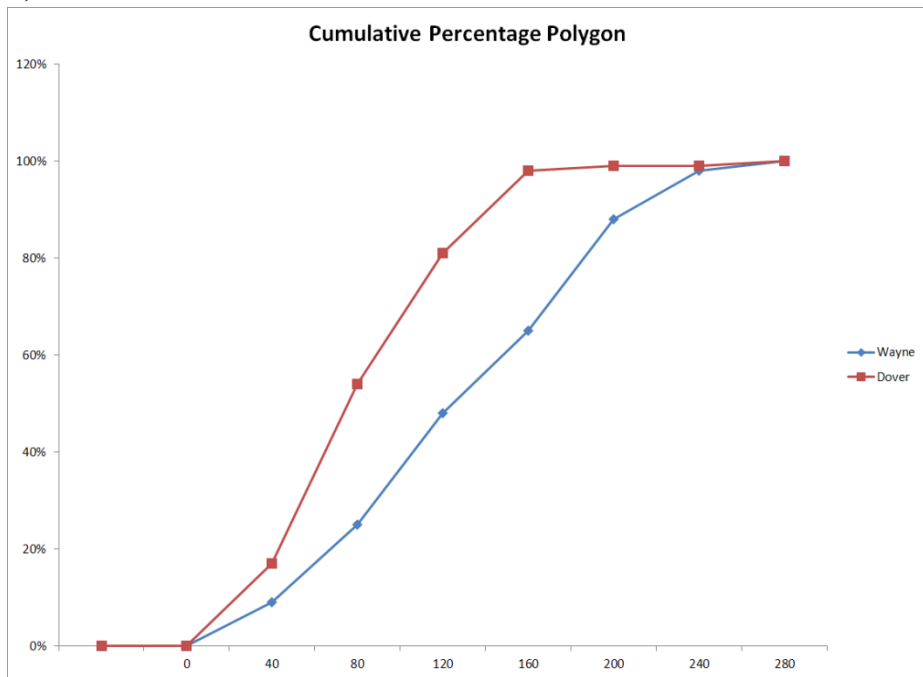
| Class   | Bins | Midpoint |
|---------|------|----------|
| 1-40    | 40   | 20.5     |
| 41-80   | 80   | 60.5     |
| 81-120  | 120  | 100.5    |
| 121-160 | 160  | 140.5    |
| 161-200 | 200  | 180.5    |
| 201-240 | 240  | 220.5    |
| 241-280 | 280  | 260.5    |

An extra bin (0) was added to Excel to provide the open-ended class required by PHStat2.

a)

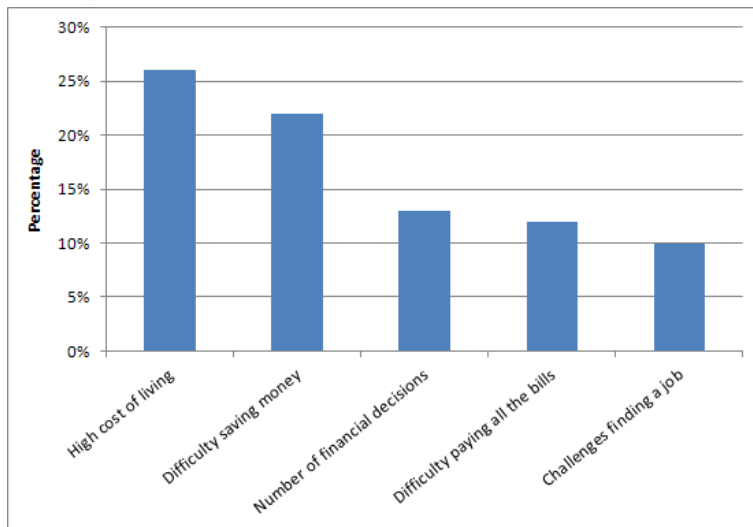


b)

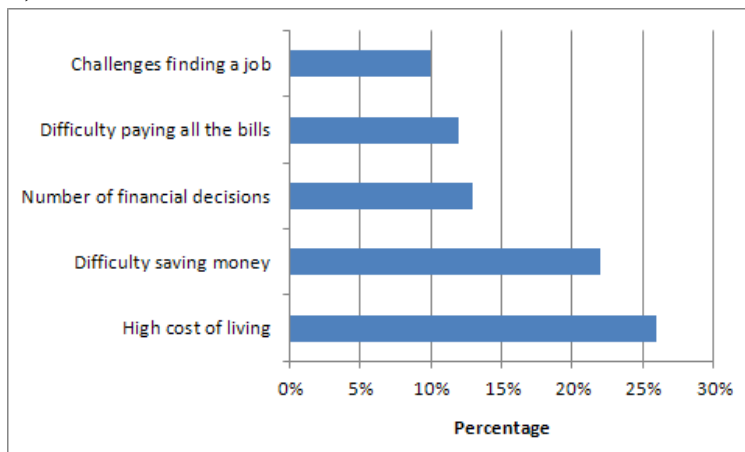


c) It appears that the days on the market for homes sold in Wayne are longer than for homes sold in Dover.

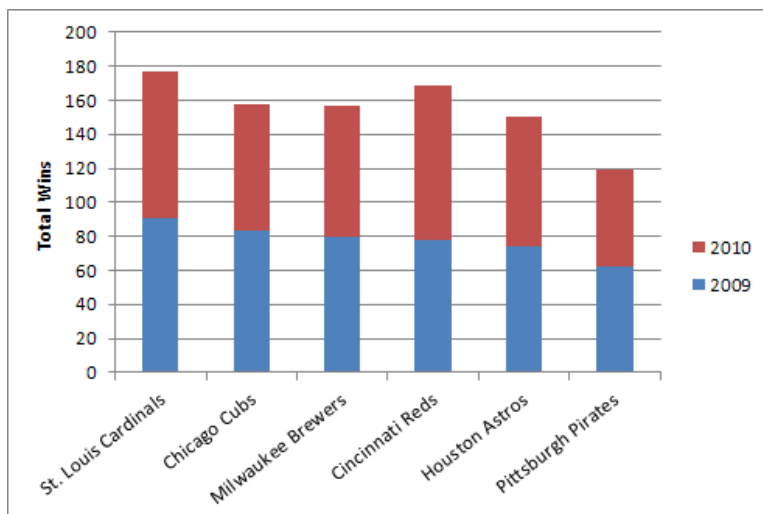
### 2.38 a)



### b)

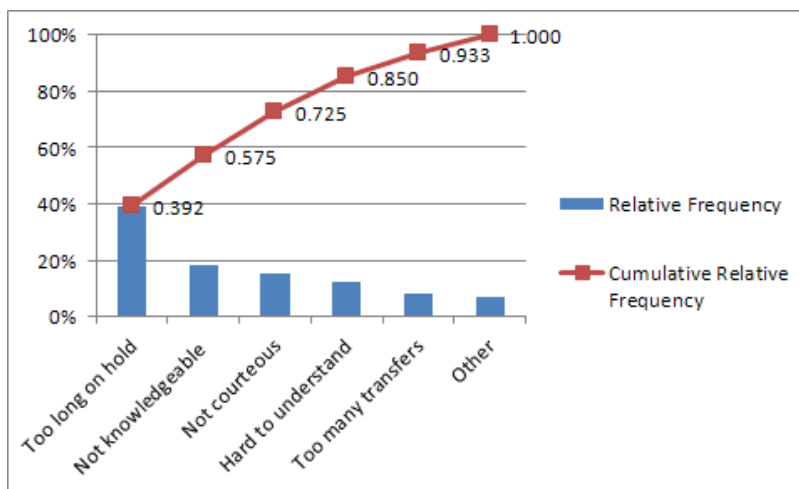


### 2.39



## 2.40

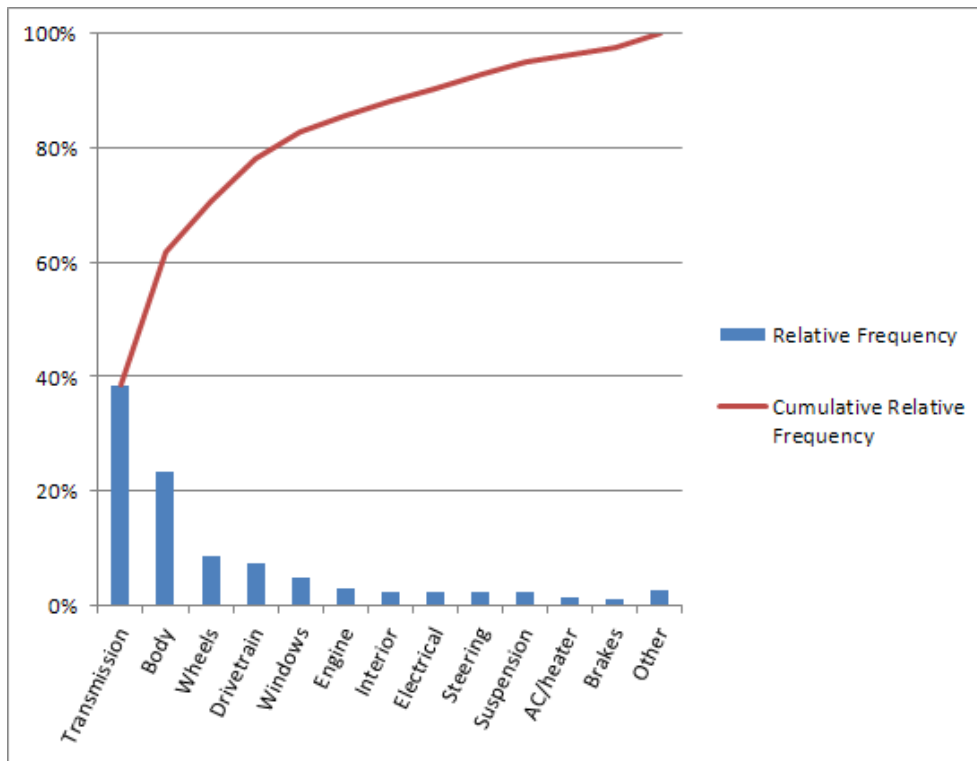
| Reason             | Frequency | Relative Frequency | Cumulative Relative Frequency |
|--------------------|-----------|--------------------|-------------------------------|
| Too long on hold   | 47        | 0.392              | 0.392                         |
| Not knowledgeable  | 22        | 0.183              | 0.575                         |
| Not courteous      | 18        | 0.150              | 0.725                         |
| Hard to understand | 15        | 0.125              | 0.850                         |
| Too many transfers | 10        | 0.083              | 0.933                         |
| Other              | 8         | 0.067              | 1.000                         |
| Total              | 120       |                    |                               |



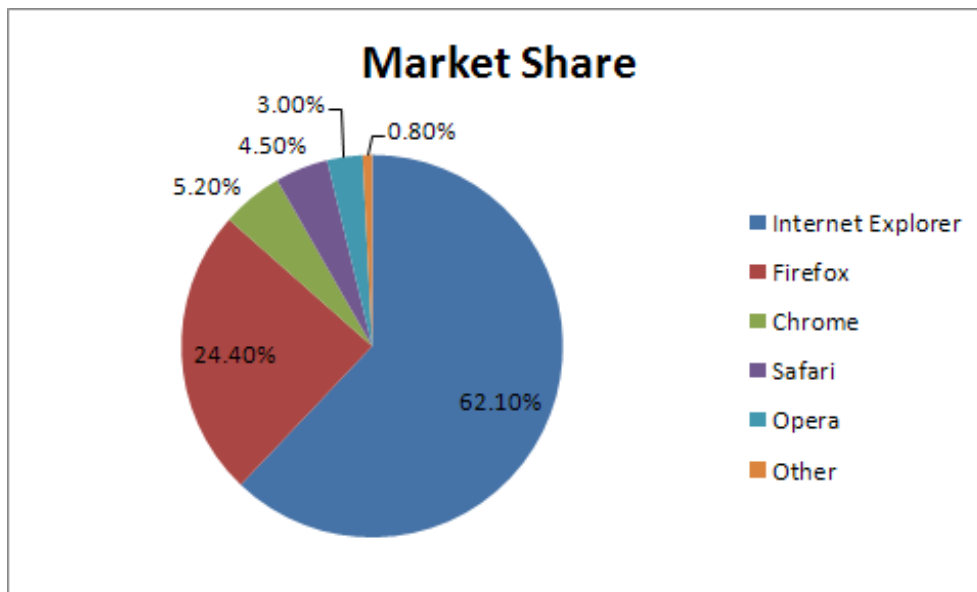
## 2.41

| Reason       | Frequency | Relative Frequency | Cumulative Relative Frequency |
|--------------|-----------|--------------------|-------------------------------|
| Transmission | 721       | 0.385              | 0.385                         |
| Body         | 437       | 0.233              | 0.619                         |
| Wheels       | 164       | 0.088              | 0.706                         |
| Drivetrain   | 139       | 0.074              | 0.780                         |
| Windows      | 89        | 0.048              | 0.828                         |
| Engine       | 55        | 0.029              | 0.857                         |
| Interior     | 45        | 0.024              | 0.881                         |
| Electrical   | 44        | 0.024              | 0.905                         |
| Steering     | 42        | 0.022              | 0.927                         |
| Suspension   | 41        | 0.022              | 0.949                         |
| AC/heater    | 26        | 0.014              | 0.963                         |
| Brakes       | 22        | 0.012              | 0.975                         |
| Other        | 47        | 0.025              | 1.000                         |
| Total        | 1872      |                    |                               |

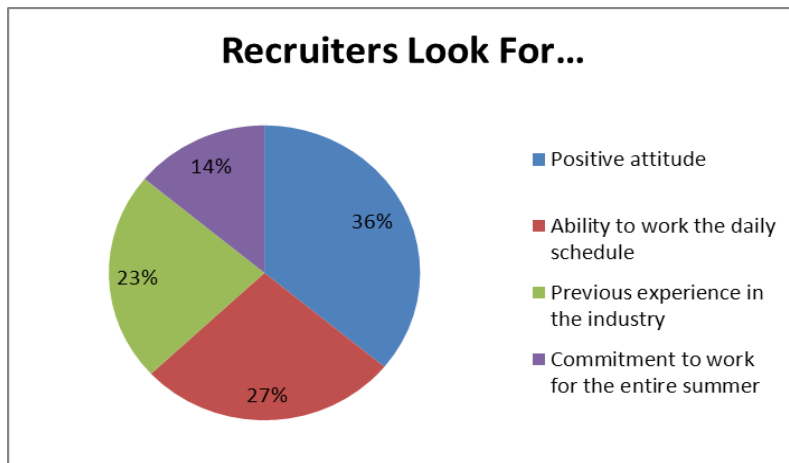




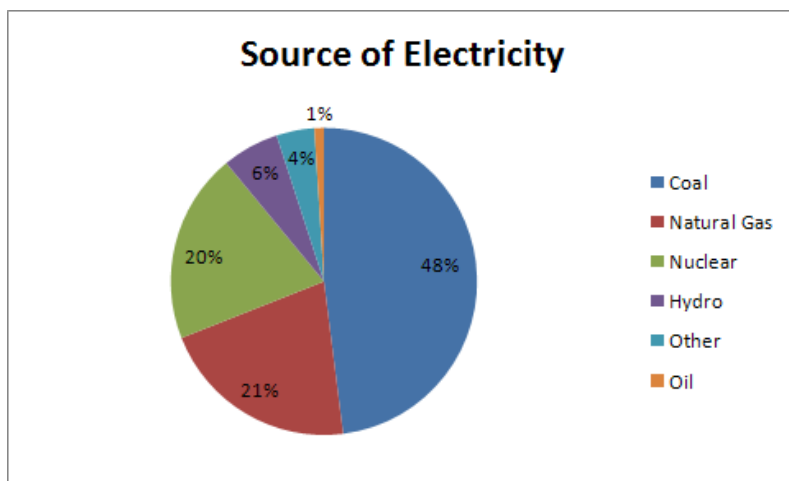
2.42



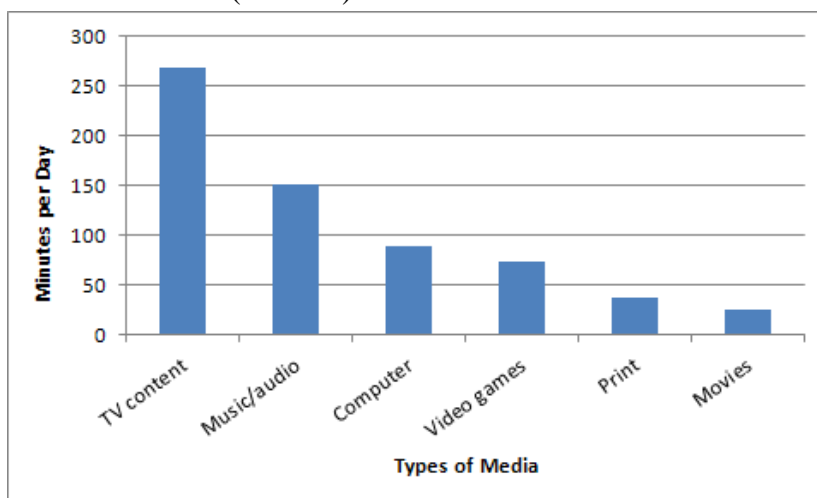
2.43



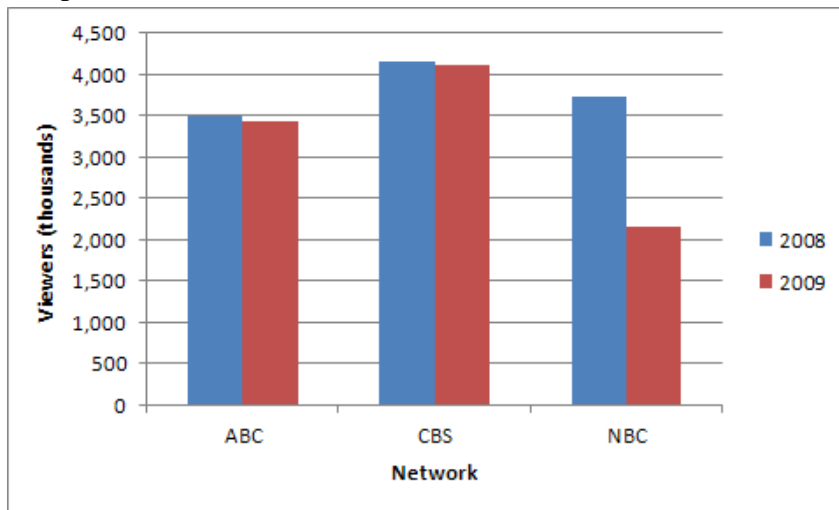
2.44



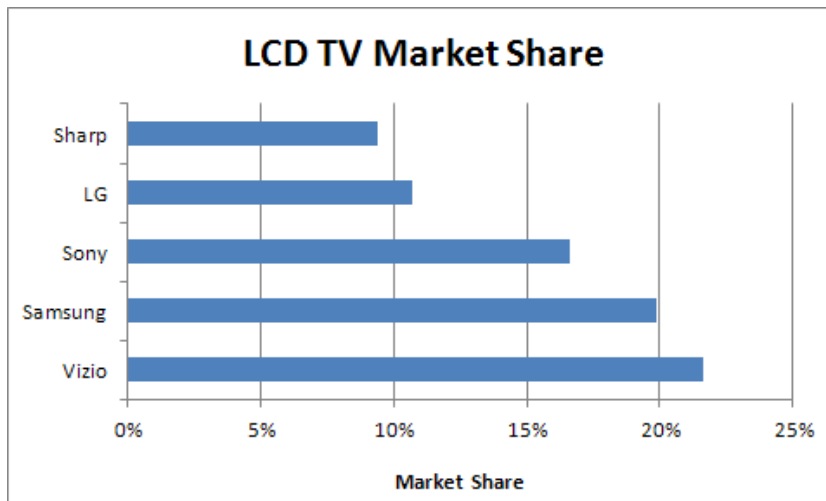
2.45 A bar chart would be appropriate for categorical data. The time data needs to be converted to common units (minutes).



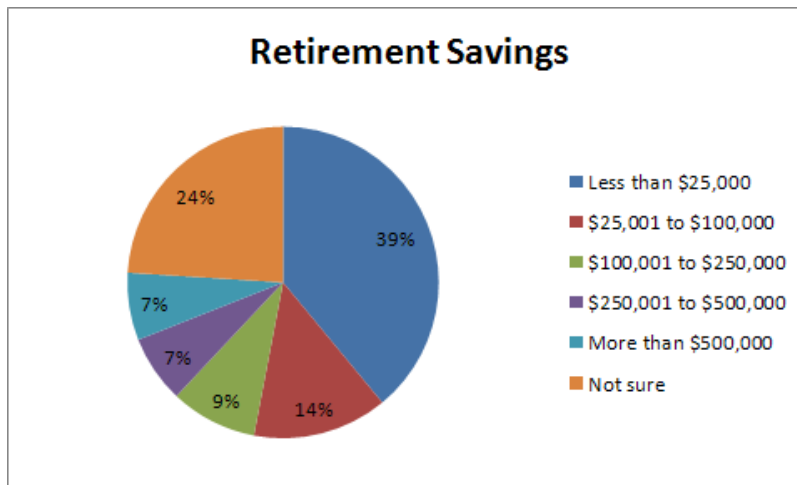
**2.46** A clustered bar chart would be appropriate for this data. A stacked bar chart would also be an option.



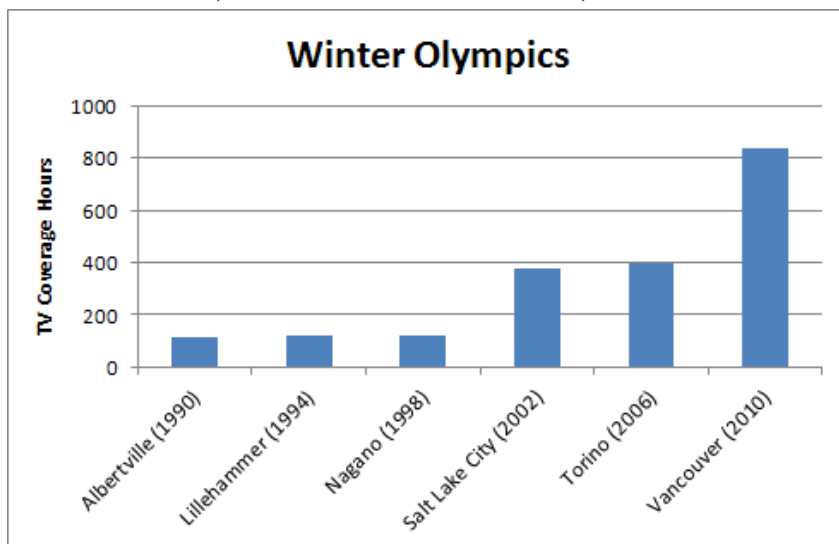
**2.47** A bar chart, either horizontal or vertical, is the best choice for this data. A pie chart would not be appropriate because all brands are not included. The total percentage does not equal 100%.



**2.48** A pie chart is the best choice because all categories are included and the percentage sums to 100%.



**2.49** A bar chart, either horizontal or vertical, is the best choice for this data.



**2.50**

| Brand        | Diet      | Regular   | Total     |
|--------------|-----------|-----------|-----------|
| Coke         | 6         | 6         | 12        |
| Mt. Dew      | 2         | 8         | 10        |
| Pepsi        | 4         | 7         | 11        |
| <b>Total</b> | <b>12</b> | <b>21</b> | <b>33</b> |

50% (6/12) of the Coke customers preferred Diet even though only 36% (12/33) of all the customers prefer Diet soda. Coke customers appear to have a higher percentage of customers who prefer diet soda than other brands.

**2.51**

| Age          | Callaway  | Nike      | Taylor Made | Total      |
|--------------|-----------|-----------|-------------|------------|
| 20-29        | 4         | 2         | 19          | 25         |
| 30-39        | 9         | 15        | 10          | 34         |
| 40-49        | 16        | 6         | 8           | 30         |
| 50-59        | 3         | 3         | 5           | 11         |
| <b>Total</b> | <b>32</b> | <b>26</b> | <b>42</b>   | <b>100</b> |

Younger golfers seem to prefer Taylor Made clubs while older golfers seem to prefer Callaway.

**2.52 a)**

```

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

```

**b)**

```

1 (5) | 8 9 9
2 (0) | 0 0 0 2 2 3 3
2 (5) | 5 5 5 6 8 8 8 8 9
3 (0) | 0 1 1 1 1 2 2 3
3 (5) | 5 5 5 6 6 9 9
4 (0) | 1 3 3
4 (5) | 5 6
5 (0) | 1

```

**2.53 a)**

```

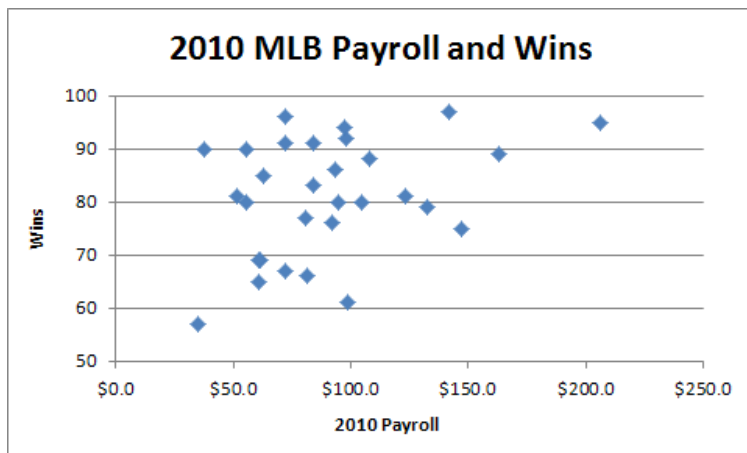
7 | 0 0 2 2 4 5 6 7 7 7
8 | 1 2 5 8
9 | 0 1 2 2 3 3 3 4 5 7 7 9 9
10 | 0 1 2 4 5
11 | 2 8 9
12 | 5
13 | 0 0 1 8

```

b)

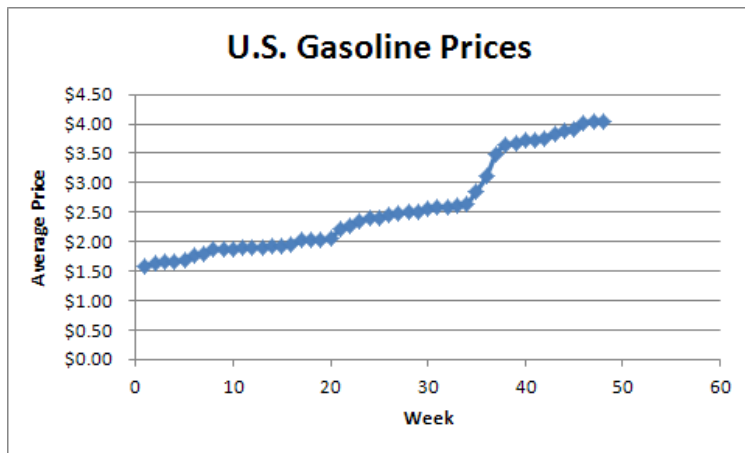
7 (0) | 0 0 2 2 4  
 7 (5) | 5 6 7 7 7  
 8 (0) | 1 2  
 8 (5) | 5 8  
 9 (0) | 0 1 2 2 3 3 3 4  
 9 (5) | 5 7 7 9 9  
 10 (0) | 0 1 2 4  
 10 (5) | 5  
 11 (0) | 2  
 11 (5) | 8 9  
 12 (0) |  
 12 (5) | 5  
 13 (0) | 0 0 1  
 13 (5) | 8

2.54



There does not appear to be a consistent relationship between payroll and wins during the 2010 season.

2.55



The trend in gasoline prices appear to rise consistently during this time period.