

Identify the lower class limits.
$\qquad$
$\qquad$
' $\qquad$
'
(Type integers or decimals. Do not round. Use ascending order.)
Identify the upper class limits.
_'
$\qquad$ , $\qquad$ , $\qquad$ ' $\qquad$ ' $\qquad$ ' $\qquad$
(Type integers or decimals. Do not round. Use ascending order.)
Identify the class width.
(Type an integer or a decimal. Do not round.)
Identify the class midpoints.
$\qquad$
, $\qquad$ _, $\qquad$ , $\qquad$
$\qquad$ ' $\qquad$ -' $\qquad$
(Type integers or decimals. Do not round. Use ascending order.)
Identify the class boundaries.
$\qquad$
$\qquad$ , $\qquad$ , $\qquad$
$\qquad$ ' $\qquad$
$\qquad$ ' $\qquad$
(Type integers or decimals. Do not round. Use ascending order.)
Identify the number of individuals included in the summary.

[^0]2. Construct one table that includes relative frequencies based on the frequency distributions shown below, then compare the amounts of tar in nonfiltered and filtered cigarettes. Do the cigarette filters appear to be effective? (Hint: The filters reduce the amount of tar ingested by the smoker.)
${ }^{1}$ Click the icon to view the frequency distributions.
Complete the relative frequency table below.

| Tar (mg) | Relative <br> Frequency <br> (Nonfiltered) | Relative <br> Frequency <br> (Filtered) |
| :---: | :---: | :---: |
| $2-6$ | $\%$ | $\%$ |
| $7-11$ | $\%$ | $\%$ |
| $12-16$ | $\%$ | $\%$ |
| $17-21$ | $\%$ | $\%$ |
| $22-26$ | $\%$ | $\%$ |
| $27-31$ | $\%$ | $\%$ |
| $32-36$ | $\%$ | $\%$ |

(Simplify your answers.)
Do cigarette filters appear to be effective?A. Yes, because the relative frequency of the higher tar classes is greater for nonfiltered cigarettes.B. No, because the relative frequencies for each are not substantially different.C. No, because the relative frequency of the higher tar classes is greater for filtered cigarettes.D. This cannot be determined.

## 1: Frequency Distributions

| Tar (mg) in Nonfiltered Cigarettes | Frequency | Tar ( mg ) in <br> Filtered <br> Cigarettes | Frequency |
| :---: | :---: | :---: | :---: |
| 12-16 | 2 | 2-6 | 1 |
| 17-21 | 0 | 7-11 | 3 |
| 22-26 | 13 | 12-16 | 5 |
| 27-31 | 8 | 17-21 | 16 |
| 32-36 | 2 |  |  |

3. Construct the cumulative frequency distribution for the given data.

| Daily Low $\left({ }^{\circ}\right.$ F) | Frequency |
| :---: | :---: |
| $35-39$ | 2 |
| $40-44$ | 3 |
| $45-49$ | 4 |
| $50-54$ | 10 |
| $55-59$ | 7 |
| $60-64$ | 8 |
| $65-69$ | 1 |


| Daily Low Temperature <br> $\left({ }^{\circ}\right.$ F) | Cumulative <br> Frequency |
| :---: | :---: |
| Less than 40 |  |
| Less than 45 |  |
| Less than 50 |  |
| Less than 55 |  |
| Less than 60 |  |
| Less than 65 |  |
| Less than 70 |  |

4. The data represents the daily rainfall (in inches) for one month.

| 0.37 | 0 | 0 | 0.28 | 0 | 0.51 |
| :--- | :--- | :--- | :--- | :--- | :--- |
| 0 | 0.22 | 0 | 0 | 1.34 | 0 |
| 0.07 | 0 | 0.02 | 0 | 0.23 | 0 |
| 0.19 | 0.55 | 0 | 0.01 | 0 | 0.24 |
| 0 | 0.22 | 0 | 0 | 0.18 | 0 |


| Daily Rainfall <br> (in inches) | Frequency | Daily Rainfall <br> (in inches) | Frequency |
| :---: | :---: | :---: | :---: |
| $0.00-0.19$ |  | $0.80-0.99$ |  |
| $0.20-0.39$ |  | $1.00-1.19$ |  |
| $0.40-0.59$ |  | $1.20-1.39$ |  |
| $0.60-0.79$ |  |  |  |

Does the frequency distribution appear to be roughly a normal distribution?A. No, although the frequencies start low, increase to some maximum, then decrease, the distribution is not symmetric.B. Yes, all of the requirements are met.C. No, the distribution is not symmetric and the frequencies do not start off low.D. No, although the distribution is approximately symmetric, the frequencies do not start low, increase to some maximum frequency, then decrease.
5. The histogram to the right represents the weights (in pounds) of members of a certain high-school programming team.

How many team members are included in the histogram?


The histogram represents $\qquad$ programming team members.
6. The frequency distribution below represents frequencies of actual low temperatures recorded during the course of a 31-day month. Use the frequency distribution to construct a histogram. Do the data appear to have a distribution that is approximately normal?

| Class |  | Frequency |
| :---: | :---: | :---: |
| A | $39-44$ | 1 |
| B | $45-50$ | 2 |
| C | $51-56$ | 7 |
| D | $57-62$ | 10 |
| E | $63-68$ | 6 |
| F | $69-74$ | 3 |
| G | $75-80$ | 2 |

Choose the correct histogram below.

○.

$\bigcirc$

B.

$\bigcirc \mathbf{D}$.


Do the data appear to have a distribution that is approximately normal?
A. No, it is not at all symmetric.B. No, it is completely erratic.
C. No, it is approximately uniform.D. Yes, it is approximately normal.
7. Fill in the blank.

The heights of the bars of a histogram correspond to $\qquad$ values.

The heights of the bars of a histogram correspond to (1) $\qquad$ values.
(1)
graph
survey
data set
frequency
8. Fill in the blank.

A(n) $\qquad$ distribution has a "bell" shape.

A(n) (1) $\qquad$ distribution has a "bell" shape.
(1)outliernormalrelative frequencypolygon
9. A study was conducted to determine how people get jobs. The table lists data from 400 randomly selected subjects. Construct a Pareto chart that corresponds to the given data. If someone would like to get a job, what seems to be the most effective approach?

Job Sources
Help-wanted ads (H)
Executive search firms (E)
Networking (N)
Mass mailing (M)

Choose the correct Pareto chart.
A.

B.

c.
D.


If someone would like to get a job, what seems to be the most effective approach?A. Mass mailing (M)B. Networking ( N )C. Executive search firms (E)D. Help-wanted ads (H)
10. The graph to the right compares teaching salaries of women and men at private colleges and universities. What impression does the graph create? Does the graph depict the data fairly? If not, construct a graph that depicts the data fairly.

Salaries (\$)


What impression does the graph create?A. The graph creates the impression that men and women have approximately the same salaries.B. The graph creates the impression that women have salaries that are slightly higher than that of men.C. The graph creates the impression that men have salaries that are slightly higher than that of women.D. The graph creates the impression that men have salaries that are more than twice the salaries of women.

Does the graph depict the data fairly?A. No, because the vertical scale does not start at zero.B. Yes, because the bars accurately represent each average.C. Yes, because the vertical scale is appropriate for the data.D. No, because the data are two-dimensional measurements.

If the graph does not depict the data fairly, which graph below does?
$\bigcirc A$
A.

B.
C.
D. The graph depicts the data fairly
11. The following data show the ages of recent award-winning male actors at the time when they won their award. Make a frequency table for the data, using bins of 20-29, 30-39, and so on.
${ }^{2}$ Click the icon to view the ages of male actors.
Complete the table below.
Age
No. of actors
20-29
30-39
40-49
50-59
60-69
70-79

2: Data Table

| 30 | 52 | 22 | 61 | 54 | 51 | 43 | 31 | 48 | 57 |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| 38 | 48 | 53 | 42 | 32 | 43 | 67 | 55 | 74 | 30 |
| 54 | 49 | 32 | 42 | 49 | 33 | 31 | 42 | 43 | 35 |
| 33 | 65 | 43 | 38 |  |  |  |  |  |  |

12. Construct the cumulative frequency distribution for the given data.

| Daily Low $\left({ }^{\circ} \mathrm{F}\right)$ | Frequency |
| :---: | :---: |
| $35-39$ | 2 |
| $40-44$ | 3 |
| $45-49$ | 5 |
| $50-54$ | 11 |
| $55-59$ | 6 |
| $60-64$ | 5 |
| $65-69$ | 1 |

Construct the cumulative frequency distribution.

| Daily Low Temperature <br> $\left({ }^{\circ} \mathbf{F}\right)$ | Cumulative <br> Frequency |
| :---: | :--- |
| Less than 40 | - |
| Less than 45 |  |
| Less than 50 |  |
| Less than 55 |  |
| Less than 60 |  |
| Less than 65 |  |
| Less than 70 |  |

13. The histogram to the right represents the weights (in pounds) of members of a certain high-school math team.

What is the class width? What are the approximate lower and upper class limits of the first class?


What is the class width?
The class width is $\qquad$ .
(Simplify your answer.)
What are the approximate lower and upper class limits of the first class?
The approximate lower class limit is $\qquad$ .
The approximate upper class limit is $\qquad$ . (Simplify your answers.)
14. The table shows the magnitudes of the earthquakes that have occurred in the past 10 years. Use the frequency distribution to construct a histogram. Does the histogram appear to be skewed? If so, identify the type of skewness.

| Earthquake <br> magnitude | Frequency |
| :---: | :---: |
| $5.0-5.9$ | 13 |
| $6.0-6.9$ | 14 |
| $7.0-7.9$ | 8 |
| $8.0-8.9$ | 6 |
| $9.0-9.9$ | 2 |

Construct the histogram. Choose the correct graph below.
$\bigcirc \mathbf{A}$
A.

C.


B


○
D.


The histogram (1) $\qquad$ so the distribution of the data is (2) $\qquad$
(1)has a longer right tail,
(2)skewed to the right. has a longer left tail,not skewed.
appears roughly symmetric,skewed to the left.
15.

The normal quantile plot shown to the right represents duration times (in seconds) of eruptions of a certain geyser from the accompanying data set. Examine the normal quantile plot and determine whether it depicts sample data from a population with a normal distribution.
${ }^{3}$ Click the icon to view the data set.


Choose the correct answer below.A. The distribution is not normal. The points are not reasonably close to a straight line.B. The distribution is not normal. The points do not show any systematic pattern.C. The distribution is normal. The points show a systematic pattern that is not a straight-line pattern.D. The distribution is normal. The points are reasonably close to a straight line and do not show a systematic pattern that is not a straight-line pattern.

## 3: Data Table

| Duration (sec) |  |
| :---: | :---: |
| 254 | 250 |
| 214 | 222 |
| 121 | 245 |
| 261 | 242 |
| 245 | 270 |
| 294 | 244 |
| 272 | 111 |
| 244 | 261 |
| 233 | 251 |
| 257 | 251 |
| 260 | 245 |
| 235 | 235 |
| 275 | 279 |
| 175 | 257 |
| 269 | 251 |
| 285 | 258 |
| 272 | 250 |
| 241 | 273 |
| 251 | 268 |
| 255 | 238 |

16. Construct a stem-and-leaf plot of the test scores $67,73,85,75,89,89,87,90,99,100$. How does the stem-and-leaf plot show the distribution of these data?

Construct the stem-and-leaf plot. Choose the correct answer below.
$\bigcirc \mathrm{A}$
A.

| Stem | Leaves |
| :---: | :--- |
| 6 | 7 |
| 7 | 35 |
| 8 | 5799 |
| 9 | 09 |
| 10 | 0 |B.

StemC.

| Stem | Leaves |
| :---: | :--- |
| 6 | 7 |
| 7 | 35 |
| 8 | 5996 |
| 9 | 09 |
| 10 | 0 |

D.

| Stem | Leaves |
| :---: | :--- |
| 6 | 7 |
| 7 | 36 |
| 8 | 5697 |
| 9 | 09 |
| 10 | 0 |

How does the stem-and-leaf plot show the distribution of these data?A. The lengths of the rows are similar to the heights of bars in a histogram; longer rows of data correspond to higher frequencies.B. The lengths of the rows are similar to the widths of bars in a histogram; longer rows of data correspond to smaller frequencies.C. The lengths of the rows are similar to the widths of bars in a histogram; longer rows of data correspond to higher frequencies.D. The lengths of the rows are similar to the heights of bars in a histogram; longer rows of data correspond to smaller frequencies.
17. The table lists weights (pounds) and highway mileage amounts ( mpg ) for seven automobiles. Use the sample data to construct a scatterplot. Use the first variable for the x -axis. Based on the scatterplot, what do you conclude about a linear correlation?

| Weight (Ib) | 2560 | 2685 | 3500 | 3965 | 4090 | 2440 | 3290 |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Highway (mpg) | 35 | 34 | 29 | 25 | 24 | 38 | 31 |

Which scatterplot below shows the data?
A.
B
C.



Is there a linear relationship between weight and highway mileage?A. No, there appears to be a relationship, but it is not linear.B. No, there appears to be no relationship.C. Yes, as the weight increases the highway mileage decreases.D. Yes, as the weight increases the highway mileage increases.


[^0]:    (Type an integer or a decimal. Do not round.)

