

To predict future enrollment in a school district, fifty households within the district were sampled, and asked to disclose the number of children under the age of five living in the household. The results of the survey are presented in the table. Complete parts (a) through (c) below.

Number of Children under 5	Number of Households
0	15
1	16
2	11
3	5
4	3

(a) Construct a relative frequency distribution of the data.

Number of Children under 5	Relative Frequency
0	.3
1	.32
2	.22
3	.1
4	.06

(Type integers or decimals. Do not round.)

(b) What percentage of households has two children under the age of 5?

22 %

(Type an integer or a decimal. Do not round.)

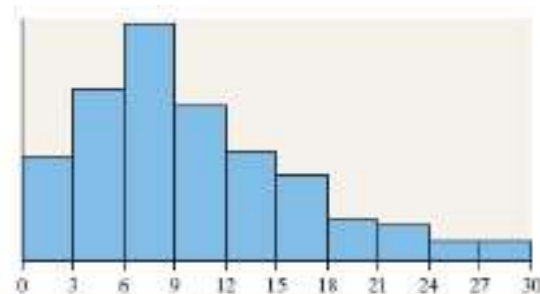
(c) What percentage of households has one or two children under the age of 5?

54 %

(Type an integer or a decimal. Do not round.)

Determine whether the following statement is true or false.

The shape of the distribution shown is best classified as skewed left.



Choose the correct answer below.

- ☐ True **SKewed LEFT falls to the left, this one is SKewed RIGHT because it falls to the right**
- ☒ False **BELL SHAPE is symmetric, and UNIFORM is approximately all the same height**

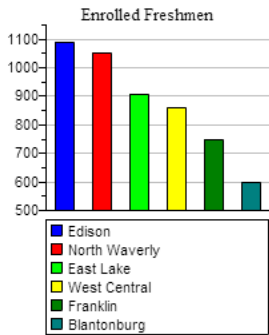
An airline offers discounted flights from Atlanta to five American cities. Below is a frequency distribution of the number of tickets purchased for each location over a two-month period.

Response	Frequency
Las Vegas	1292
Orlando	1283
New York	1278
Chicago	599
San Diego	672

(f) A local news broadcast reported that 13.1% of tickets purchased from the airline are for flights to San Diego. What is wrong with this statement?

No level of confidence is provided along with the estimate.

The following Pareto chart represents the number of freshmen enrolled in six high schools in a school district. Use the chart to answer parts a through c.



(a) Construct a relative frequency distribution of the data.

Response	Relative Frequency
Las Vegas	0.252
Orlando	0.250
New York	0.249
Chicago	0.117
San Diego	0.131

(Round to three decimal places as needed.)

(b) What proportion of the tickets were for New York?

0.249

(Round to three decimal places as needed.)

(a) Which high school has the most freshmen enrolled?

- ☐ A. North Waverly
- ☐ B. Blantonburg
- ☐ C. West Central
- ☒ D. Edison

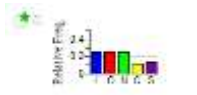
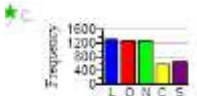
(b) Approximately what is the number of freshmen enrolled in East Lake High School?

900

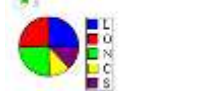
(Type a whole number.)

(c) How many more freshmen are enrolled at Franklin High School than Blantonburg High School?

150



(e) Construct a pie chart. Choose



The data below represent the per capita (average) disposable income (income after taxes) for 25 randomly selected cities in a recent year. Complete parts (a) through (j).

30,248 34,172 36,811 40,278

30,431 34,680 37,251 41,199

30,744 34,913 37,792 41,319

32,147 35,155 38,476 52,580

33,024 35,541 38,797

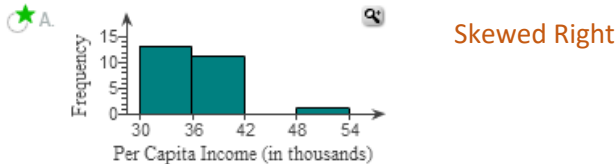
33,641 35,763 38,911

33,862 36,031 39,757

(a) Construct a frequency distribution with the first class having a lower class limit of 30,000 and a class width of 6000.

Class	Frequency
30,000 – 35,999	13
36,000 – 41,999	11
42,000 – 47,999	0
48,000 – 53,999	1

(b) Construct a frequency histogram of the data. Choose the correct graph below.



The following data represent the number of grams of fat in breakfast meals offered at a local fast food restaurant. (a) Construct an ordered stem-and-leaf plot and (b) describe the shape of the distribution.

4	19	9	16	24	15
30	25	33	35	25	6
15	5	29	41	37	12
12	27	29	16		

STATCRUNCH

GRAPH – STEP AND LEAF
NONE for outlier timing

COMPUTE

(a) Construct the ordered stem-and-leaf plot below.

0	4569
1	2255669
2	455799
3	0357
4	1

Legend: 5 | 1 represents 51 grams of fat.

(b) The distribution is skewed right.

Violent crimes include murder, forcible rape, robbery, and aggravated assault. The data to the right represent the violent-crime rate (crimes per 100,000 population) by region of a certain country. Complete parts (a) through (f) below.

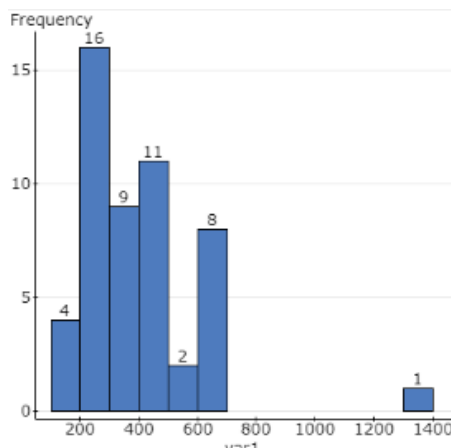
457.7	1346.4	398.3	271.8	384.6	679.3	294.9
634.5	605.3	268.9	499.9	411.7	177.1	257.6
418.8	418.9	623.9	249.9	204.5	660.7	232.4
524.1	279.5	114.5	274.7	323.2	496.8	
462.5	235.2	598.5	693.1	499.6	202.4	
336.2	499.1	455.1	151.7	260.7	136.1	
304.6	332.7	495.5	317.3	371.8	221.1	
631.1	272.3	236.9	615.3	241.4	335.6	

(a) If thirteen classes are to be formed, choose an appropriate lower class limit for the first class and a class width.

An appropriate lower class limit for the first class is 100, with a class width of 100.

(b) Construct a frequency distribution.

Violent Crimes	Frequency	Violent Crimes	Frequency
100–199.9	4	800–899.9	0
200–299.9	16	900–999.9	0
300–399.9	9	1000–1099.9	0
400–499.9	11	1100–1199.9	0
500–599.9	2	1200–1299.9	0
600–699.9	8	1300–1399.9	1
700–799.9	0		



STATCRUNCH

GRAPH – HISTOGRAM – highlight var1

Type: frequency

start at 100

width 100

value above bar ✓

COMPUTE

Gives the frequency

Find relative frequency:

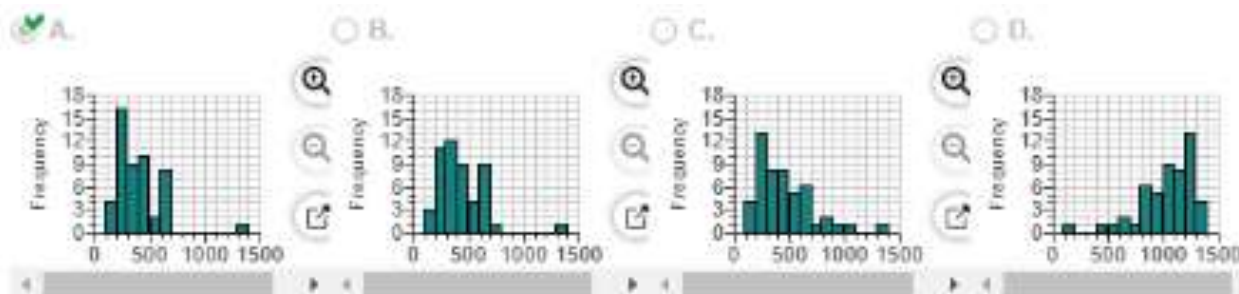
$$\frac{\text{frequency}}{\text{total}} = \text{relative frequency}$$

(c) Construct a relative frequency distribution.

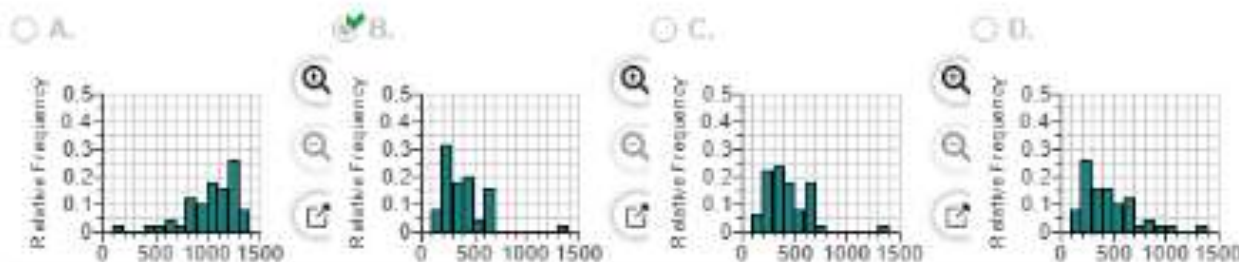
Violent Crimes	Relative Frequency	Violent Crimes	Relative Frequency
100–199.9	.078	800–899.9	0
200–299.9	.314	900–999.9	0
300–399.9	.176	1000–1099.9	0
400–499.9	.216	1100–1199.9	0
500–599.9	.039	1200–1299.9	0
600–699.9	.157	1300–1399.9	.020
700–799.9	0		

(Round to three decimal places as needed.)

Use the histogram to choose graphs – skewed right because the right tail is longer



(e) Construct a relative frequency histogram of the data. Choose the correct histogram below.



A frequency distribution lists the number of occurrences of each category of data, while a relative frequency distribution lists the proportion of occurrences of each category of data.

A researcher wanted to determine the number of televisions in households. He conducts a survey of 40 randomly selected households and obtains the data in the accompanying table. Complete parts (a) through (h) below.



Click the icon to view the table of television counts.

(a) Are these data discrete or continuous? Explain.

- ☒ A. The given data are discrete because they can only have whole number values.
☐ B. The given data are continuous because they can take on any real value.
☐ C. The given data are continuous because they can only have whole number values.
☐ D. The given data are discrete because they can take on any real value.

(b) Construct a frequency distribution of the data.

Televisions	Frequency
0	1
1	14
2	14
3	8
4	2
5	1

(c) Construct a relative frequency distribution of the data.

Televisions	Relative Frequency
0	.025
1	.35
2	.35
3	.2
4	.05
5	.025

(Type integers or decimals. Do not round.)

(d) What percentage of households in the survey have three televisions?

20 %

(Type an integer or a decimal. Do not round.)

(e) What percentage of households in the survey have four or more televisions?

7.5 %

(Type an integer or a decimal. Do not round.)

(f) Construct a frequency histogram of the data. Choose the correct graph below.

STATCRUNCH

GRAPH – HISTOGRAM – highlight var1

Type: frequency

start at 0

width 1

value above bar ✓

COMPUTE

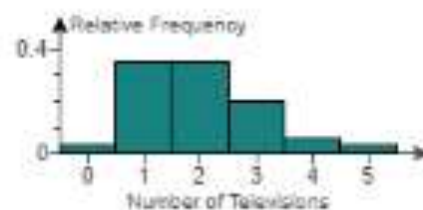
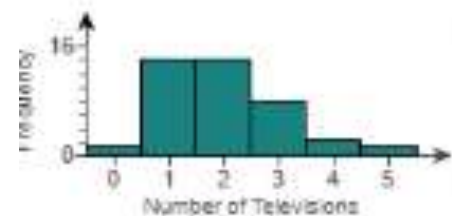
Gives the frequency

Find relative frequency:

$$\frac{\text{frequency}}{\text{total}} = \text{relative frequency}$$

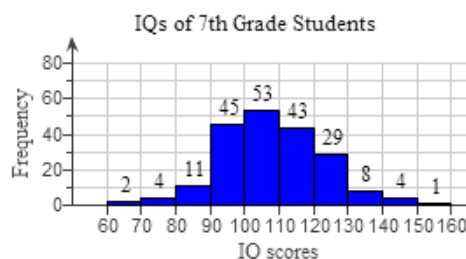
Staterunch computes relative frequency but rounds to two decimal places instead of 3

So you have to do it manually



The graphs are skewed right because the fall to the right

The following frequency histogram represents the IQ scores of a random sample of seventh-grade students. IQs are measured to the nearest whole number. The frequency of each class is labeled above each rectangle. Use the histogram to answer parts (a) through (g).



(a) How many students were sampled?

200 students

(b) Determine the class width.

The class width is 10.

(c) Identify the classes and their frequencies. Choose the correct answer below.

- ☒ A. 60-69, 2; 70-79, 4; 80-89, 11; 90-99, 45; 100-109, 53; 110-119, 43; 120-129, 29; 130-139, 8; 140-149, 4; 150-159, 1
- ☐ B. 60-70, 2; 70-80, 4; 80-90, 11; 90-100, 45; 100-110, 53; 110-120, 43; 120-130, 29; 130-140, 8; 140-150, 4; 150-160, 1

(d) Which class has the highest frequency?

- ☐ A. 105
- ☐ B. 100-110
- ☐ C. 90-99
- ☒ D. 100-109

(e) Which class has the lowest frequency?

- ☐ A. 60-69
- ☐ B. 150-160
- ☐ C. 155
- ☒ D. 150-159

(f) What percent of students had an IQ of at least 120?

21 % (Type an integer or a decimal.)

$$29+8+4+1 = \frac{42}{200} = 21\%$$

(g) Did any students have an IQ of 165?

- ☒ A. No, because there are no bars, or frequencies, greater than an IQ of 160.
- ☐ B. Yes, because there is a bar in the 150-159 class.
- ☐ C. No, because there is a bar in the 150-159 class.
- ☐ D. Yes, because there is a frequency of a score of 165.

Suppose a survey of adults and teens (ages 12–17) in a certain country was conducted to determine the number of texts sent in a single day.

- Construct a relative frequency distribution for adults.
- Construct a relative frequency distribution for teens.
- Construct a side-by-side relative frequency bar graph.
- Compare the texting habits of adults and teens.

Number of Texts	Adults	Teens
None	164	14
1–10	976	148
11–20	253	77
21–50	249	113
51–100	138	100
100 +	162	176

(a) Complete the table below.

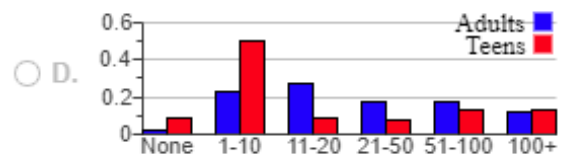
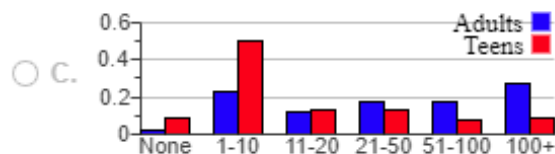
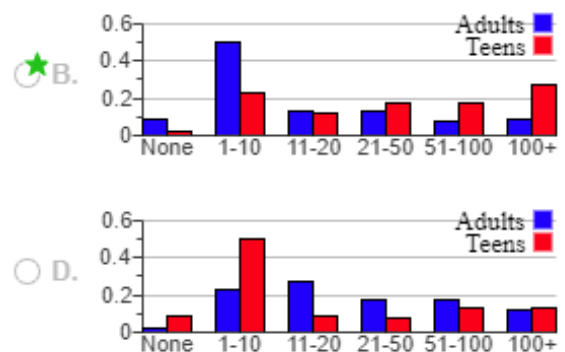
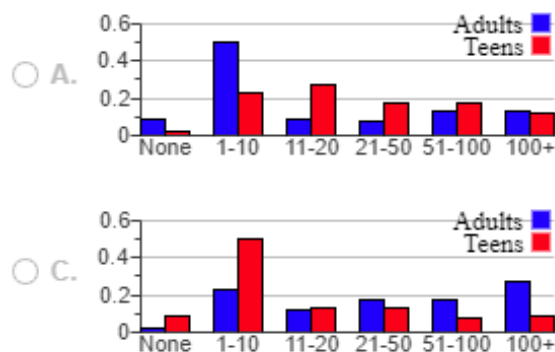
Number of Texts	Adults
None	0.084
1–10	0.503
11–20	0.130
21–50	0.128
51–100	0.071
100 +	0.083

$$\text{Relative Frequency is } \frac{\#}{\text{TOTAL}}$$

(Round to three decimal places as needed.)

(b) Complete the table below.

Number of Texts	Teens
None	0.022
1–10	0.233
11–20	0.121
21–50	0.178
51–100	0.170



(d) Choose the correct answer below.

- ☒ Adults are more likely to send few texts per day, while teens are more likely to send many texts per day.
- ☐ Teens are more likely to send few texts per day, while adults are more likely to send many texts per day.
- ☐ Adults are more likely to send few or many texts per day, while teens are more likely to send a moderate number of texts per day.
- ☐ Teens are more likely to send few or many texts per day, while adults are more likely to send a moderate number of texts per day.

Determine the original set of data.

```

1 | 0 1 4
2 | 1 4 4 7 9
3 | 3 5 5 5 7 9
4 | 0 1
    
```

Legend: 1|0 represents 10

The original set of data is 10, 11, 14, 21, 24, 24, 27, 29, 33, 35, 35, 35, 37, 39, 40, 41.

(Use a comma to separate answers as needed. Use ascending order.)

The following data represent the number of potholes on 35 randomly selected 1-mile stretches of highway around a particular city. Complete parts (a) through (g) below.

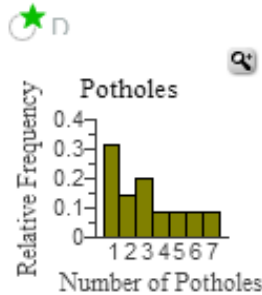
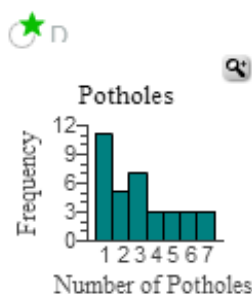
Number of Potholes

```

1 3 3 1 3
7 5 1 3 6
1 2 1 1 2
7 1 6 2 7
1 5 4 4 1
1 5 3 6 2
3 2 4 1 3
    
```

(d) Using the results from part (b), what percentage of the stretches of highway have 5 or more potholes?

27%



(a) Construct a frequency distribution of the data.

Potholes	Frequency
1	11
2	5
3	7
4	3
5	3
6	3
7	3

(b) Construct a relative frequency distribution of the data.

Potholes	Relative Frequency
1	0.31
2	0.14
3	0.20
4	0.09
5	0.09
6	0.09
7	0.09

(Round to two decimal places as needed.)

(c) Using the results from part (b), what percentage of the stretches of highway have 3 potholes?

20%

(g) Describe the shape of the distribution. Choose the correct answer below.

- ☐ Bell-shaped
☐ Uniform
☒ Skewed right
☐ Skewed left

The following data represent the number of people in a particular state aged 17 to 44 with a high school education.

Age	Number (thousands)
17 – 23	139
24 – 30	163
31 – 37	197
38 – 44	182

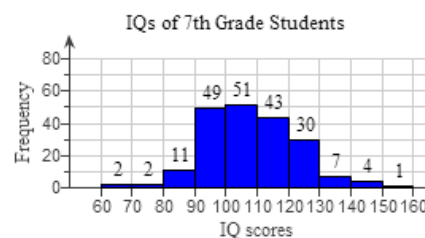
(a) What is the number of classes? 4

(b) What are the class limits for the second class?

Lower Class Limit = 24 Upper Class Limit = 30

(c) What is the class width? 7

The following frequency histogram represents the IQ scores of a random sample of seventh-grade students. IQs are measured to the nearest whole number. The frequency of each class is labeled above each rectangle. Use the histogram to answers parts (a) through (g).



(a) How many students were sampled?

200 students

(b) Determine the class width.

The class width is 10.

(c) Identify the classes and their frequencies. Choose the correct answer below.

- ☐ A. 65, 2; 75, 2; 85, 11; 95, 49; 105, 51; 115, 43; 125, 30; 135, 7; 145, 4; 155, 1
- ☒ B. 60-69, 2; 70-79, 2; 80-89, 11; 90-99, 49; 100-109, 51; 110-119, 43; 120-129, 30; 130-139, 7; 140-149, 4; 150-159, 1
- ☐ C. 60-70, 2; 70-80, 2; 80-90, 11; 90-100, 49; 100-110, 51; 110-120, 43; 120-130, 30; 130-140, 7; 140-150, 4; 150-160, 1

(d) Which class has the highest frequency?

☒ A. 100-109

(e) Which class has the lowest frequency?

- ☐ A. 150-160
- ☐ B. 155
- ☐ C. 60-69
- ☒ D. 150-159

(f) What percent of students had an IQ of at least 130?

6% (Type an integer or a decimal.)

(g) Did any students have an IQ of 163?

☒ A. No, because there are no bars, or frequencies, greater than an IQ of 160.

The following data represent the number of male and female murder victims by age in a recent year. Use the data to complete parts a-d.

Age	Number of Males	Number of Females
Less than 17	647	437
17-24	3490	705
25-34	2969	707
35-54	2851	1088
55 or older	763	436

(a) Construct a relative frequency distribution for males. Express each relative frequency as a decimal.

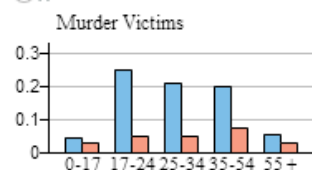
Age	Number of Males	Relative Frequency
Less than 17	647	0.060 (Round to three decimal places as needed.)
17-24	3490	0.326
25-34	2969	0.277
35-54	2851	0.266
55 or older	763	0.071

(b) Construct a relative frequency distribution for females. Express each relative frequency as a decimal.

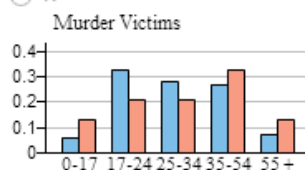
Age	Number of Females	Relative Frequency
Less than 17	437	0.130 (Round to three decimal places as needed.)
17-24	705	0.209
25-34	707	0.210
35-54	1088	0.323
55 or older	436	0.129

(c) Construct a side-by-side relative frequency bar graph. In the bar graphs below, the blue (left-side) bars represent males and the orange (right-side) bars represent females. Choose the correct graph below.

☐ A



☒ B



(d) Compare each gender's age percentages. Choose the correct answer below.

- ☐ A. The percentages of male murder victims for each age group are much lower than the percentages of female murder victims for the same age group.
- ☒ B. The percentages of male murder victims for each age group are fairly close to the percentages of female murder victims for the same age group.
- ☐ C. The percentages of male murder victims for each age group are much higher than the percentages of female murder victims for the same age group.