

## E Chapter 2 Exercises

Create a frequency distribution with the indicated number of classes for each set of data. Include the frequency, class boundaries, midpoint, relative frequency, and cumulative frequency of each class. Use the frequency distribution to answer the questions.

- The following list contains the percentage of students who transferred from the community college to a university for 21 community colleges in one state. Use six classes that have a class width of 3. Begin with a lower limit of 13 percent.

20.7	20.9	17.1	18.1	20.6	18.5	25.6
21.6	20.2	15.7	22.0	19.5	21.7	24.3
13.8	25.1	22.8	21.3	18.9	29.5	19.4

- What class contains the largest percentage of transfers?
  - Is it reasonable to say of the 21 schools, more than half of them had transfer rates below 22%? Explain.
  - What conclusions can you draw, if any, from the frequency distribution?
- The following list contains the pass rates, as the percentage of students passing the course, for students taking English Composition I from 24 different sections of the course one fall semester. Use five classes that have a class width of 10%. Begin with a lower limit of 35%.

0.457	0.421	0.701
0.397	0.446	0.766
0.422	0.434	0.742
0.454	0.481	0.752
0.482	0.515	0.773
0.616	0.435	0.775
0.597	0.486	0.751
0.647	0.639	0.758

- Which class represents the most common pass rate for English Composition I?
- Do most English Composition I classes have a pass rate of at least 65%?
- What conclusions, if any, can you draw from the frequency distribution?

**Create a stem-and-leaf plot for the given data. Be sure to include a key to your stem-and-leaf plot.**

3. The following data represent the number of people, in millions, employed by postsecondary institutions in the last 16 years.

3.97	3.45	3.97	3.34	3.98	3.25	3.21	3.63
4.13	3.97	3.97	3.92	3.89	3.80	3.71	3.54

4. The United States accounted for 23.9% of all imported cars in 2017. The list below gives the percentage of total imported cars that were imported by the next highest 14 countries.

7.8	6.6	5.9	4.8	4.6	4.1	3.8
2.7	2.3	1.7	1.5	1.5	1.4	1.3

Source: Workman, Daniel. "Car Imports by Country." 15 April 2019. <http://www.worldstopexports.com/cars-imports-by-country/> (24 July 2019).

**Determine which type of graph would most clearly depict the data described.**

5. The total commission paid by a company to its employees each month for a year.
6. The commission paid by a company to each of its employees for the month of June.
7. The commission paid by a company to each of its employees for the month of June, specifically comparing the commission paid to sales representatives with 10 years or more of experience to those with less than 10 years of experience.
8. Average commission paid to sales representatives in this field across the country.

**Use the given frequency distribution to answer the questions.**

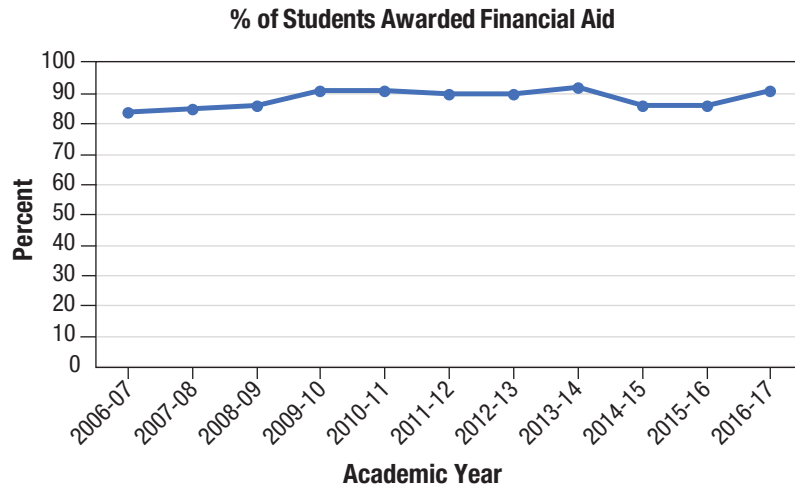
Amara works as a sales associate at a large home furnishings and accessories store. Her earnings are based partially on salary and partially on commissions she earns from sales. Because her commission rate is dependent on the price of the item sold, it is important that she keeps a detailed record of her sales. For the month of August, the frequency table of her sales is as follows.

Item Price	Number of Items Sold
\$0 - \$149.99	24
\$150 - \$299.99	31
\$300 - \$449.99	14
\$450 - \$599.99	11
\$600 - \$749.99	16
\$750 and above	12

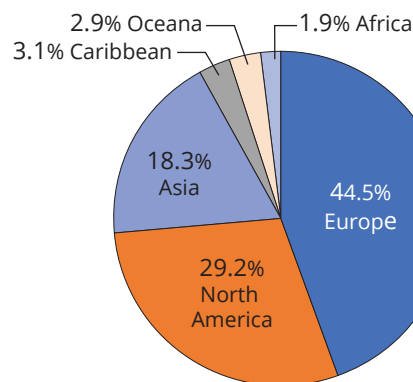
9. What is the relative frequency for the 4th class?
10. What is the cumulative frequency for items less than \$600?
11. What is the upper class boundary for the 2nd class?
12. What is the class width?
13. What percentage of Amara's sales were for items that cost between \$300 and \$599.99?
14. How many items did Amara sell in August?
15. What was the maximum price of most of Amara's sales items?

Use the given graphs to answer the questions.

16. The graph below shows the percentage of students awarded any form of financial aid at one community college. Use this graph to answer the following questions.



- What is the overall trend for this line graph?
  - Have there been any periods where the amount of financial aid increased?
  - Have there been any periods where the amount of financial aid decreased?
  - If you were preparing a summary of the data, what would you use as a title for your graph which is both truthful and catchy?
17. Global purchases of imported cars totaled \$752.9 billion USD in 2017. From a continental perspective, the pie chart below shows the percentages of imports by region. Use this pie chart to answer the following questions.
- Which region had the highest percentage of imports?
  - Which region had the lowest percentage of imports?
  - What was the percentage of imports from Asia?
  - What was the percentage of imports from Europe and North America?

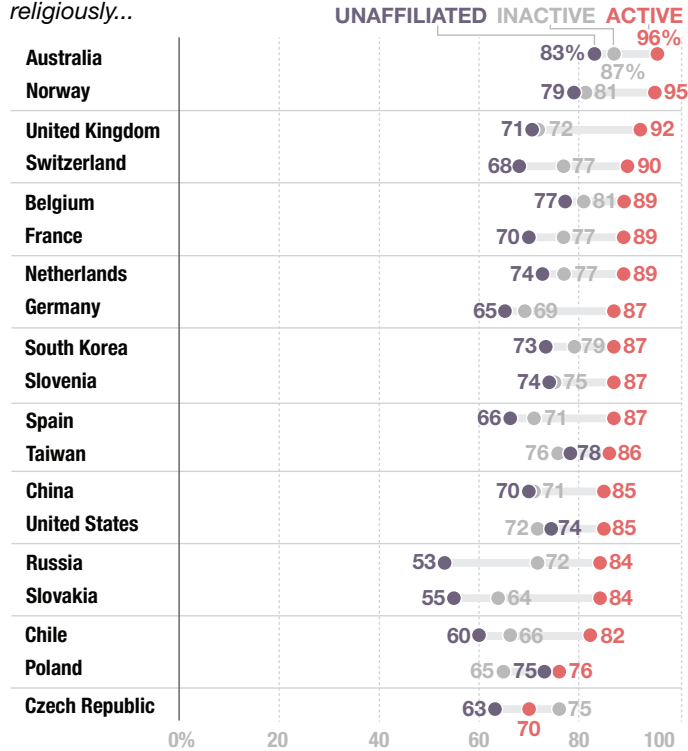


Source: Workman, Daniel. "Car Imports by Country." 15 April 2019. <http://www.worldstopexports.com/cars-imports-by-country/> (24 July 2019).

18. The following graph shows the percentage of respondents who say they currently do not smoke, among those who are religiously unaffiliated, inactive, or active. Use this graph to answer the following questions.

### Actively religious less likely to smoke

% who say they do **not** currently smoke, among those are religiously...



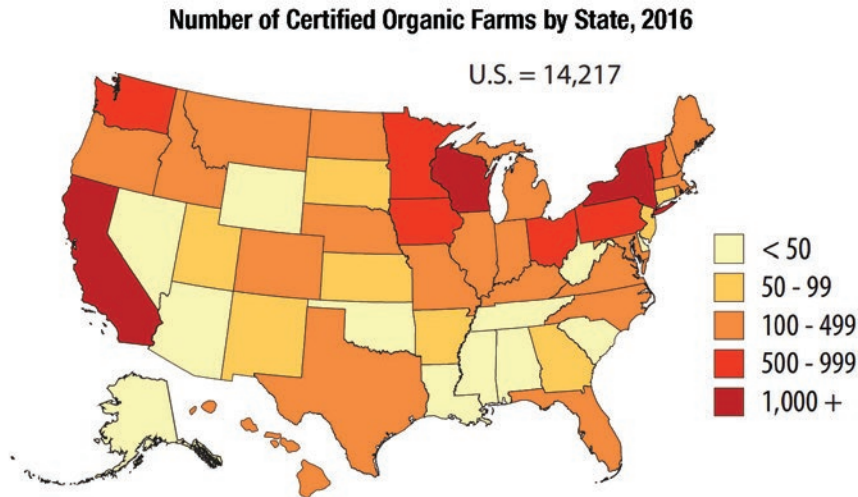
Note: the actively religious are those who identify with a religion and attend religious services at least once per month. Inactives are those who identify with a religion and attend less often. Unaffiliated are those who do not identify with a religious group.

PEW RESEARCH CENTER

Source: Pew Research Center. "Actively religious less likely to smoke." 28 Jan. 2019. [http://www.pewforum.org/2019/01/31/religions-relationship-to-happiness-civic-engagement-and-health-around-the-world/pf\\_1-23-19\\_religion\\_wellbeing-24/](http://www.pewforum.org/2019/01/31/religions-relationship-to-happiness-civic-engagement-and-health-around-the-world/pf_1-23-19_religion_wellbeing-24/) (24 July 2019).

- Which country has the highest percentage of non-smokers among those who are actively religious?
- Which country has the lowest percentage of non-smokers among those not religiously affiliated?
- Which country has the largest range of non-smokers?
- Is it true that those who are religiously active are less likely to smoke than those that are not religiously active?

19. The following graph shows the number of organic farms by state. Use this graph to answer the following questions.
- Which states have the largest number of organic farms?
  - How many organic farms does Alaska have?
  - How many organic farms are in the United States?
  - How many organic farms do the majority of the states have?



Source: USDA. NASS Highlights. "2016 Certified Organic Survey." Oct. 2017. [https://www.nass.usda.gov/Publications/Highlights/2017/2016\\_Certified\\_Organic\\_Survey\\_Highlights.pdf](https://www.nass.usda.gov/Publications/Highlights/2017/2016_Certified_Organic_Survey_Highlights.pdf) (24 July 2019).

20. The following graph depicts the pass rates in one state for students in their first year taking a credit-bearing math class, with different types of math remediation methods, based on the students' ACT scores. The remediation methods are defined as follows:

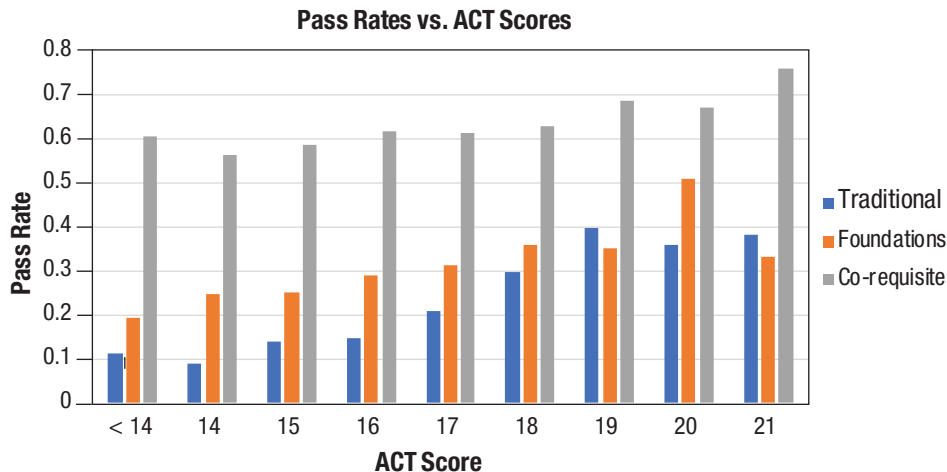
**Traditional** - as many developmental classes as deemed necessary taken before credit-bearing class

**Foundations** - only 1 developmental class taken before credit-bearing class

**Co-requisite** - developmental support offered at the same time as the credit-bearing class

Use the graph to answer the following questions:

- Which remediation method produces the highest pass rates?
- Which remediation method produces the lowest pass rates?
- Does a student's ACT score affect which remediation method is best?



21. The following graph shows the percentage of each type of degree awarded by a prestigious university between July 1, 2016 and June 30, 2017, based on the student's race or ethnicity. Use the graph to answer the following questions.
- For which race/ethnicity was the largest percentage of the degrees awarded masters degrees?
  - Of the degrees awarded to Asian students, which type of degree accounted for the smallest percentage?
  - Can you tell from this graph which race/ethnicity was awarded the most degrees?

