

Data Analysis, Statistics, and Probability

Calculators may not be used.

The list below shows the number of pages Marian read in her library book each day for one week.

11, 13, 11, 15, 20, 17, 11

What is the mode of the number of pages that Marian read each day?

- A. 9
 - B. 11
 - C. 13
 - D. 14
-

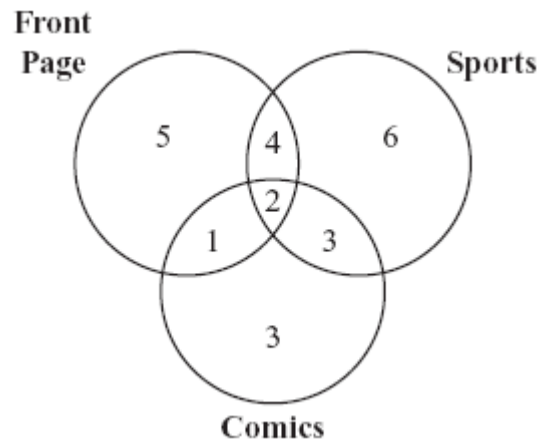
Mr. Jamison is the principal at a new school with an enrollment of 430 students. He surveyed 10% of the students at his school to find out which colors they would like as the school colors. What is the number of students in the sample size of the principal's survey?

In Mr. Montgomery's class, there are 8 boys and 12 girls. If Mr. Montgomery selects 1 student from his class at random, what is the probability that the student will be a girl?

- A. $\frac{2}{3}$
- B. $\frac{3}{5}$
- C. $\frac{1}{12}$
- D. $\frac{1}{20}$

Mr. Turner surveyed the students in his class to find out if they had read the front page, the comics, the sports, or any combination of those sections of the previous day's newspaper. He recorded the results in the Venn diagram below.

Sections of Newspaper
Read by Students



Based on the Venn diagram, what was the total number of students who had read the front page of the previous day's paper?

Lorna swam 30 laps per day for the first 6 days of swim practice. She swam 40 laps per day for the next 4 days of practice. What was the mean number of laps that Lorna swam per day for these 10 days?

Frank has 2 Massachusetts quarters and 3 “Eagle” quarters in his pocket, as pictured below.

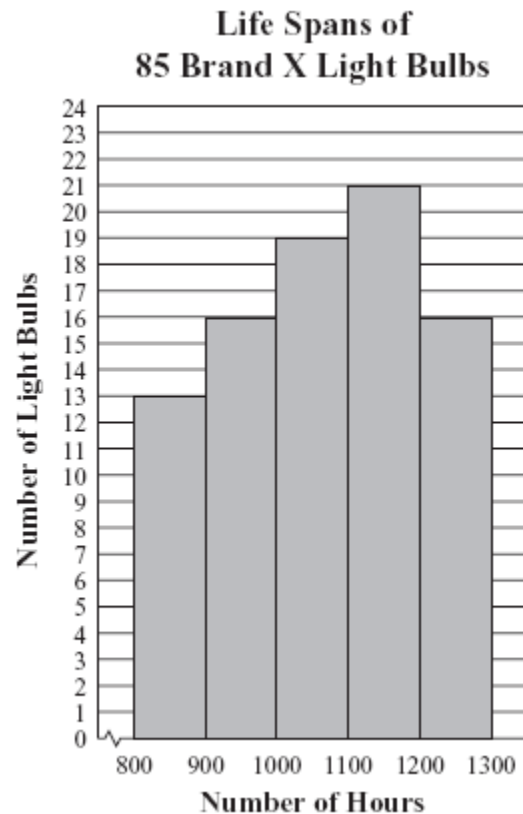


He will select a quarter at random, look at it, and put it back. Then he will select another quarter at random.

What is the probability that Frank will select a Massachusetts quarter both times?

- A. $\frac{2}{25}$
- B. $\frac{4}{25}$
- C. $\frac{1}{4}$
- D. $\frac{1}{2}$

Abe tested 85 Brand X light bulbs to determine their life spans. The histogram below shows the results of his test.



What was the total number of Brand X light bulbs that had life spans greater than or equal to 1000 hours?

- A. 72
- B. 56
- C. 51
- D. 21

The table below shows Patrick's results on a 25-question history test.

Results of Patrick's History Test

	Multiple-Choice Questions	True-False Questions
Number of Questions Answered Correctly	14	6
Number of Questions Answered Incorrectly	1	4

Of the questions Patrick answered **correctly**, what percent were true-false questions?

- A. 30%
- B. 40%
- C. 42%
- D. 67%

The stem-and-leaf plot below shows the number of laps walked by 15 students in a walk-a-thon.

Number of Laps Walked

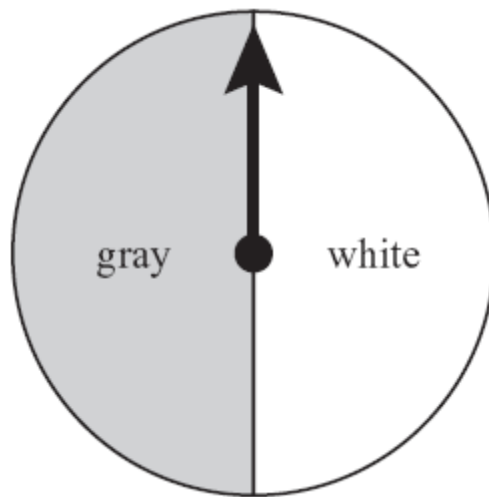
1	2 4 4 6 7
2	0 0 0 3 5 8
3	0 2 6
4	2

Key

1 | 8 represents 18

What is the total number of students who walked more than 29 laps?

Daniel has a spinner divided into two congruent sections, as shown below.



- a. Daniel will spin the arrow on the spinner one time. What is the probability that the arrow will stop in the gray section? Show or explain how you got your answer.

- b. Daniel will spin the arrow two times. What is the probability that the arrow will stop in the gray section both times? Show or explain how you got your answer.

- c. Daniel will spin the arrow three times. In your Student Answer Booklet, construct a tree diagram that shows all the possible outcomes that can occur.

- d. Based on your diagram from part (c), what is the probability that the arrow will stop in the white section **at least** one time when Daniel spins the arrow three times? Show or explain how you got your answer.

Calculators may be used on this section.

The scores Melanie earned on her first four mathematics tests are shown in the box below.

78, 82, 92, 94

Melanie earned a 92 on her fifth mathematics test. Which of the following measures does **not** change when her fifth test score is included?

- A. range
- B. mode
- C. median
- D. mean

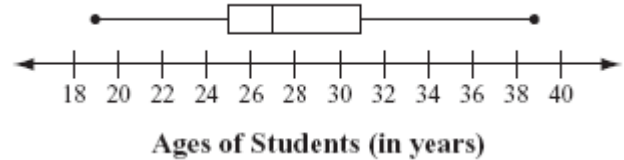
Yasmin works in a pet store. The list in the box below shows the number of pets that Yasmin sold each week for seven weeks.

7, 5, 6, 10, 4, 12, 5

What is the mode of the number of pets that Yasmin sold each week for these seven weeks?

- A. 5
- B. 6
- C. 7
- D. 8

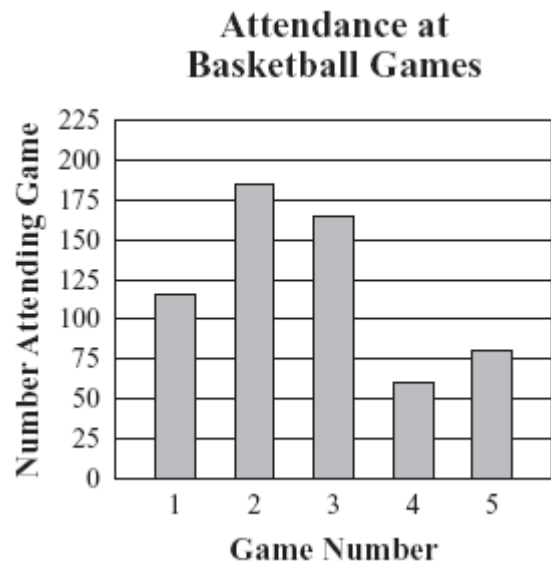
Ms. Simmons made the box-and-whisker plot below to show some statistics about the ages of the students in her class at a community college.



Which of the following best represents the median age of the students in her class?

- A. 25
- B. 27
- C. 29
- D. 31

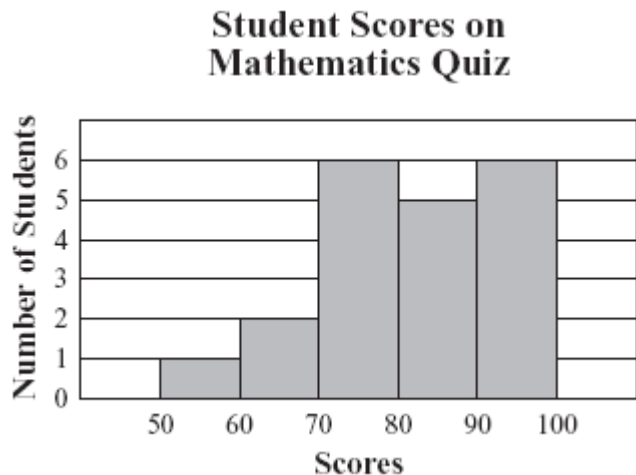
The bar graph below shows the attendance at each of five basketball games.



Which of the following is closest to the difference between the least and the greatest attendance for the five basketball games?

- A. 35
- B. 55
- C. 70
- D. 125

The histogram below shows the scores for all the students who took a mathematics quiz.



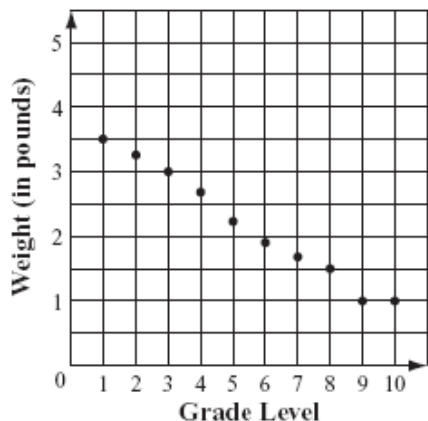
What percent of the students received a score of 80 or above?

- A. 55%
- B. 40%
- C. 25%
- D. 11%

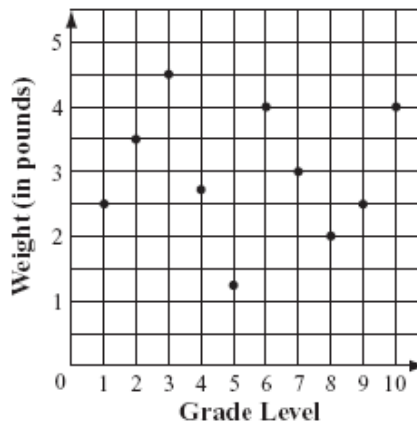
In David's school district, there is a positive correlation between the grade level and the weight of the mathematics textbook used by each grade.

Which of the following scatterplots best represents this correlation?

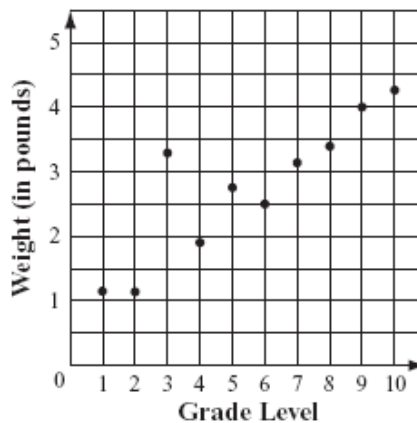
A. **Mathematics Textbooks**



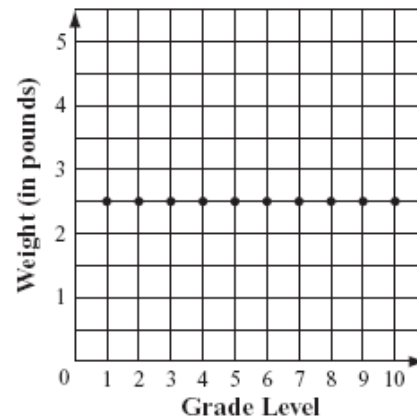
B. **Mathematics Textbooks**



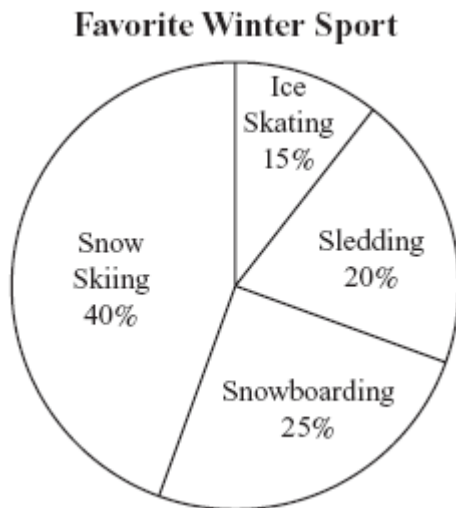
C. **Mathematics Textbooks**



D. **Mathematics Textbooks**



Ruben surveyed 180 students in his school to find each student's favorite winter sport. He recorded his results in the circle graph below.



Based on Ruben's graph, what is the total number of students whose favorite sport was either snowboarding or snow skiing?

- A. 117
- B. 115
- C. 90
- D. 65

Tara wrote a set of three numbers.

- The mean of her set is 8.
- The range of her set is 14.

Which of the following could be Tara's set of numbers?

- A. 2, 8, 14
- B. 4, 6, 18
- C. 2, 6, 16
- D. 6, 8, 10

Franco has a bag with four letter tiles in it. All of the tiles are the same size and shape, as shown below.



One face of each tile has a letter on it, and the other faces are blank.

Franco will select a tile at random, record the letter, and put the tile back. If he does this two times, what is the probability that Franco will select a T and then a B?

- A. $\frac{1}{16}$
- B. $\frac{1}{12}$
- C. $\frac{1}{4}$
- D. $\frac{1}{2}$

A box of identically shaped light bulbs contains the following:

- 11 red light bulbs
- 13 blue light bulbs
- 10 green light bulbs
- 16 orange light bulbs

If 1 light bulb is chosen at random from the box, what is the probability that it will be green?

- A. $\frac{1}{4}$
- B. $\frac{1}{5}$
- C. $\frac{1}{10}$
- D. $\frac{1}{50}$

The chart below shows the low temperatures, in degrees Fahrenheit, outside Maya's house for a seven-day period in December.

Temperatures Outside Maya's House

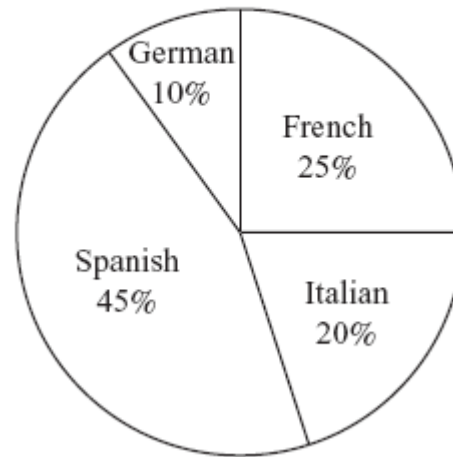
Date	Temperature
December 12	-3°F
December 13	-9°F
December 14	8°F
December 15	7°F
December 16	-4°F
December 17	5°F
December 18	8°F

What is the median of the temperatures in the chart?

- A. 5°F
- B. 6°F
- C. 7°F
- D. 8°F

The circle graph below shows the percent of students enrolled in each of four foreign language classes being offered at a school.

Students Enrolled in Foreign Language Classes



- No student is enrolled in more than one foreign language class.
- The number of students enrolled in Italian is 36.

Based on the graph and the given data, what is the total number of students enrolled in foreign language classes?

- A. 72
- B. 100
- C. 116
- D. 180

The mean height, in inches, of 5 girls on the middle school basketball team is exactly 66 inches. The table below lists the heights of 4 of the girls.

Girls' Heights	
Name	Height (in inches)
Jessica	65
Ali	65
Sina	70
Amanda	66
Becky	?

Which of the following is the height of Becky?

- A. 64 inches
- B. 65.5 inches
- C. 66 inches
- D. 66.5 inches

The stem-and-leaf plot below shows the age of each member of a hiking club.

Hiking Club Members' Ages

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

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Key
2|8 represents 28

What is the range of ages of the hiking club members?

- A. 34
- B. 37
- C. 40
- D. 41

The chart below shows the number of goals scored by the Sharks soccer team and their opponents for 5 games.

Goals Scored by Sharks and Opponents

Game	Number of Goals Scored by the Sharks	Number of Goals Scored by Opponents
1st	5	3
2nd	4	0
3rd	3	2
4th	4	6
5th	5	1

In what percent of the games did the Sharks score more goals than their opponents?

- A. 40%
- B. 50%
- C. 80%
- D. 100%

The prices of some of the comic books sold in a collectors' catalogue are listed below.

\$5.00	\$20.00	\$4.50	\$3.00	\$3.50
\$3.00	\$5.50	\$3.00	\$6.00	\$4.00

What is the mean price of these books?

- A. \$3.00
- B. \$4.25
- C. \$5.00
- D. \$5.75

There are a total of 500 students at Lincoln Middle School. The table below shows the number of students who are members of 0, 1, 2, 3, or 4 clubs.

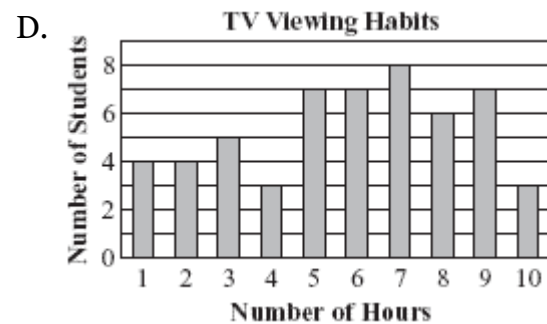
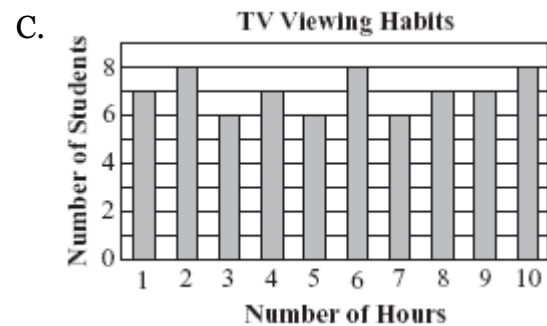
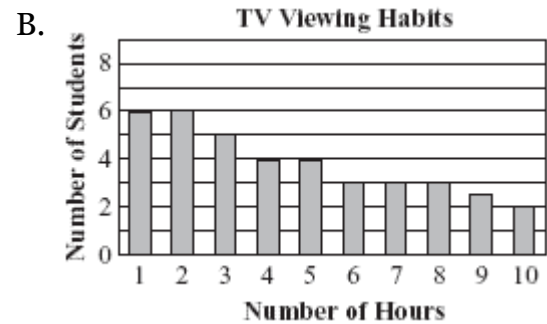
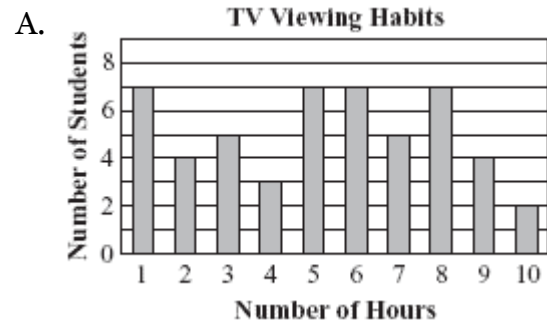
Members of Student Clubs

Number of Clubs (n)	Number of Students Who Are Members of n Clubs
0	300
1	110
2	60
3	20
4	10

Based on the table, what percent of the 500 students are members of 2 or more clubs?

- A. 12%
- B. 18%
- C. 90%
- D. 94%

Which bar graph below shows a mode of 7 hours of television viewed per week?



The manager of a car dealership is ordering a new car. The options for the new car are shown in the table below.

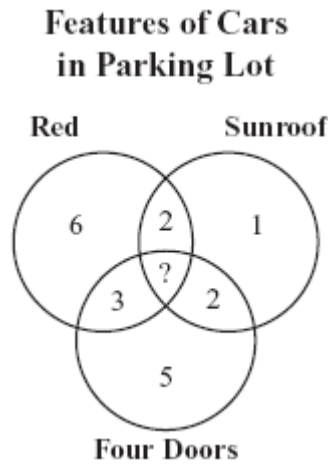
Options for New Car

Categories	Options
Color	white red silver
Roof style	hard top convertible
Number of doors	2 doors 4 doors

The manager decides to let his computer randomly select one option for each of the three categories in the table.

- Based on the table, what is the total number of combinations of 1 color, 1 roof style, and 1 number of doors that can be selected for the new car? Show or explain how you got your answer.
- What is the probability that the computer will select a hard top for the new car? Show or explain how you got your answer.
- What is the probability that the computer will **not** select white for the new car's color? Show or explain how you got your answer.
- What is the probability that the computer will select for the new car to **both** be silver and have 2 doors? Show or explain how you got your answer.

Brad made the Venn diagram below to show the number of cars in a parking lot that were red, had four doors, had a sunroof, or had any combination of those features. He left one number off his Venn diagram.



- a. Describe what the 6 represents in the Venn diagram.

- b. A total of 20 cars in the parking lot were red, had four doors, had a sunroof, or had any combination of those features. What number should Brad put in place of the "?" in the center section of his Venn diagram? Show or explain how you got your answer.

- c. What was the total number of cars in the parking lot that were red? Show or explain how you got your answer.

The individual weights, in pounds, of the members of a school's wrestling team are shown in the box below.

180	163	165	165
171	177	191	168
180	203	196	175
162	155	178	195

- a. What is the range of the weights? Show or explain how you got your answer.
- b. Copy the diagram below into your Student Answer Booklet. Use the diagram to make a stem-and-leaf plot of the data above. Be sure to title your plot and provide a key.

[illegible]

- c. What is the median weight for the data in your stem-and-leaf plot from part (b)? Show or explain how you got your answer.