

Chapter 5

Data and Probability

Practice 1 Average

Find the mean or average of each set of data.

Example

6, 14, 18, 22

Step 1 Find the sum of the four numbers.

$$\underline{6} + \underline{14} + \underline{18} + \underline{22} = \underline{60}$$

Step 2 Divide the sum by 4.

$$\underline{60} \div 4 = \underline{15}$$

The mean or average of the set of numbers is 15.

Another word for average is mean.



1. Here are the weights of 5 pieces of luggage at an airport.

14 lb, 18 lb, 21 lb, 27 lb, 30 lb

Step 1 Find the total weight of all the pieces of luggage.

$$\underline{\quad\quad\quad} + \underline{\quad\quad\quad} + \underline{\quad\quad\quad} + \underline{\quad\quad\quad} + \underline{\quad\quad\quad}$$

$$= \underline{\quad\quad\quad} \text{ lb}$$

Step 2 Divide the total by 5.

$$\underline{\quad\quad\quad} \div 5 = \underline{\quad\quad\quad} \text{ lb}$$

What is the average weight of the pieces of luggage? lb

Find the mean of each set of data.

2. 37, 0, 67, 44

3. \$8, \$12, \$15, \$29

4. 15 pt, 21 pt, 34 pt, 48 pt, 52 pt

Name: _____

Date: _____

5. 28 yd, 61 yd, 19 yd, 43 yd, 89 yd, 126 yd

6. 55 lb, 246 lb, 100 lb, 34 lb, 95 lb, 460 lb

Complete. Use the data in the table.

The table shows the distances Wayne jogged on 5 days.

Distances Wayne Jogged on Five Days

| Day | Distance Jogged |
|-----------|-----------------|
| Monday | 3 km |
| Tuesday | 2 km |
| Wednesday | 4 km |
| Thursday | 5 km |
| Friday | 6 km |

7. How many kilometers did he jog altogether?

8. On average, how many kilometers did he jog each day?



Complete. Use the data in the table.

The table shows the number of trophies a school collected over 6 years.

Trophies Collected Over Six Years

| Year | Number of Trophies Collected |
|------|------------------------------|
| 1 | 15 |
| 2 | 9 |
| 3 | 12 |
| 4 | 18 |
| 5 | 20 |
| 6 | 22 |

9. What is the total number of trophies collected in 6 years?
10. What is the average number of trophies collected each year?



Solve. Show your work.

Example

Mrs. Lim made 6,250 milliliters of orange juice and poured it into 5 containers. Find the mean amount of juice in each container.

$$6,250 \div 5 = 1,250 \text{ mL}$$

The mean amount of juice in each container is 1,250 mL.

$$\text{Mean} = \frac{\text{Total number or amount}}{\text{Number of items}}$$



- 11.** A chess club began accepting members on January 1. By September 30 of the same year, the club had a total of 504 members. What was the average number of members who joined the club each month?

Solve. Show your work.*Example*

The average number of goals scored by a soccer team in a game was 4. The team played a total of 22 games. What was the total number of goals scored by the team?

$$4 \times 22 = 88 \text{ goals}$$

| | | | | |
|-------------|---|---------------|---|-----------------|
| Total score | = | Average score | × | Number of games |
|-------------|---|---------------|---|-----------------|

The total number of goals scored by the team was 88.



- 12.** The mean length of the sides of a triangular plot of land is 18 yards. What is its perimeter?

Solve. Show your work.

13. There are 12 peaches in a carton. The mean mass of all the peaches is 175 grams. What is their total mass?

14. Alicia sews costumes for a school play. She takes an average of 86 minutes to sew each costume. How long would she take to sew 16 of these costumes?

Practice 2 Median, Mode, and Range

Find the median, mode, and range.

Example

4, 6, 5, 6, 8, 8, 10, 8

Find the median.

4, 5, 6, 6, 8, 8, 8, 10

Since there are two middle numbers, 6 and 8, find the mean of the two numbers.

The median of the data set is $\frac{6 + 8}{2} = \frac{14}{2} = 7$.

Arrange the numbers in order from least to greatest. The middle number or the mean of the two middle numbers is the median.



Find the mode.

4, 5, 6, 6, 8, 8, 8, 10

The mode of the data set is 8.

The number that appears most often is the mode. There can be more than one mode. If all the numbers appear the same number of times, there is no mode.



Find the range.

4, 5, 6, 6, 8, 8, 8, 10

$$\begin{aligned} \text{Range} &= 10 - 4 \\ &= 6 \end{aligned}$$

The range of the data set is 6.

The difference between the greatest and the least number is the range.



Find the median, mode, and range of each set of data.

- 1.** 50, 52, 58, 50, 47, 43, 52, 60, 49, 52

Median:

Mode:

Range:

- 2.** 15 in., 18 in., 12 in., 14 in., 30 in., 15 in., 15 in.

Median:

Mode:

Range:

- 3.** 9 lb, 11 lb, 14 lb, 20 lb, 14 lb, 20 lb, 14 lb, 20 lb

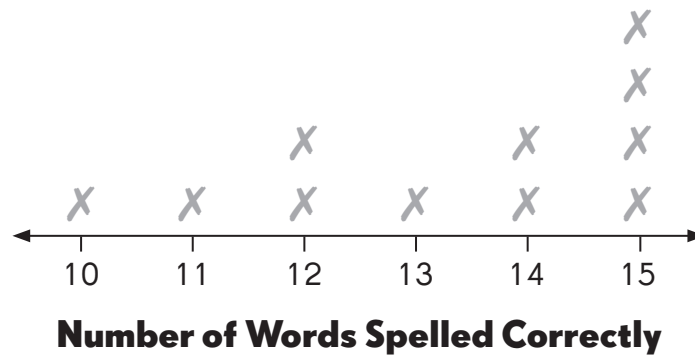
Median:

Mode:

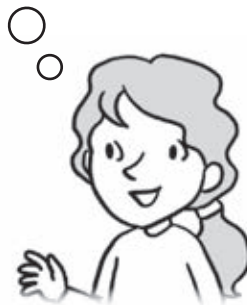
Range:

Example

The line plot shows the number of words spelled correctly by each contestant in a spelling bee. Each \times represents one contestant.



An \times above 15 on the number line represents a contestant who spelled 15 words correctly.

**Complete. Use the data in the line plot.**

_____ ¹¹ contestants took part in the spelling bee.

The median number of words spelled correctly is _____ ¹⁴.

The number of contestants who spelled the greatest number of words correctly is _____ ⁴.

The mode of the set of data is _____ ¹⁵ words.

The difference between the greatest and the least number of words spelled correctly is _____ ⁵.

Make a line plot to show the data.

The table shows the number of bull's eyes each player scored out of 10 shots in a dart competition.

Results of Dart Competition

| | | | | | | |
|------------------------------|---|---|---|---|---|----|
| Number of Bull's Eyes | 5 | 6 | 7 | 8 | 9 | 10 |
| Number of Players | 1 | 2 | 3 | 4 | 0 | 1 |

Complete. Use the data in your line plot.

4. The median number of bull's eyes scored is _____.
5. There are _____ players altogether.
6. The number of bull's eyes that was scored the most is _____.
7. The range of the set of data is _____.
8. _____ players scored 7 bull's eyes, and the winner scored _____ bull's eyes.

Complete the table based on the information given.

A number cube has six faces numbered 1 to 6. John tossed two number cubes several times and added the numbers each time.

Sum of the Number Cubes

| Total | Tally | Number of Times |
|-------|-------|-----------------|
| 2 | / | |
| 3 | | |
| 4 | // | |
| 5 | / | |
| 6 | // | |
| 7 | //// | |
| 8 | // | |
| 9 | / | |
| 10 | | |
| 11 | / | |
| 12 | | |

Complete. Use the data in the table.

9. John threw the two number cubes _____ times altogether.

10. Make a line plot to show the total for each toss.

11. The median of the set of data is _____.

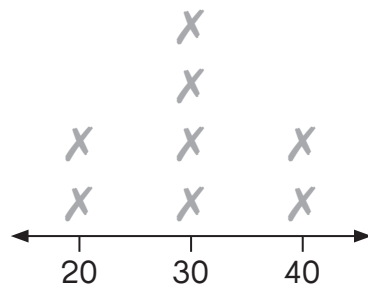
12. The mode of the set of data is _____.

13. The range of the set of data is _____.

Find the mean of each set of data.

Example

Haley made a line plot to show the number of points she scored in a computer math game over three weeks.



First, find the total number of points she scored.



Name: _____

Date: _____

$$20 \text{ points} \times \underline{2} \text{ times} = \underline{40}$$

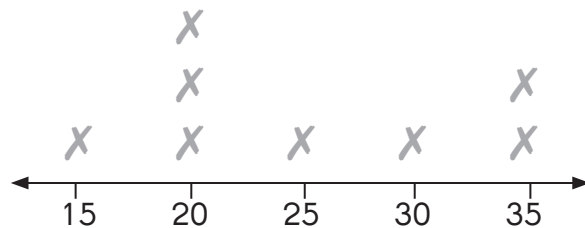
$$30 \text{ points} \times \underline{4} \text{ times} = \underline{120}$$

$$40 \text{ points} \times \underline{2} \text{ times} = \underline{80}$$

$$\begin{aligned} \text{Mean} &= \frac{\text{Total number of points scored}}{\text{Number of times played}} \\ &= \frac{40 + 120 + 80}{2 + 4 + 2} = \frac{240}{8} = 30 \end{aligned}$$

Haley's mean score for each game in Week 1 is 30 points.

14.



Number of Points Scored in Week 2

$$15 \text{ points} \times \underline{\hspace{2cm}} \text{ time(s)} = \underline{\hspace{2cm}}$$

$$20 \text{ points} \times \underline{\hspace{2cm}} \text{ time(s)} = \underline{\hspace{2cm}}$$

$$25 \text{ points} \times \underline{\hspace{2cm}} \text{ time(s)} = \underline{\hspace{2cm}}$$

$$30 \text{ points} \times \underline{\hspace{2cm}} \text{ time(s)} = \underline{\hspace{2cm}}$$

$$35 \text{ points} \times \underline{\hspace{2cm}} \text{ time(s)} = \underline{\hspace{2cm}}$$

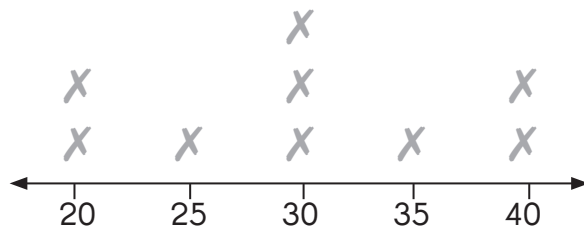
$$\text{Mean} = \underline{\hspace{4cm}}$$

$$= \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

Haley's mean score for each game in Week 2 is _____ points.

Find the mean of the set of data.

15.



Number of Points Scored in Week 3

20 points \times _____ time(s) = _____

25 points \times _____ time(s) = _____

30 points \times _____ time(s) = _____

35 points \times _____ time(s) = _____

40 points \times _____ time(s) = _____

Mean = _____

= _____

= _____

Haley's mean score for each game in Week 3 is _____ points.

- 16.** Compare the line plots for Weeks 2 and 3. Can you tell which data set has a greater mean just by looking at the line plots? What part of the line plot makes you think that?

Practice 3 Stem-and-Leaf Plots

Complete. Use the data in the stem-and-leaf plot.

Example

The stem-and-leaf plot shows 9 students' grades on a math test.

| Math Test Scores | |
|------------------|---------|
| Stem | Leaves |
| 1 | 5 |
| 2 | 5 8 |
| 3 | 2 2 2 7 |
| 4 | 2 5 |

$$1 \mid 5 = 15$$

In a stem-and-leaf plot, the leaves are the ones digits and the stems are the digits to the left of the ones digit.



The stem 3 has 4 leaves.

The median, the middle score, is 32.

The mode, the most frequent score, is 32.

The range of the scores is 30.

The outlier, the number farthest from the others, is 15.

Complete. Use the data in the stem-and-leaf plot.

The stem-and-leaf plot shows the heights of 12 children in centimeters.

| Heights of Children (cm) | |
|--------------------------|---------|
| Stem | Leaves |
| 9 | 6 8 |
| 10 | 4 6 6 6 |
| 11 | 0 3 3 5 |
| 12 | 4 9 |

$$9 \mid 6 = 96$$

1. The stem 12 has _____ leaves.
2. The height of the shortest child is _____ centimeters.
3. $10 \mid 4$ stands for _____ centimeters, and $11 \mid 4$ stands for _____ centimeters.
4. The median height of the children is _____ centimeters.
5. The mode of the set of data is _____ centimeters.
6. The range of the heights is _____ centimeters.

Make a stem-and-leaf plot to show the data.

The table shows the points scored by a school team in eight basketball games one season.

Points Scored in Basketball Games

| Game | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---------------|----|----|----|----|----|----|----|----|
| Points Scored | 50 | 62 | 60 | 68 | 60 | 72 | 56 | 76 |

| Points Scored in Basketball Games | |
|-----------------------------------|--------|
| Stem | Leaves |
| | |
| | |
| | |

Complete. Use the data in the stem-and-leaf plot.

7. The stem 7 has _____ leaves.
8. The stem _____ has the greatest number of leaves.
9. The median number of points scored is _____.
10. The modal number of points scored is _____.
11. The range of the set of data is _____.

Make a stem-and-leaf plot to show the data.

Seven children weighed their dogs at a pet-care center.

15 lb, 12 lb, 17 lb, 15 lb, 21 lb, 17 lb, 15 lb

| Weights of Dogs (lb) | |
|----------------------|--------|
| Stem | Leaves |
| | |
| | |

Complete. Use the data in the stem-and-leaf plot.

- 12. The weight of the heaviest dog is _____ pounds.
- 13. The median weight of the dogs is _____ pounds.
- 14. The mode of the set of data is _____ pounds.
- 15. The range of the weight of the dogs is _____ pounds.
- 16. _____ of the dogs weigh less than 18 pounds.
- 17. An eighth dog is weighed at the pet-care center. Its weight is 32 pounds. How would this change the stem-and-leaf plot?
How would this change the median and mode?

Practice 4 Outcomes

Decide which are possible outcomes. Write **yes** or **no**.

A coin is tossed once.

- The coin lands on heads. _____
- The coin lands on tails. _____
- The coin lands on both heads and tails. _____

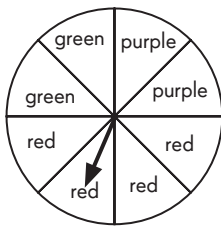
Complete.

- There are _____ possible outcomes when you toss a coin.

Complete. Write *more likely*, *less likely*, *certain*, *impossible*, or *equally likely*.

Example

Look at the spinner. Suppose it is spun once.



It is more likely that the spinner will land on red or on green.

It is equally likely that the spinner will land on green or on purple.

It is impossible that the spinner will land on yellow.

It is less likely that the spinner will land on green.

It is certain that the spinner will land on red, green, or purple.

A spinner is divided into four equal parts. The parts are red, blue, yellow, and green. The spinner is spun once.

- It is _____ that the spinner will land on red.
- It is _____ that the spinner will land on red, blue, yellow, or green.
- It is _____ that the spinner will land on blue or on green.
- It is _____ that the spinner will land on purple.

Complete each sentence.

A number cube numbered 1 to 6 is tossed once.

9. There are _____ possible outcomes.
10. The number cube lands with an even number on top. There are _____ possible outcomes.
11. The number cube lands with a number less than 3 on top. There are _____ possible outcomes.

Study the data in the table.

Three bags each contain eight colored marbles.

Number of Marbles in Three Bags

| Color of Marbles | Bag A | Bag B | Bag C |
|------------------|-------|-------|-------|
| Green | 4 | 6 | 8 |
| Red | 4 | 2 | 0 |

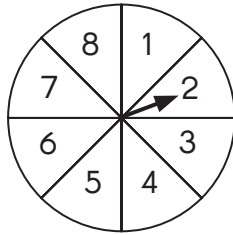
Complete. Write *more likely*, *less likely*, *certain*, *impossible*, or *equally likely* to describe each outcome.

12. A green marble is drawn from Bag B. _____
13. A red marble is drawn from Bag B. _____
14. A green marble is drawn from Bag C. _____
15. A red marble is drawn from Bag C. _____
16. A red or green marble is drawn from Bag B. _____

Practice 5 Probability as a Fraction

Find the probability as a fraction in simplest form.

Jake spins the spinner once. He wants to land on these numbers.
What is the probability of a favorable outcome?



Example

He wants to land on a number less than 3.

There are 2 favorable outcomes: 1 and 2

There are 8 possible outcomes: 1, 2, 3, 4, 5, 6, 7, and 8

$$\begin{aligned} \text{Probability of a favorable outcome} &= \frac{\text{Number of favorable outcomes}}{\text{Number of possible outcomes}} \\ &= \frac{2}{8} \\ &= \frac{1}{4} \end{aligned}$$

1. He wants to land on the number 7.

2. He wants to land on an odd number.

Find the probability as a fraction in simplest form for each outcome.

A coin is tossed once. The probability of getting

3. heads is .

4. tails is .

A number cube numbered 1 to 6 is tossed once.
The probability of getting

5. the number 2 is .

6. the number 0 is .

7. an even number is .

8. a number greater than 4 is .

A circular spinner has 4 equal parts. The parts are colored red, blue, green, and yellow. The spinner is spun once.
The probability of landing on

9. red is .

10. blue is .

11. purple is .

12. green, red, or yellow is .

13. red, blue, green, or yellow is .

Find the probability as a fraction in simplest form for each outcome.

A bag contains 10 discs numbered 1 to 10. A disc is drawn from the bag. The probability of drawing

14. the number 10 is .

15. a number less than 5 is .

16. an odd number is .

17. a number divisible by 3 is .

18. a number greater than 8 is .

19. the number 12 is .

A bag contains 3 white marbles, 3 blue marbles, and 6 red marbles. A marble is drawn from the bag. The probability of getting

20. a white marble is .

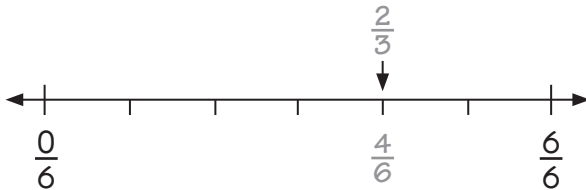
21. a blue marble is .

22. Which is more likely: drawing a red marble or drawing a blue marble? Explain.

Find the probability of each outcome on the number line. Then describe the outcome as *more likely*, *less likely*, *certain*, *impossible*, or *equally likely*.

Example

A box contains 4 red pencils, 1 blue pencil, and 1 black pencil.
Find the probability of picking a red pencil.



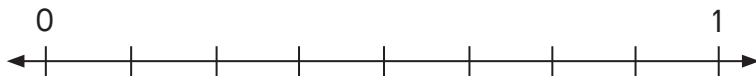
The closer the probability of an outcome is to 1, the more likely the outcome is to occur.

The probability of picking a red pencil is $\frac{4}{6}$ or $\frac{2}{3}$.

$\frac{2}{3}$ is closer to 1 than to 0 on the number line. So, the likelihood of picking a red pencil is more likely.



Each card in a set of 8 cards has a picture of a fruit. There are 3 orange cards, 2 apple cards, 2 pear cards, and 1 peach card. The cards are shuffled, placed in a stack, and one card is picked.



- 23.** An orange card: _____
- 24.** An apple card: _____
- 25.** An apple, peach, or pear card: _____
- 26.** An apple, orange, peach, or pear card: _____

Practice 6 Real-World Problems: Data and Probability

Solve. Show your work.

Example

In a test, Carl, Sarah, and Dinesh scored an average of 70 points. Carl scored 65 and Sarah scored 82. How many points did Dinesh get?

$$\begin{aligned} \text{Total score of the 3 students} &= 3 \times 70 \\ &= 210 \text{ points} \end{aligned}$$

$$\begin{aligned} \text{Carl and Sarah's total score} &= 65 + 82 \\ &= 147 \text{ points} \end{aligned}$$

$$\begin{aligned} \text{Dinesh's test score} &= 210 - 147 \\ &= 63 \text{ points} \end{aligned}$$

Dinesh's test score was 63 points.

1. Luis went on a fishing trip from Thursday to Sunday. On average, he caught 12 fish per day. He caught 15 fish on Thursday. How many fish did he catch altogether from Friday to Sunday?

2. Nicole bought 20 pieces of fabric of different lengths. The average length of 12 pieces is 3 feet. The total length of the other 8 pieces is 44 feet. Find the average length of the 20 pieces of fabric.

3. Ron drove his car every day from Monday to Saturday. On Monday and Tuesday, the car used an average of 2 gallons of gas each day. From Wednesday to Saturday, the car used an average of 3 gallons of gas each day. Find the total amount of gas the car used from Monday to Saturday.



Solve. Show your work. Use bar models to help you.*Example*

The average number of students in Class A and Class B is 24.
 Class A has 4 more students than Class B.
 How many students are there in each class?

Total number of students in both classes = $2 \times 24 = 48$

$$48 - 4 = 44$$

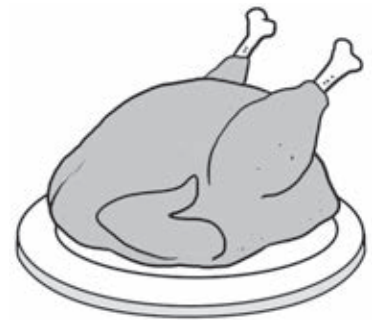
$$44 \div 2 = 22 \text{ students}$$

$$22 + 4 = 26 \text{ students}$$



Class A has 26 students, and Class B has 22 students.

- 4.** Mrs. Johnson buys 2 chickens. The average weight of the 2 chickens is 4 pounds. One of the chickens is 2 pounds heavier than the other. What is the weight of the heavier chicken?



Solve. Show your work.

Example

A group of athletes took part in a charity marathon. The table shows the number of kilometers completed by each athlete.

Results of Charity Marathon

| Number of Kilometers Completed by each Athlete | Number of Athletes |
|--|--------------------|
| 42 | 4 |
| 36 | 1 |
| 28 | 3 |

Find the median.

28, 28, 28, 36, 42, 42, 42, 42

The median is $\frac{36 + 42}{2} = 39$ kilometers.

Find the mode.

28, 28, 28, 36, 42, 42, 42, 42

The mode is 42 kilometers.

Find the range.

The range is $42 - 28 = 14$ kilometers.

Find the mean.

$$4 \times 42 \text{ km} = 168 \text{ km}$$

$$1 \times 36 \text{ km} = 36 \text{ km}$$

$$3 \times 28 \text{ km} = 84 \text{ km}$$

$$\begin{aligned} \text{Total} &= 168 + 36 + 84 \\ &= 288 \text{ km} \end{aligned}$$

The mean is $288 \div 8 = 36$ kilometers.

Another athlete joins the charity marathon and completes 27 kilometers. Will this athlete's distance increase or decrease the mean? Explain why you think so. Then find the new mean number of kilometers completed by all the athletes.

The new athlete's distance will decrease the mean because this new data point is less than the old mean.

$$288 + 27 = 315 \text{ km}$$

$$315 \div 9 = 35 \text{ km}$$

The new mean is 35 kilometers.

For every kilometer each athlete completed, \$25 would be donated to charity. Find the amount of money raised for charity by the 9 athletes.

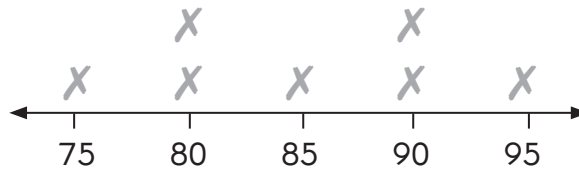
$$315 \times \$25 = \$7,875$$

The amount raised for charity is \$7,875.

- 5.** The scores of 9 players playing 18 holes of golf are 65, 72, 70, 69, 72, 67, 70, 72, and 73.
- Find the median score.
 - Find the mode of the scores.
 - Find the range of the set of data.
 - Find the mean of the set of data.
 - Another player scores 80. Predict how this player's score will change the median, mode, range, and mean of the data and explain your reasoning. Then compute each of these measures to check your predictions.

Example

The line plot shows Marilyn's science test scores during one semester. Each \times represents one test.



Marilyn's Science Test Scores

- a.** How many tests did she take?

7

- b.** Find the median, mode, and range of her scores.

Marilyn's median score is 85.

Marilyn's modal scores are 80 and 90.

The range of her scores is $95 - 75 = 20$.

- c.** Find her mean score.

$$1 \times 75 = 75$$

$$2 \times 80 = 160$$

$$1 \times 85 = 85$$

$$2 \times 90 = 180$$

$$1 \times 95 = 95$$

$$\text{Total} = 595$$

$$595 \div 7 = 85$$

Her mean score is 85.

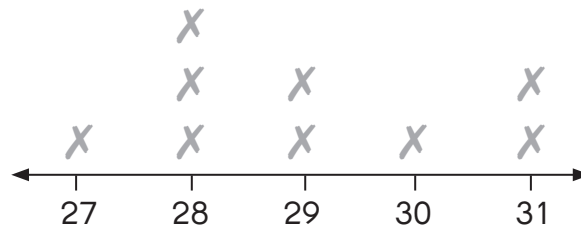
- d.** After Marilyn took another test, her new mean score was 84. What was her latest score?

$$84 \times 8 = 672$$

$$672 - 595 = 77$$

Her latest score was 77.

6. Kurt recorded the daily temperature highs for a science project. The results are shown in the line plot.



Daily Temperature Highs in °F

- a. On how many days did he record the temperature?
- b. What were the mean and median temperatures?
- c. The temperature high on another day was included with the data. The new mean temperature changed to 30°F . What was this temperature?
- d. Find the new median temperature.

7. A restaurant pays its 9 employees these daily wages:
\$90, \$70, \$100, \$90, \$90, \$90, \$100, \$160, \$200
Make a line plot to show the data.

- a.** Find the mean and median of the set of wages.

- b.** Does the mean or the median better describe what a new employee could expect to earn at this restaurant?

- c.** Are there any outliers? If so, what are they?

- d.** How do the mean and median each change if you disregard the outliers?
Now does the mean or median better represent what a new employee could expect to earn?

Example

During a trip to the beach, 9 children collected seashells. The stem-and-leaf plot shows the number of shells each child collected.

| Number of Seashells Collected | |
|-------------------------------|--------|
| Stem | Leaves |
| 6 | 1 1 5 |
| 7 | 0 6 8 |
| 8 | 3 8 |
| 9 | ? |

$$6 \mid 1 = 61$$

- a.** If the total number of seashells collected is 681, find the missing number. What is the outlier?

$$681 - 61 - 61 - 65 - 70 - 76 - 78 - 83 - 88 = 99$$

The missing number is 99. The outlier is 99 because it is farthest from the other numbers.

- b.** Find the median of the set of data.

The median is 76.

- c.** Find the mode of the set of data.

The mode is 61.

- d.** Find the range of the set of data.

$$99 - 61 = 38$$

The range is 38.

8. The stem-and-leaf plot shows the weights of some bowling balls in pounds.

| Weights of Bowling Balls (lb) | |
|-------------------------------|-------------------------------|
| Stem | Leaves |
| 0 | 8 8 9 |
| 1 | 0 0 1 1 2 2 4 4 5 5 5 6 6 6 6 |

$$0 \mid 8 = 8$$

- a. How many bowling balls are there?
- b. Find the median, mode, and range.
- c. What is the least number of bowling balls needed to make the mode 14 pounds?
- d. Find the total weight of the bowling balls in **Exercise 8.c**.

Find the probability of each outcome on a number line. Then describe the likelihood of each outcome as *more likely*, *less likely*, *certain*, *impossible*, or *equally likely*.

9. The weather forecast in a city is that for every week, 3 days are sunny, 2 are cloudy, and 2 are rainy. On any chosen day, describe the probability of each of these outcomes.

Example

It is a sunny day.

$$\begin{aligned}\text{Probability} &= \frac{\text{Number of favorable outcomes}}{\text{Number of possible outcomes}} \\ &= \frac{3}{7}\end{aligned}$$



Less likely

- a. It is not a sunny day.

b. It is a rainy, sunny, or a cloudy day.

c. If today is sunny, tomorrow is rainy.

Name: _____

Date: _____

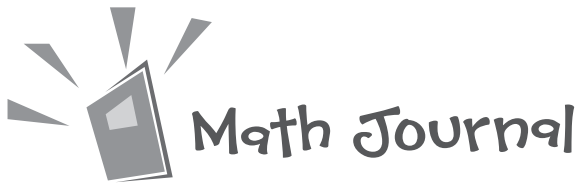
Solve.

10. In a class of 25 students, 10 are girls. The names of the students are written on cards and placed in a box. The names are chosen at random to win prizes donated by a local store.

a. What is the probability that the first student selected is a girl?

b. What is the probability that the first student selected is a boy?

c. If the first student selected is a girl, what is the probability that the second student selected is also a girl?



Write the steps to solve the problem.

Neil bought 5 books. The average price of 2 of the books is \$5. The average price of the rest of the books is \$4. Find the total amount of money Neil paid for the 5 books.

Then, following your steps above, solve the problem.



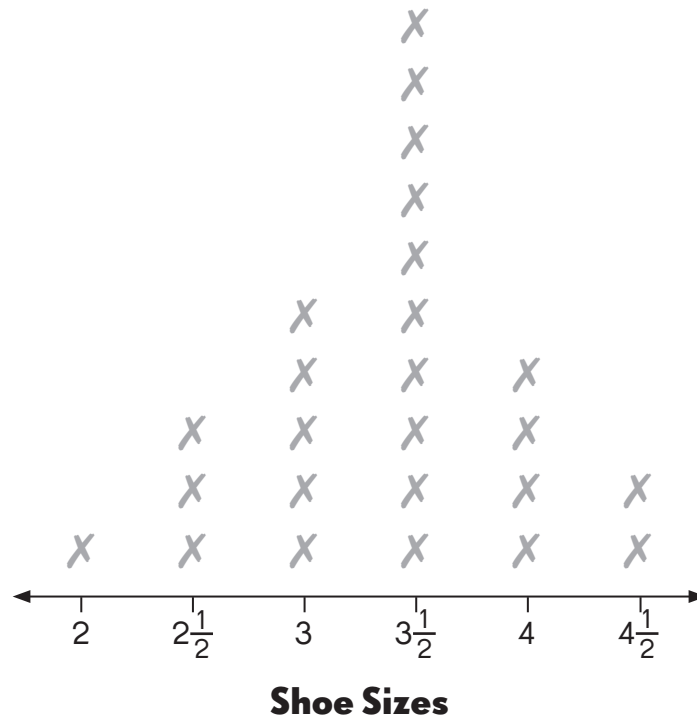
Put On Your Thinking Cap!



Challenging Practice

1. Michelle got an average score of 80 on two tests. What score must she get on the third test so that her average score for the three tests is the same as the average score for the first two tests?

2. The line plot shows the shoe sizes of students in Ms. George's class.



- How many students are in the class?
- What is the mode of the set of data?
- How many students in the class wear a size $3\frac{1}{2}$ shoe?
- Suppose you looked at 100 pairs of shoes for the grade, which includes 3 other classes. How many pairs of size $3\frac{1}{2}$ would there be? Explain your answer.



Put On Your Thinking Cap!



Problem Solving

1. The average height of Andy, Chen, and Chelsea is 145 centimeters. Andy and Chen are of the same height and Chelsea is 15 centimeters taller than Andy. Find Andy's height and Chelsea's height.

2. Eduardo has 3 times as many stamps as Sally. The average number of stamps they have is 450. How many more stamps does Eduardo have than Sally?

3. Bag A and Bag B each contain 2 marbles — 1 white and 1 red. Troy picks 1 marble from Bag A and 1 from Bag B. What is the probability that the following are picked?

a. 2 white marbles

b. 1 red and 1 white marble