

**Part V:**

*(Probability and Statistics)*

**Saturday Tutoring  
Mathematics Program**

**Name:** \_\_\_\_\_

**7<sup>th</sup> Grade**

1. Melissa conducts a study of the heights of some red kangaroos. She records the heights in the table below.

| Red Kangaroo Heights (inches) |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|-------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 40                            | 57 | 72 | 78 | 62 | 67 | 73 | 66 | 71 | 60 | 56 | 52 | 48 | 51 | 44 | 79 |

Using the data in Melissa's table, complete the frequency table below to show the number of kangaroos in each of the indicated height ranges.

### RED KANGAROO HEIGHTS

| Height (inches) | Number of Kangaroos |
|-----------------|---------------------|
| 40–49           |                     |
| 50–59           |                     |
| 60–69           |                     |
| 70–79           |                     |

Based on her study, Melissa claims that exactly  $\frac{1}{4}$  of the red kangaroos are between 70 and 79 inches in height. On the lines below, explain whether her claim is correct.

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Saturday Tutoring Program 7<sup>th</sup> Grade Mathematics Practice. Saturday, March 29, 2014.

2. Millie recorded the prices of all the plants she sold between noon and 1 p.m. at a nursery. At the end of the hour, she reviewed her list, as shown below.

\$2.95 \$8.50 \$12.95 \$3.50 \$4.50 \$14.50 \$12.95 \$4.50 \$3.50 \$12.95 \$8.50 \$4.50

Using Millie's list, complete the frequency table below to show how many plants were sold in each of the indicated price ranges.

Be sure to

- title the table
- label the columns
- record all the data

|                 |  |
|-----------------|--|
|                 |  |
| \$0.00–\$3.99   |  |
| \$4.00–\$7.99   |  |
| \$8.00–\$11.99  |  |
| \$12.00–\$15.99 |  |

Which price range shows the **least** number of plants sold?

**Answer** \$ \_\_\_\_\_ to \$ \_\_\_\_\_

3. On the calendar below, Mindy recorded the daily high temperature in degrees Fahrenheit (°F) for the first fifteen days in May.

**MAY**

| Sun        | Mon       | Tue        | Wed        | Thu        | Fri        | Sat        |
|------------|-----------|------------|------------|------------|------------|------------|
| 1<br>77°F  | 2<br>80°F | 3<br>65°F  | 4<br>61°F  | 5<br>65°F  | 6<br>71°F  | 7<br>82°F  |
| 8<br>87°F  | 9<br>70°F | 10<br>71°F | 11<br>86°F | 12<br>86°F | 13<br>86°F | 14<br>70°F |
| 15<br>87°F | 16        | 17         | 18         | 19         | 20         | 21         |
| 22         | 23        | 24         | 25         | 26         | 27         | 28         |
| 29         | 30        | 31         |            |            |            |            |

**Part A**

Use information from the calendar to complete the temperature frequency table shown below.

**DAILY HIGH TEMPERATURES  
MAY 1–15**

| Temperature (°F) | Tally |
|------------------|-------|
| 61–65            |       |
| 66–70            |       |
| 71–75            |       |
| 76–80            |       |
| 81–85            |       |
| 86–90            |       |

**Part B**

Which temperature range occurs most frequently?

**Answer** \_\_\_\_\_ °F

**Part C**

Which temperature range occurs least frequently?

**Answer** \_\_\_\_\_ °F

4. Jessie performs an experiment by spinning the arrow on a spinner. The spinner has four equal sections. The results of his experiment are shown in the table below.

**JESSIE'S SPINNER  
EXPERIMENT**

| Outcome | Frequency |
|---------|-----------|
| Blue    | 11        |
| Green   | 11        |
| Orange  | 12        |
| Red     | 8         |

Based on the data in the table, what is the experimental probability that the arrow will land on red?

- A**  $\frac{1}{8}$
- B**  $\frac{8}{42}$
- C**  $\frac{8}{34}$
- D**  $\frac{1}{4}$

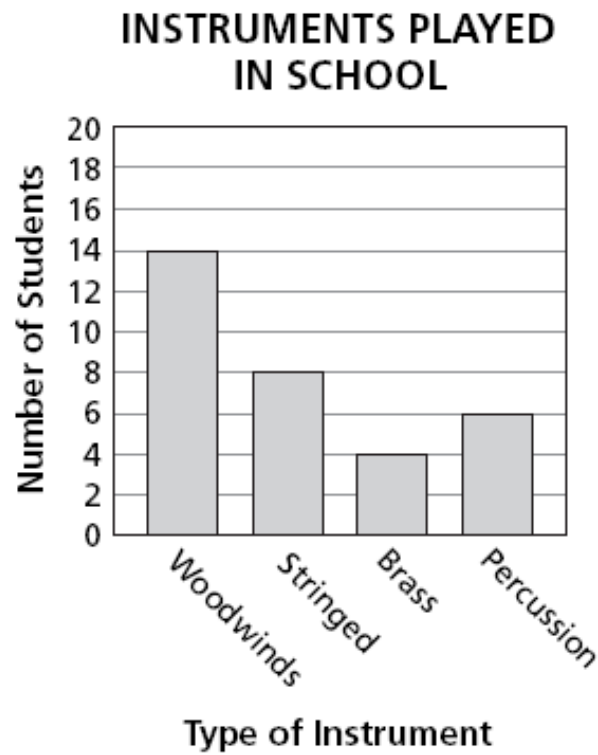
5. Hiral performs an experiment by randomly selecting different-colored marbles from a jar. The results of his experiment are shown in the table below.

| Marble Color | Frequency |
|--------------|-----------|
| Green        | 5         |
| Blue         | 11        |
| Red          | 8         |
| Yellow       | 1         |

Based on the data, what is the probability that the next marble Hiral selects will be blue or red?

- A**  $\frac{1}{25}$
- B**  $\frac{6}{25}$
- C**  $\frac{19}{25}$
- D**  $\frac{24}{25}$

6. The graph below shows the type of instruments played by students in the school.



Janelle is chosen to perform a solo. What is the probability that she plays a stringed instrument?

- A**  $\frac{6}{24}$
- B**  $\frac{8}{24}$
- C**  $\frac{6}{32}$
- D**  $\frac{8}{32}$



7. The table below shows the bowling scores of 125 students.

**BOWLING SCORES**

| Scores     | Number of Students |
|------------|--------------------|
| Under 100  | 28                 |
| 100–125    | 52                 |
| 126–150    | 30                 |
| 151 and up | 15                 |

What is the experimental probability that the next student who bowls will have a score that is 126 or more?

- A  $\frac{15}{125}$
- B  $\frac{30}{125}$
- C  $\frac{45}{125}$
- D  $\frac{80}{125}$

8. The table below shows the attendance at a skating rink during the first 4 months of this year.

### SKATING RINK ATTENDANCE

| Month    | Number of People |
|----------|------------------|
| January  | 1,450            |
| February | 1,502            |
| March    | 1,631            |
| April    | 1,688            |
| May      | ?                |

Based on the data in the table, which is the best prediction for how many people skated at the skating rink in May?

- A 1,400
- B 1,600
- C 1,800
- D 2,000

9. The population of Los Angeles, California, throughout the 20th century is shown in the table below.

**POPULATION OF LOS ANGELES**

| Year | Population (in millions) |
|------|--------------------------|
| 1900 | 0.1                      |
| 1920 | 0.6                      |
| 1940 | 1.1                      |
| 1960 | 1.8                      |
| 1980 | 2.3                      |
| 2000 | 2.8                      |

Between which 2 years did the population increase the most?

**Answer** between \_\_\_\_\_ and \_\_\_\_\_

Based on the data in the table, predict the population of Los Angeles in the year 2020. Justify your prediction on the lines below.

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10. Dylan has a bag containing 15 marbles. The table below shows the number of marbles of each color in the bag. As part of a probability experiment for his science class, Dylan randomly picks a marble from the bag and then replaces it. He repeats this 300 times.

**DYLAN'S BAG OF MARBLES**

| Marble Color | Number of Marbles |
|--------------|-------------------|
| White        | 3                 |
| Red          | 8                 |
| Blue         | 3                 |
| Black        | 1                 |

**Part A**

Dylan randomly picks a marble from the bag. What is the probability the marble will be red?

**Show your work.**

**Answer** \_\_\_\_\_

**Part B**

Predict the number of times out of 300 Dylan will pick a red marble.

**Show your work.**

**Prediction** \_\_\_\_\_ times

11. Brandon wants to conduct a survey as to whether mushrooms should be added to the pizzas sold in the school cafeteria. Which sampling method will offer Brandon the best results?
- A interview every vegetarian student
  - B interview every student at a pizza parlor
  - C interview every student who brings lunch from home
  - D interview every student who eats lunch in the cafeteria
12. Eva surveys a large number of students at a movie theater about their favorite weekend activity. The table below shows the results of her survey.

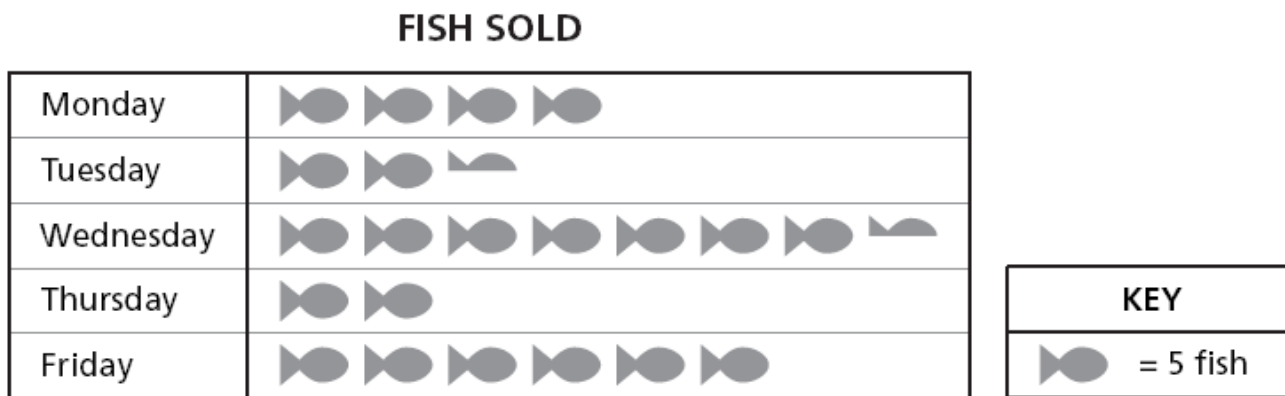
**FAVORITE WEEKEND ACTIVITY**

| Activity            | Number of Students |
|---------------------|--------------------|
| Reading books       | 16                 |
| Playing sports      | 24                 |
| Playing video games | 30                 |
| Watching movies     | 130                |

Based on the results of her survey, Eva concludes that the favorite weekend activity of most students is watching movies. Which statement best describes Eva's conclusion?

- A Eva's conclusion is not valid because she surveyed only students.
- B Eva's conclusion is valid because she surveyed a large number of students.
- C Eva's conclusion is valid because she surveyed students from many schools.
- D Eva's conclusion is not valid because she surveyed students at a movie theater.

13. The number of fish sold at a fish market during a certain week is shown in the pictograph below.



What is the total number of fish sold on Tuesday and Wednesday?

- A** 10
  - B** 25
  - C** 45
  - D** 50
14. There are 500 students in Andrew's school. Andrew wants to survey a sample of students to determine the most popular school subject. Which sampling method is the best to use to predict the most popular school subject?
- A** randomly select 50 students from the student list of 500
  - B** randomly select 10 students having lunch in the cafeteria
  - C** select the first 50 girls entering the auditorium for an assembly
  - D** select the first 25 students leaving the building after school

15. A reporter for a teen magazine surveys teenagers leaving Hot Shots clothing store to determine which brand of clothing teens like best. Which statement best explains why the results of this survey may not be valid?
- A The survey should have been conducted online.
  - B The group surveyed consisted only of teenagers.
  - C The survey was conducted by a reporter from only one magazine.
  - D The group surveyed consisted only of teenagers who shopped at the same store.
16. Karen surveyed students in one middle school about their favorite band. Of the 1,156 students in the middle school, 65 sixth-grade students were surveyed. More than half of the 65 students said their favorite band is Rhonda and the Gees. Based on the survey, Karen says most middle school students' favorite band is Rhonda and the Gees. Why is Karen's statement incorrect?
- F Karen surveyed too many students.
  - G Karen's survey sample was too small.
  - H Karen did not survey any high school students.
  - J Karen did not include enough bands in the survey.

17. Based on Rudy's baseball statistics, the probability that he will pitch a curveball is  $\frac{1}{4}$ . If Rudy throws 20 pitches, how many pitches **most likely** will be curveballs?
- A 1
  - B 2
  - C 5
  - D 10
18. Veronica has a box that contains 24 pictures of her family, 6 pictures of her dog, and 12 pictures of her friends. Veronica randomly chooses one picture from the box. Which statement **best** describes what will likely occur?
- A She will definitely pick a picture of her family.
  - B She will most likely pick a picture of her family.
  - C She is equally likely to pick a picture of her family or of her dog.
  - D She is equally likely to pick a picture of her family, of her dog, or of her friends.
19. Rachel has 5 silver bracelets and 2 gold bracelets in her jewelry box. Rachel randomly picks one bracelet. Which statement **best** describes which bracelet she will probably pick?
- A She probably will pick a gold bracelet.
  - B She definitely will pick a gold bracelet.
  - C She probably will pick a silver bracelet.
  - D She definitely will pick a silver bracelet.



20. Derek conducts a probability experiment for his mathematics class. He uses the ten cards shown below.

|                 |                 |                 |                 |                 |
|-----------------|-----------------|-----------------|-----------------|-----------------|
| Card 1<br>Black | Card 2<br>Black | Card 3<br>Black | Card 4<br>White | Card 5<br>White |
| Card 6<br>White | Card 7<br>White | Card 8<br>Gray  | Card 9<br>Gray  | Card 10<br>Gray |

Derek randomly picks one of the ten cards from a container, looks at the color, and replaces the card. He repeats this 100 times. How many times would you expect Derek to pick a white card?

- A 20 times
  - B 30 times
  - C 40 times
  - D 50 times
21. A spinner is divided into five equal sections numbered 1 through 5. Predict how many times out of 240 spins the spinner is most likely to stop on an odd number.
- F 80
  - G 96
  - H 144
  - J 192

22. Joan flipped a coin 100 times during a mathematics experiment. The coin landed on tails 36 times. Based on Joan's results, which of these statements is true?
- A The coin landed on tails more than expected.
  - B The coin landed on heads less than expected.
  - C The coin landed on heads more than tails.
  - D The coin landed on heads less than tails.
23. Four students predicted how long it would take them to run around a city block. Their predictions and actual times are shown in the table below.

| Student | Predicted Time<br>(in seconds) | Actual Time<br>(in seconds) |
|---------|--------------------------------|-----------------------------|
| Angie   | 74                             | 63                          |
| Rachael | 61                             | 70                          |
| Thomas  | 68                             | 76                          |
| Jordan  | 65                             | 72                          |

Which student's predicted time is closest to his or her actual time?

- A Angie
- B Rachael
- C Thomas
- D Jordan

24. In a basketball contest, Chad predicted he would make 85 percent of his shots. He actually made 18 out of 20 shots. How did Chad's prediction compare with his actual results?
- A His prediction was the same as his actual results.
  - B His prediction was lower than his actual results.
  - C His prediction was higher than his actual results.
  - D His prediction cannot be compared with his actual results.