## pp. 404-405 (#3-18, 27-30

**3.** 8

**4.** 4 ways; 4 ways

**5.** 1, 2, 3, 4, 5, 6, 7, 8, 9

**6.** 6

**7.** 1, 3, 5, 7, 9

**8.** 6, 7, 8, 9

**9.** 1, 3

**10.** 1, 2

**11.** 3, 6, 9

**12.** **a.** 2 ways **b.** blue, blue

**13.** **a.** 1 way **b.** green

**14.** **a.** 2 ways

**b.** purple, purple

**15.** **a.** 1 way **b.** yellow

**16.** **a.** 6 ways

**b.** yellow, green, blue, blue, purple, purple

**17.** **a.** 7 ways

**b.** red, red, red, purple, purple, green, yellow

**18.** There are 7 marbles that are *not* purple, even though there are only 4 colors. Choosing *not* purple could be red, red, red, blue, blue, green, or yellow.

**27.** $x = 2$

**28.** $n = 21$

**29.** $w = 12$

**30.** $b = 68$

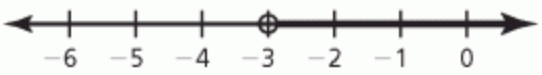
# pp. 410-411 (#4-9, 11-17, 21, 23-27)

4. Spinner B; There are more chances to land on "Down" with Spinner B.
5. either; Both spinners have the same number of chances to land on "Forward."
6. likely
7. impossible
8. certain
9. unlikely
11. $\frac{1}{10}$
12. $\frac{1}{5}$
13. $\frac{9}{10}$
14. $\frac{4}{5}$
15. 0
16. The student found the probability of choosing a blue shirt.;

    $P(\textit{not}\ \text{blue}) = \frac{6}{10} = \frac{3}{5}$
17. 20
21. There are 2 combinations for each.
23. $x < 4$;

**24.** $b \geq -5$;


**25.** $w > -3$;




**26.** $g \leq -3$;

# pp. 417-419 (#6-14, 35-37

**6.** $\frac{7}{50}$, or 14%

**7.** $\frac{12}{25}$, or 48%

**8.** $\frac{7}{25}$, or 28%

**9.** $\frac{21}{25}$, or 84%

**10.** $\frac{17}{50}$, or 34%

**11.** 0, or 0%

**12.** $\frac{3}{20}$, or 15%

**13.** 45 tiles

**14.** 5 cards

**35.** 4%

**36.** 3.5%

**37.** D

# pp. 417-419 (#15-24, 29)

**15.** $\frac{1}{3}$, or about 33.3%

**16.** $\frac{1}{6}$, or about 16.7%

**17.** $\frac{1}{2}$, or 50%

**18.** $\frac{1}{2}$, or 50%

**19.** 1, or 100%

**20.** 0, or 0%

**21.** $\frac{25}{26}$, or about 96.2%

**22.** 30 chips

**23.** 36 songs

**24.** **a.** $\frac{4}{9}$, or about 44.4%

**b.** 5 males

**29.** **a.** $\frac{1}{12}$; 50 times

**b.** $\frac{11}{50}$; 132 times

**c.** A larger number of trials should result in a more accurate probability, which gives a more accurate prediction.

# pp. 425-427 (#6-13, 15-25, 31-33)

**6.** *Sample space:*
Miniature golf 1 P.M.–3 P.M.,
Miniature golf 6 P.M.–8 P.M.,
Laser tag 1 P.M.–3 P.M.,
Laser tag 6 P.M.–8 P.M.,
Roller skating 1 P.M.–3 P.M.,
Roller skating 6 P.M.–8 P.M.;
6 possible outcomes

**7.** *Sample space:* Realistic Lion, Realistic Bear, Realistic Hawk, Realistic Dragon, Cartoon Lion, Cartoon Bear, Cartoon Hawk, Cartoon Dragon; 8 possible outcomes

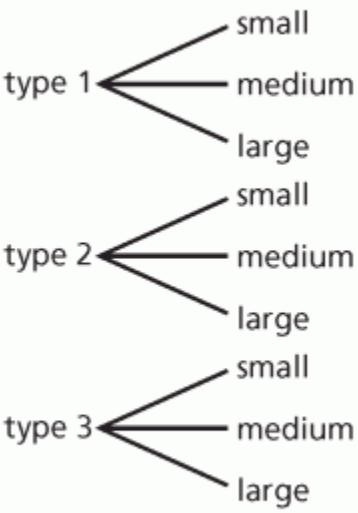
**8.** 21

**9.** 20

**10.** 24

**11.** 60

**12.** Tree Diagram:




Fundamental Counting Principle: $3 \cdot 3 = 9$

**13.** The possible outcomes of each question should be multiplied, not added.
The correct answer is $2 \times 2 \times 2 \times 2 \times 2 = 32$.

**15.** $\frac{1}{10}$, or 10%

**16.** $\frac{1}{5}$, or 20%

**17.** $\frac{1}{5}$, or 20%

**18.** 0, or 0%

**19.** $\frac{2}{5}$, or 40%

**20.** $\frac{3}{10}$, or 30%

**21.** $\frac{1}{18}$, or $5\frac{5}{9}\%$

**22.** $\frac{1}{9}$, or $11\frac{1}{9}\%$

**23.** $\frac{1}{9}$, or $11\frac{1}{9}\%$

**24.** $\frac{2}{9}$, or $22\frac{2}{9}\%$

**25.** **a.** $\frac{1}{9}$, or about 11.1%

**b.** It increases the probability that your guesses are correct to $\frac{1}{4}$, or 25%, because you are only choosing between 2 choices for each question.

**31.** *Sample answer:* adjacent: $\angle XWY$ and $\angle ZWY$, $\angle XWY$ and $\angle XWV$; vertical: $\angle VWX$ and $\angle YWZ$, $\angle YWX$ and $\angle VWZ$

**32.** *Sample answer:* adjacent: $\angle LJM$ and $\angle LJK$, $\angle LJM$ and $\angle NJM$; vertical: $\angle KJL$ and $\angle PJN$, $\angle PJQ$ and $\angle MJL$

**33.** B

## pp. 433-435 (#3-13, 18-23)

3. independent; The outcome of the first roll does not affect the outcome of the second roll.

4. dependent; Your friend's lane number cannot be the same as your lane number. So, your friend's lane number depends on your lane number.

5. $\frac{1}{8}$

6. $\frac{1}{4}$

7. $\frac{3}{8}$

8. $\frac{3}{8}$

9. $\frac{1}{42}$

10. $\frac{1}{14}$

11. $\frac{2}{21}$

12. $\frac{2}{7}$

13. The two events are dependent, so the probability of the second event is $\frac{1}{3}$.

$$P(\text{red and green}) = \frac{1}{4} \cdot \frac{1}{3} = \frac{1}{12}$$

**18.** $\frac{1}{162}$, or about 0.62%

**19.** $\frac{5}{162}$, or about 3.1%

**20.** $\frac{10}{81}$, or about 12.3%

**21.** $\frac{4}{81}$, or about 4.9%

**22.** $\frac{20}{81}$, or about 24.7%

**23.** $\frac{3}{4}$

## pp. 439 (#1-15)

1. 2
2. 0
3. 4
4. $\frac{3}{10}$, or 30%
5. $\frac{1}{4}$, or 25%
6. $\frac{3}{4}$, or 75%
7. 0, or 0%
8. $\frac{2}{15}$, or about 13.3%
9. $\frac{11}{30}$, or about 36.7%
10. $\frac{43}{120}$, or about 35.8%
11. 1, or 100%
12. 12
13. 8
14. $\frac{2}{5}$, or 40%
15. $\frac{1}{10}$, or 10%

## pp. 444-445 (#5-15, 24)

5. biased; The sample is not selected at random and is not representative of the population because students in a band class play a musical instrument.
6. unbiased; The sample is representative of the population, selected at random, and large enough to provide accurate data.
7. biased; The sample is not representative of the population because people who go to a park are more likely to think that the park needs to be remodeled.
8. yes; The sample is representative of the population, selected at random, and large enough to provide accurate data. So, the sample is unbiased and the conclusion is valid.
9. no; The sample is not representative of the population because people going to the baseball stadium are more likely to support building a new baseball stadium. So, the sample is biased and the conclusion is not valid.
10. Sample B because it is a larger sample.
11. Sample A; it is representative of the population.
12. 696 students
13. sample; It is much easier to collect sample data in this situation.

**14.** A population because there are few enough students in your homeroom to not make the surveying difficult.

**15.** sample; It is much easier to collect sample data in this situation.

**24.** A

# Math Plus Worksheet Answers

1. median = 37; $Q_1 = 33.5$; $Q_3 = 40.5$; IQR = 7

2. median = 88; $Q_1 = 84$; $Q_3 = 92$; IQR = 8

3. median = 133.5; $Q_1 = 128$; $Q_3 = 139$; IQR = 11

4. median = 58.5; $Q_1 = 55$; $Q_3 = 65$; IQR = 10

5. . range = $21\frac{3}{4}$ ft; The distances traveled by the paper airplane vary by no more than $21\frac{3}{4}$ feet; IQR = 11 ft; The middle half of the distances traveled by the paper airplane vary by no more than 11 feet.

6. range; The range is the difference between the greatest value and the least value. The interquartile range is the range of the middle half of the data. So, the range is greater than the interquartile range.

7. Exercise 11: 54

8. Exercise 13: 106 and 158

9. *Sample answer:* An outlier increases the range of a data set because there is a wider spread between the greatest and least values.

**10.** **a.** range = 172 points;
IQR = 42 points

**b.** The outlier is 193 points; range = 101; IQR = 34; range

**11.** 11

**12.** 56

**13.** D

## pp. 455-459 (#1-15 odd, 16-24)

**1.** **a.** 2

**b.** 1 green, 1 purple

**3.** **a.** 5

**b.** 1 green, 1 purple, 3 orange, 3 blue, 3 purple

**5.** **a.** 8

**b.** 1 green, 1 purple, 2 blue, 2 orange, 2 green, 3 orange, 3 blue, 3 purple

**7.** $\frac{1}{2}$, or 50%

**9.** $\frac{43}{70}$, or about 61.4%

**11.** $\frac{2}{5}$, or 40%

**13.** $\frac{3}{8}$, or 37.5%

**15.** $\frac{1}{8}$, or 12.5%

**16.** 12

**17.** 90

**18.** $\frac{1}{8}$, or 12.5%

**19.** $\frac{2}{7}$, or about 28.6%

**20.** $\frac{1}{14}$, or about 7.1%

**21.** $\frac{4}{21}$, or about 19.0%

**22.** $\frac{1}{21}$, or about 4.8%

**23.** biased; The sample is not selected at random and is not representative of the population because students in the biology club like biology.

**24.** **a.** Class A:
median = 88, IQR = 6;
Class B:
median = 91, IQR = 9;
In general, Class B has greater scores than Class A. Class A has less variation than Class B.

**b.** The difference in the medians is about 0.3 to 0.5 times the IQR.

Name Answers Date

# Unit 6 – Study Guide

Complete this study guide with the assistance of your notes and book.

A bag is filled with 4 red marbles, 3 blue marbles, 3 yellow marbles, and 2 green marbles. You randomly choose one marble from the bag. Find the **number of ways** the event can occur.

1) Choosing red

4

2) Choosing yellow

3

3) Choosing not blue

9

4) Complete the formula for probability: $P(event) = \frac{\text{Number of favorable outcomes}}{\text{Number of possible outcomes}}$

You randomly choose one hat from 3 green hats, 4 black hats, 2 white hats, 2 red hats, and 1 blue hat. Find the probability of the event. Find the probability of the event.

5) Choosing a red hat

$\frac{1}{6}$

6) *Not* choosing a white hat

$\frac{5}{6}$

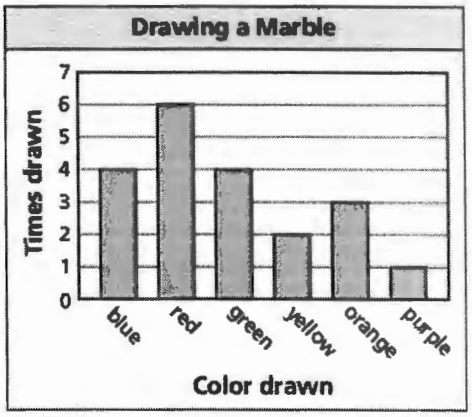
7) Choosing a black hat

$\frac{1}{3}$

8) Complete the formula: $\textit{Relative Frequency} = \frac{\text{Number of times the event occurs}}{\text{Total number of times for the experiment}}$

9) Complete the formula: $\textit{Experimental Probability} = \frac{\text{Number of times event occurs}}{\text{Total number of trials}}$

Use the bar graph to find the experimental probability of the event.




10) Drawing red $\frac{3}{10}$

11) Drawing orange $\frac{3}{20}$

12) Drawing *not* yellow $\frac{9}{10}$

13) Drawing a color with more than 4 letters in its name $\frac{1}{2}$

Use the Fundamental Counting Principle to find the total number of possible outcomes. SHOW WORK.

14)

| Photos | |
|---|---|
| **Size** | Wallet, 4 by 6, 5 by 7, 8 by 10, 11 by 14, 16 by 20 |
| **Finish** | Matte, Glossy |
| **Edits** | Red eye, Black and white, Crop |

36 possible outcomes

15)

| Laptops | |
|---|---|
| **Hard Drive** | 250 GB, 320 GB, 500 GB |
| **Style** | HD, LCD |
| **Color** | Black, White, Red, Blue, Pink, Green, Purple |

42 possible outcomes

16) There are 64 cookies in a jar. The probability of randomly choosing an oatmeal cookie from the jar is 25%. How many of the cookies are *not* oatmeal cookies?

56 cookies

17) You roll a number cube and flip a coin. Find the probability of rolling a 3 and flipping tails.

$\frac{1}{6} \cdot \frac{1}{2} = \frac{1}{12}$

For # 18 and 19, determine whether the sample is biased or unbiased. Explain.

18) You want to estimate the number of students in your grade who choose math as their favorite subject. You survey 10 of your close friends.

Biased

Why? The sample is not representative of the population because close friends are more likely to have the same opinion.

19) You want to estimate the number of people in a town in favor of a proposed curfew law. You survey every fifth person who enters a post office.

Unbiased

Why?

The sample is representative of the population and selected at random.

20) Which sample is better for making a prediction? Explain.

| Predict the percentage of English-speaking people in the world | |
|---|---|
| Sample A | A random sample of 100,000 people from the U.S. |
| Sample B | A random sample of 100,000 people all across the world |

Sample B is representative of the population. Sample A is only representative of the US and not the world.

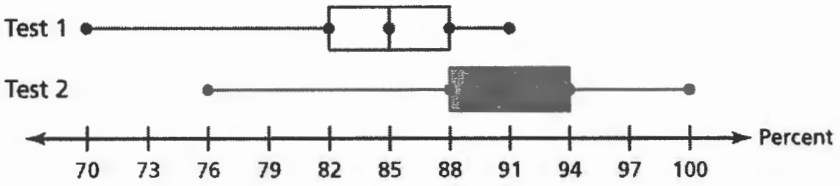
21) You want to know how the residents of your town feel about a Laundromat going out of business. You survey 100 people who enter the Laundromat. Ninety are disappointed about the closing, and ten are not. So, you conclude that 90% of the residents of your town are disappointed about the Laundromat going out of business. Determine whether the conclusion is valid. Explain.

The sample is biased, and the conclusion is not valid. The sample is not representative of the population because residents entering a Laundromat are more likely to need its services. A random sample would include residents with washers and dryers at home.

22) Of the 40 randomly chosen students surveyed, 27 are involved in extracurricular activities at school. There are 680 students in the school. Predict the number of students in the school who are involved in extracurricular activities.

459 students.

23) The double box-and-whisker plot shows the scores of two tests.




a) List the following for Test 1:

Least: 70

Q1: 82

Median: 85

Q3: 88

Greatest: 91

b) Find the interquartile range of the students in Test 2.

94 - 88 = 6