Name_____ Date_____

<table>
<tr><td>**11.2**</td><td>**Populations, Samples, and Hypotheses**
For use with Exploration 11.2</td></tr>
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Essential Question How can you test theoretical probability using sample data?

1 EXPLORATION: Using Sample Data

Go to *BigIdeasMath.com* for an interactive tool to investigate this exploration.

Work with a partner.

   a. When two six-sided dice are rolled, what is the theoretical probability that you roll the same number on both dice?

   b. Conduct an experiment to check your answer in part (a). What sample size did you use? Explain your reasoning.

   c. Use the dice rolling simulator at *BigIdeasMath.com* to complete the table. Do your experimental data check the theoretical probability you found in part (a)? Explain. What happens as you increase the sample size?

Number of Rolls	Number of Times Same Number Appears	Experimental Probability
100		
500		
1000		
5000		
10,000		

2 EXPLORATION: Using Sample Data

Go to *BigIdeasMath.com* for an interactive tool to investigate this exploration.

Work with a partner.

   a. When three six-sided dice are rolled, what is the theoretical probability that you roll the same number on all three dice?

11.2 **Populations, Samples, and Hypotheses** (continued)

2 **EXPLORATION:** Using Sample Data (continued)

b. Compare the theoretical probability you found in part (a) with the theoretical probability you found in Exploration 1(a).

c. Conduct an experiment to check your answer in part (a). How does adding a die affect the sample size that you use? Explain your reasoning.

d. Use the dice rolling simulator at *BigIdeasMath.com* to check your answer to part (a). What happens as you increase the sample size?

Communicate Your Answer

3. How can you test theoretical probability using sample data?

4. Conduct an experiment to determine the probability of rolling a sum of 7 when two six-sided dice are rolled. Then find the theoretical probability and compare your answers.

Name_____ Date _____

11.2 Notetaking with Vocabulary
For use after Lesson 11.2

In your own words, write the meaning of each vocabulary term.

population

sample

parameter

statistic

hypothesis

Notes:

11.2 **Notetaking with Vocabulary** (continued)

Extra Practice

In Exercises 1–3, identify the population and sample. Describe the sample.

1. In a city, a survey of 3257 adults ages 18 and over found that 2605 of them own a tablet.

2. To find out the consumers' response towards a new flavor of sports drink, a company surveys 1000 athletes who drink sports drinks and finds that 726 of them like the new flavor.

3. In a school district, a survey of 1500 high school students found that 824 of them have a part time job in the summer.

In Exercises 4–7, determine whether the numerical value is a parameter or a statistic. Explain your reasoning.

4. Eighty-two percent of the residents in one neighborhood in a town voted to approve building a bike lane through town.

11.2 **Notetaking with Vocabulary** (continued)

5. In a science class, 25% of the students wear glasses.

6. In a recent year, the median household income in the United States was about $52,000.

7. A survey of some visitors to a museum found that 84% thought the new planetarium was very exciting.

8. You spin the spinner five times and every time the spinner lands on blue. You suspect the spinner favors blue. The maker of the spinner claims that the spinner does not favor any color. You simulate spinning the spinner 50 times by repeatedly drawing 200 random samples of size 50. The histogram shows the results. Use the histogram to determine what you should conclude when you spin the actual spinner 50 times and the spinner lands on blue (a) 12 times and (b) 19 times.