Name

10 Probability

Dear Family,

When you plan an outdoor event like a picnic, you cannot be certain that the weather will cooperate. Almost immediately, you begin to wonder—will it be warm or cool? sunny or cloudy? dry or rainy? There is no way to be certain, so you turn to the weather forecast to find out what is likely. When weather forecasters say there is a 60% chance of rain, do you ever wonder how they know? The weather report introduces you to the concept of probability.

The National Weather Service keeps track of daily conditions. They record the temperature, humidity, air pressure, and other data, including the weather produced by those conditions. The forecasters compare this historical data with current conditions and may see that out of 100 days with similar conditions, 60 of them were rainy days.

In probability, a *favorable outcome* is the result you are looking for, such as the number of rainy days. The ratio of the favorable outcome to the total number of outcomes is the probability.

 $\frac{\text{Number of favorable outcomes}}{\text{Total number of outcomes}} = \frac{\text{days with rain}}{\text{total days}} = \frac{60}{100} = 0.6 = 60\%$

The next time you are relying on good weather, you may want to do your own research. You and your student can think about these topics:

- The Farmer's Almanac provides historical weather information, such as the number of times it rained on a given date. Use this information to determine the probability that it will rain on the date of your event.
- For some events, like a pool party or a picnic by the lake, you may want to get a sense of what the temperature will be. What is the probability that the temperature will be above 70 degrees the day of your event?
- What other conditions and probabilities do you want to know?

You might revise your plans if the conditions aren't favorable.

Pick a favorable day and then enjoy your picnic! Remember to watch for ants—they are almost certain to attend!



Probability (continued)

Lesson	Learning Target	Success Criteria
10.1 Probability	Understand how the probability of an event indicates its likelihood.	 I can identify possible outcomes of an experiment. I can use probability and relative frequency to describe the likelihood of an event. I can use relative frequency to make predictions.
10.2 Experimental and Theoretical Probability	Develop probability models using experimental and theoretical probability.	 I can explain the meanings of experimental probability and theoretical probability. I can find experimental and theoretical probabilities. I can use probability to make predictions.
10.3 Probability and Data Displays	Use probability and measures of central tendency to compare data from two samples or populations.	 I can tell whether data is qualitative or quantitative. I can find a probability using a data display. I can compare data from two samples or populations.