

Grade 6 Mathematics Unit Preview

Quarter 3: Probability

Objectives: (Your student will be able to)

- **List all possible outcomes of an event with a limited number of possible results.** For example, an ice cream stand offers two flavors, chocolate and vanilla. You can get either a cup or a cone. You can have rainbow or chocolate sprinkles as a topping. How many combinations of favors, containers, and toppings are there? Answer: 8 outcomes
- **Find the probability of an event with equally likely outcomes and express as a fraction, decimal or percent.** For example, Logan has a six-sided die with faces labeled using the numbers 1-6. Express the probability of rolling an even number as a fraction, decimal, and percent. Answer: $\frac{3}{6}$ or $\frac{1}{2}$; 0.5; 50%
- **Find the probability for a dependent event plots.** (*Dependent events* are those where the outcome of one event affects the outcome of another event. If two events are dependent, you can use this formula to find the probability of both events occurring: $\text{Probability (A and B)} = \text{Probability(A)} \times \text{Probability(B)}$.)
- **Solve problems using theoretical probability.**

$$\text{Theoretical} = \frac{\text{Number of Favorable Outcomes}}{\text{Number of Possible Outcomes}}$$

Vocabulary (on back)

Activities to do with your student (in addition to homework, optional):

- Create experiments to explore possible outcomes. Conduct the experiment and compare results. For example, how many times will we flip a tails if we flip a coin 100 times? How many times will we roll an even number if we roll a die 50 times?
- Use clothes in a closet to write problems that involve combinations. Find all of the possible combinations.
- Find real-world examples of probability. Describe how probability is used in this example.



Vocabulary: (Words your student will need to understand)

• **Decimal:** A number with one or more digits to the right of the decimal point, (e.g., 3. 27).

• **Dependent event:** An event for which the outcome of the second event depends on the outcome of the first event.



Drawing a card and not replacing it, and then drawing a second card are dependent events.

• **Equally likely outcomes:** Having the same chance of occurring, (e.g., you are equally likely to roll a 1,2,3,4,5, or 6 on a number cube).

• **Event:** A set of outcomes.

• **Experiment:** An action or process carried out under controlled conditions in order to discover an unknown effect or law, to test or establish a hypothesis, or to illustrate a known law.

• **Experimental probability:** The ratio of the number of times an event occurs to the total number of trials

$$\text{experimental probability} = \frac{\text{number of times outcome occurs}}{\text{total number of trials}}$$

• **Independent event:** An event for which the outcome of the second event does not depend on the outcome of the first event, (e.g. tossing a coin and rolling a number cube are independent events).

• **Least likely:** An event that has a lesser chance of happening compared to other events.

• **Less likely:** having less chance of occurring.

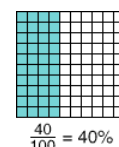
• **More likely:** having more chances of occurring.

• **Most likely:** an event that has a greater chance of happening compared to other events.

• **Organized list:** a systematic way of recording combinations.

• **Outcomes:** a possible result of a probability experiment (e.g. when tossing a coin, the outcomes are heads and tails).

• **Percent:** the ratio of a number to 100; percent means “per hundred.”



40% of the squares are shaded

• **Probability:** The chance that an event will occur expressed as the ratio of the number of favorable outcomes to the number of possible outcomes.

$$\text{Probability} = \frac{\text{number of favorable outcomes}}{\text{number of possible outcomes}}$$

• **Sample space:** The set of all possible outcomes, (e.g., for a number cube, the sample space is 1,2,3,4,5,6).

There are 6 possible outcomes.

• **Theoretical probability:** A comparison of the number of favorable outcomes to the number of possible equally likely outcomes.

$$P(\text{event}) = \frac{\text{number of favorable outcomes}}{\text{number of possible equally likely outcomes}}$$

• **Tree diagram:** A diagram that shows all possible outcomes for an event.

