

# Probability Study Guide

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

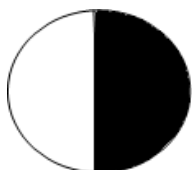
Quiz on: \_\_\_\_\_

## \*Probability

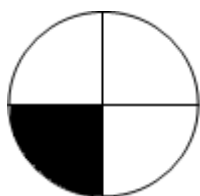
-**Probability** tells us how likely a particular outcome is to occur in a specific situation. The probability of an outcome for a particular event is a number telling us how likely something is to happen. This number is the **ratio** of the number of ways the outcome may occur to the total number of possible outcomes.

$$\text{Probability (P)} = \frac{\text{Number of favorable outcomes}}{\text{Total number of outcomes}}$$

Example: The spinner below is divided into 2 sections, 1 section is black and the other is white. The Total number of outcomes is 2. The number of chances for the spinner to stop on black is 1 (because there is only 1 section of the spinner that is black.)



The probability of the spinner landing on black is 1:2, 1 to 2, one to two,  $\frac{1}{2}$ .



What is the probability of the spinner landing on black?

**Certain** -an event is **certain** to happen only if there is only **1 possible outcome**.

Ex: If there are 3 red marbles in a bag, you are certain to pull out a red marble.

**Likely** -an event is **likely** to happen if there is a **greater chance** of one outcome over another.

Ex: If there are 5 red marbles and 1 blue marble in a bag, you are likely to pull out a red marble.

**Unlikely** -an event is **unlikely** to happen if there is **less of a chance** a specific outcome will happen.

Ex: If there are 10 red marbles and 1 blue marble in a bag, you are unlikely to pull out a blue marble.

**Impossible** -an event is **impossible** to happen if there is **NO chance** of a specific outcome.

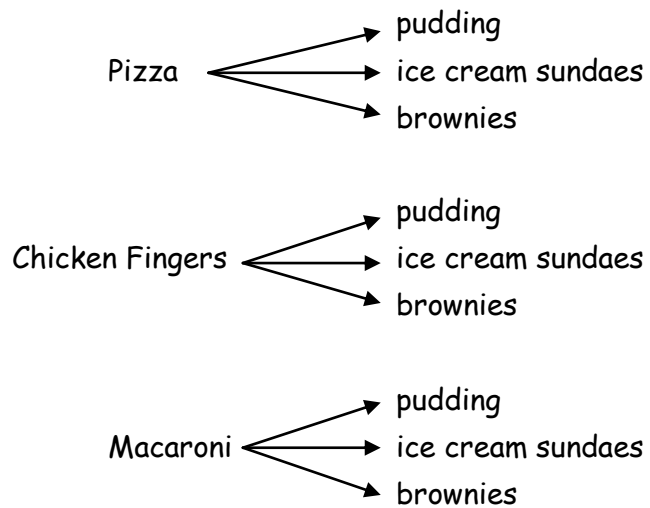
Ex: If there are 10 red marbles and 1 blue marble in a bag, it is impossible to pull out a yellow marble. (There are no yellow marbles in the bag!)

\*Help can be found in your textbook on pages 296-297

### \*Tree Diagrams

-A **tree diagram** shows all the possible combinations that can occur given a group of items.

Example: Mom is thinking about the menu for dinner tonight. She is trying to decide between a few of different options. She has pizza, chicken fingers, and macaroni in the pantry for a main dish. She also has pudding, ice cream sundaes, and brownies to choose from for dessert. In order to find the different combinations for dinner and dessert she makes a tree diagram. She starts with the main dish possibilities.



In order to find the total number of all possible combinations you will need to count each branch. There are 9 possible outcomes for the menu.

### \*Tree Diagrams & Probability

-In order to find the **probability** of having pudding for dessert in the example above you would count all the branches that have pudding listed and compare it to all possible dessert options listed all together. It would be written just like any other probability answer. In this case the probability of having pudding for dessert is 3:9, 3 to 9, three to nine, or  $\frac{3}{9}$

\*Help can be found in your textbook on pages 300