

NAME: _____

SECTION: _____

LESSON 8: EXPERIMENTAL AND THEORETICAL PROBABILITY**I. OBJECTIVES**

The learner illustrates an experimental probability and a theoretical probability. (M8GE-IVi-1)

II. LESSON**Theoretical Probability.** The probability of Event is the ratio of the number of ways that an event can occur to the total number of outcomes when each outcome is equally likely to occur.

$$P(E) = \frac{\text{Number of ways } E \text{ can occur}}{\text{number of possible outcomes in the sample space}}$$

Experimental Probability is how many times an event occurs divided by the total number of trials.

$$\text{Experimental Probability} = \frac{\text{Number of times an event occurs}}{\text{Total number of trials}}$$

Example: A bag contains 20 red marbles, 18 blue marbles and 12 yellow marbles.**Find the probability of getting a blue marble.**

Theoretical Probability	Experimental Probability
There are 18 blue marbles. Therefore, the number of ways E can occur = 18. There are a total of 50 marbles. Therefore, sample space = 50 $P(\text{blue marble}) = \frac{18}{50} \text{ or } \frac{9}{25}$	Let's simulate an experiment where you randomly draw a marble from the bag 100 times and record the outcomes. Draws: 100 ; Blue marbles drawn: 40 $P(\text{blue marble}) = \frac{40}{100} \text{ or } \frac{2}{5}$

**III. ACTIVITY**

- I. Identify whether the given scenario represents a theoretical or experimental probability.
Click the arrow to reveal the options and select your answer.

1. The Philippine Atmospheric, Geophysical, and Astronomical Services Administration (PAGASA) announces that there is a 70% chance of rain tomorrow.

2. You watch a Philippine Basketball Association (PBA) game and record how many free throws a player attempts and how many they make. You calculate the probability of the player making a free throw based on the actual attempts.

3. You calculate the probability of winning the 6/42 Philippine Lotto by analyzing the total possible combinations of numbers.

4. At a school fair, you play a spinning wheel game and track the outcomes after 30 spins to see how often you land on the "prize" section.

5. You record the number of cars that pass by EDSA during rush hour for 5 consecutive days. You calculate the probability of seeing a red car based on your data.

- II. Given the results of the experiment, answer the following questions. Click the arrow to reveal the options and select your answer.

The results below show the actual data from a 15-minute traffic observation along Calamba Crossing during rush hour.

Jeepneys: 35; Cars: 40; Motorcycles: 75; Tricycles: 60; Buses: 15

Choices: A. 0 B. $\frac{1}{3}$ C. $\frac{1}{15}$ D. $\frac{4}{15}$ E. $\frac{7}{45}$ F. $\frac{8}{45}$ G. $\frac{37}{45}$

6. What is the experimental probability of seeing a jeepney?

7. What is the experimental probability of seeing a vehicle that is not a car?

8. What is the experimental probability of seeing a tricycle?

9. What is the experimental probability of seeing a motorcycle?

10. What is the experimental probability of seeing a train?

**HOW DO YOU FEEL
ABOUT TODAY'S
LESSON?**



**I NEED MORE
HELP!**

I'M GETTING IT!

I GOT IT!



-ARSL-