

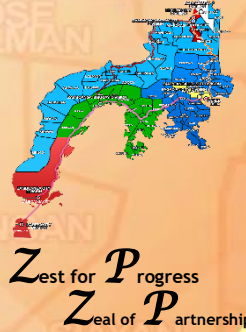
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- OCTOBER**  
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- NOVEMBER**  
*Masaligan*
- DECEMBER**  
*Maalampon*



Republic of the Philippines  
**Department of Education**  
 Regional Office IX, Zamboanga Peninsula



**5**



# MATHEMATICS

## 4<sup>th</sup> QUARTER – Module 8: EXPERIMENTAL PROBABILITY



Name of Learner: \_\_\_\_\_

Grade & Section: \_\_\_\_\_

Name of School: \_\_\_\_\_

**Mathematics – Grade 5**  
**Alternative Delivery Mode**  
**Quarter 4 - Module 8: Experimental Probability**  
**First Edition, 2020**

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# Introductory Message

This Self – Learning Module (SLM) is prepared so that you, our dear learners, can continue your studies and learn while at home. Activities, questions, directions, exercises, and discussions are carefully stated for you to understand each lesson.

Each SLM is composed of different parts. Each part shall guide you step-by-step as you discover and understand the lesson prepared for you.

Pre-tests are provided to measure your prior knowledge on lessons in each SLM. This will tell you if you can proceed on completing this module or if you need to ask your facilitator or your teacher's assistance for better understanding of the lesson. At the end of each module, you need to answer the post-test to self-check your learning. Answer keys are provided for each activity and test. We trust that you will be honest in using these.

In addition to the material in the main text, notes to the Teacher are also provided to our facilitators and parents for strategies and reminders on how they can best help you on your home-based learning.

Please use this module with care. Do not put unnecessary marks on any part of this SLM. Use a separate sheet of paper in answering the exercises and tests. Read the instructions carefully before performing each task.

If you have any questions in using this SLM or any difficulty in answering the tasks in this module, do not hesitate to consult your teacher or facilitator.

Thank you.



## What I Need to Know

Mathematics instruction at the fifth-grade level should deepen the pupil's understanding of the concept of probability.

In this module, the fifth-grader needs to know the basic terminology to learn about simple probability. Therefore, it is of utmost importance that every pupil demonstrates knowledge of probability vocabulary to understand and be able to answer the following activities accurately.

After going through the module, you are expected to:

- describe experimental probability. (M5SP-IVi-14)
- perform an experimental probability and records result by listing. (M5SP-IVi-15)

Through this module, learning can continue amidst the health crisis. Good luck, stay safe, and God bless.



## What I Know

**Directions:** Refer to the situation given below. Choose the letter that corresponds to your answer. Write your answer on a separate sheet of paper.

Angela rolled a cube with 6 sides numbered 1, 2, 3, 4, 5, and 6 ten times. She then recorded the results in the table below

POSSIBLE OUTCOMES	TALLY	NUMBER OF OCCURENCES
1	III	3
2	II	2
3	I	1
4	HH-I	6
5	II	2
6	I	1

1. What are the chances that side 4 will be rolled?  
A. Very likely      B. Likely      C. Unlikely      D. Very Unlikely
2. What are the chances that side 3 will be rolled?  
A. Very likely      B. Likely      C. Unlikely      D. Very Unlikely
3. Is there a chance that Angela will roll a side labeled 7?  
A. Certain      B. Very likely      C. Very unlikely      D. impossible
4. How many times did the face 4 and above got rolled?  
A. 5      B. 6      C. 8      D. 9
5. How many times did she roll the cube altogether?  
A. 12      B. 15      C. 18      D. 21

# LESSON 1

## Describing Experimental Probability



### What's In

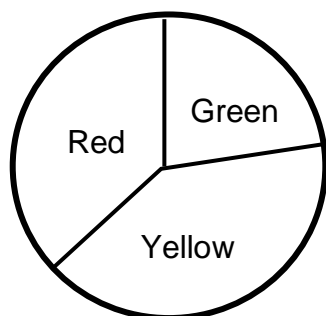
Can you still remember what probability is?

- **Probability** is the mathematics of chance. When we do something and we are expecting a result by chance or we are not certain of what the result will be, in probability, we call it an **experiment**. The uncertain result is called an **outcome**.
- In real life, whenever we do an experiment, two things can happen, either the one that we expect or the one that we do not. When the result is what we expected, then it is the favourable outcome.



### What's New

Maria spins the spinning wheel 20 times. Use the result from the table below to answer the questions.



OUTCOME	FREQUENCY
Red	6
Yellow	9
Green	5



1. What is the experimental probability of landing on red area?
2. How many times yellow was spun?
3. How many trials of spinning each color was made?



## What is It

**Experimental probability** is the ratio of the number of times an event occurs to the total number of trials or times the activity is performed. It is also calculated by dividing the number of successful events by the total number of events.

The probability of an event is given by the ratio of the favorable outcome to the total possible outcome. That is,

$$\text{Probability of an event} = \frac{\text{favorable outcome}}{\text{total possible outcomes}}$$

An **experiment** is an activity including chance. Each repetition or observation of an experiment is a **trial**. Each possible result is an **outcome**. The **sample space** of an experiment is the set of all possible outcomes.

EXPERIMENT	SAMPLE SPACE
Rolling a number of cube	{1,2,3,4,5,6}
Tossing a coin	{heads, tails}
Spinning a game spinner	{red, blue, green, yellow}

On the table above, the sample space for rolling a number cube is 1, 2, 3, 4, 5, 6, since there are 6 faces in a cube. For the sample space in tossing a coin is only head and tail because the coin has only two sides. For the spinner, it depends on how you use it; whether you will use colors, number, letters or even pictures. In my example, I use 4 colors (red, blue, green and yellow).

Aside from the given example above, you may also use the like hood of an event such as unlikely, likely, as likely as not or certain to describe each event in performing an experimental probability.



## What's More

**Directions:** Read the statement carefully. Write **True** if the statement is correct and **False** if the statement is wrong. Write your answer on a separate sheet of paper.

1. A die is tossed. The probability of getting a 4 is  $\frac{4}{6}$ .
2. The probability of getting an even number when a die is tossed is  $\frac{3}{6}$  or  $\frac{1}{2}$ .
3. A bag contains 3 red balls and 4 black balls. The total number of possible outcomes are 7.
4. A leap year has 366 days. So, it has 52 weeks and 2 days. The probability of getting Sundays is 50.
5. A coin is tossed. The probability of getting a head is 1.



## What I Have Learned

**Directions:** Fill in the blanks with the correct word to complete the statement. Write your answer on a separate sheet.

1. \_\_\_\_\_ is the ratio of the number of times an event occurs to the total number of trials or times the activity is performed.
2. \_\_\_\_\_ is an activity including chance.
3. \_\_\_\_\_ is a repetition or observation of an experiment.
4. \_\_\_\_\_ is a possible result of an experiment.
5. \_\_\_\_\_ is a favourable outcome over a total possible outcomes.

# LESSON 2

## Performing an Experimental Probability and Recording Result by Listing



### What is It

Let us try to solve the given problem.

If we toss a 5php and a 1php coin at the same time how many different outcomes are there?



Experiment Tossing a coin	Systematic listing
	Total possible outcomes
Coin 1 HEAD	a. Coin 1 head (H1), Coin 2 Head (H2) = HH
Coin 1 TAIL	b. Coin 1 Head (H1), Coin 2 Tail (T2) = HT
Coin 2 HEAD	c. Coin 1 Tail (T1), Coin 2 Tail (T2) = TT
Coin 2 TAIL	d. Coin 1 Tail (T1), Coin 2 Head (H2) = TH

Therefore, there are four possible outcomes.



### What's More

**Directions:** Find the possible outcomes by using the systematic listing. Write your answers inside the box.

Supposed a die with 6 sides is labeled as L, O, V, E, L, Y. List down the possible outcomes using a systematic listing.





## What I Have Learned

To solve for experimental probability, we used sample space for rolling a cube or a die, tossing a coin and a deck of playing cards.



## What I Can Do

**Directions:** Find the possible outcomes using systematic listing.

“There are 2 red pens, 3 blue pens, 1 black pens, and 4 green pens in a desk drawer. All the pens have the same size and same shape. Suppose we open the drawer and grab a pen without looking. In other words, we are choosing the pen in random and each outcome is equally likely.”

1. What is the probability that the chosen pen is blue?
2. What is the probability that the pen chosen is either red or green?
3. What is the probability that the pen is purple?
4. After using all your pens in a drawer, how are you going to return it?
5. Which pen is most likely to be picked?



## Assessment

**A. Directions:** Read each question carefully. Write the letter of the correct answer on a separate sheet of paper.

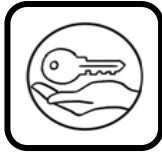
1. Emma picks a card at random. [2, 6, 7, 5, 8, 9, 8, 4]. The number on the card will most likely be.  
A. A number greater than 6  
B. A number less than 6  
C. An even number  
D. An odd number

2. Michael has 2 hats, 3 shirts, and 8 pants. How many different ways can he wear the outfit if he wears one of each  
A. 24                      B. 56                      C. 13                      D. 48
3. At the annual Science Club Festival, 12 of the first 90 participants is throwing a baseball through a tire game won first prize, 22 won second prize and 32 won third prize. What is the experimental probability of not winning any of the three prizes?  
A.  $\frac{17}{45}$                       B.  $\frac{11}{15}$                       C.  $\frac{16}{45}$                       D.  $\frac{4}{15}$

**B. Directions:** Find the possible outcomes using systematic listing.

You are to toss two dice. What is the probability of you getting a sum of 5? Use systematic listing in solving this problem.

List the possible outcomes when you will toss three coins at the same time.



## Answer Key

<p><b>What's New:</b></p> <p>1. Answer: <math>\frac{20}{6}</math> or <math>\frac{10}{3}</math></p>	<p><b>What I Know:</b></p> <p>1. A 2. D 3. D 4. D 5. B</p>
<p><b>What I Can Do:</b></p> <p>1. P(blue) = <math>\frac{3}{10}</math> or 0.3 2. P(red or green) = <math>\frac{6}{10}</math> or 0.6          3. 0, since there are no purple pens in the clothes 4. Answer may vary 5.</p>	
<p><b>What I Have Learned:</b></p> <p>1. Experimental Probability          2. Experiment          3. Trial          4. Outcome          5. Probability of an event</p>	<p><b>What's More:</b></p> <p>Lesson 1.          1. (<math>\frac{1}{6}</math>) F 2. T 3. T          4. F (53) 5. T</p> <p>Lesson 2.          A. Listing method</p>
<p><b>Assessment:</b></p> <p>A. 1. C 2. D 3. D          B. 1. Two possible outcomes (tossing 1 and 4, and 2 and 3)          2. There are four possible outcomes.</p>	

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# I AM A FILIPINO

## by Carlos P. Romulo

I am a Filipino – inheritor of a glorious past, hostage to the uncertain future. As such, I must prove equal to a two-fold task – the task of meeting my responsibility to the past, and the task of performing my obligation to the future.

I am sprung from a hardy race – child many generations removed of ancient Malayan pioneers. Across the centuries, the memory comes rushing back to me: of brown-skinned men putting out to sea in ships that were as frail as their hearts were stout. Over the sea I see them come, borne upon the billowing wave and the whistling wind, carried upon the mighty swell of hope – hope in the free abundance of the new land that was to be their home and their children's forever.

This is the land they sought and found. Every inch of shore that their eyes first set upon, every hill and mountain that beckoned to them with a green and purple invitation, every mile of rolling plain that their view encompassed, every river and lake that promised a plentiful living and the fruitfulness of commerce, is a hollowed spot to me.

By the strength of their hearts and hands, by every right of law, human and divine, this land and all the appurtenances thereof – the black and fertile soil, the seas and lakes and rivers teeming with fish, the forests with their inexhaustible wealth in wild and timber, the mountains with their bowels swollen with minerals – the whole of this rich and happy land has been for centuries without number, the land of my fathers. This land I received in trust from them, and in trust will pass it to my children, and so on until the world is no more.

I am a Filipino. In my blood runs the immortal seed of heroes – seed that flowered down the centuries in deeds of courage and defiance. In my veins yet pulses the same hot blood that sent Lapulapu to battle against the alien foe, that drove Diego Silang and Dagohoy into rebellion against the foreign oppressor.

That seed is immortal. It is the self-same seed that flowered in the heart of Jose Rizal that morning in Bagumbayan when a volley of shots put an end to all that was mortal of him and made his spirit deathless forever; the same that flowered in the hearts of Bonifacio in Balintawak, of Gregorio del Pilar at Tirad Pass, of Antonio Luna at Calumpit, that bloomed in flowers of frustration in the sad heart of Emilio Aguinaldo at Palanan, and yet burst forth royally again in the proud heart of Manuel L. Quezon when he stood at last on the threshold of ancient Malacanang Palace, in the symbolic act of possession and racial vindication. The seed I bear within me is an immortal seed.

It is the mark of my manhood, the symbol of my dignity as a human being. Like the seeds that were once buried in the tomb of Tutankhamen many thousands of years ago, it shall grow and flower and bear fruit again. It is the insigne of my race, and my generation is but a stage in the unending search of my people for freedom and happiness.

I am a Filipino, child of the marriage of the East and the West. The East, with its languor and mysticism, its passivity and endurance, was my mother, and my sire was the West that came thundering across the seas with the Cross and Sword and the Machine. I am of the East, an eager participant in its struggles for liberation from the imperialist yoke. But I know also that the East must awake from its centuried sleep, shake off the lethargy that has bound its limbs, and start moving where destiny awaits.

For I, too, am of the West, and the vigorous peoples of the West have destroyed forever the peace and quiet that once were ours. I can no longer live, a being apart from those whose world now trembles to the roar of bomb and cannon shot. For no man and no nation is an island, but a part of the main, and there is no longer any East and West – only individuals and nations making those momentous choices that are the hinges upon which history revolves. At the vanguard of progress in this part of the world I stand – a forlorn figure in the eyes of some, but not one defeated and lost. For through the thick, interlacing branches of habit and custom above me I have seen the light of the sun, and I know that it is good. I have seen the light of justice and equality and freedom, my heart has been lifted by the vision of democracy, and I shall not rest until my land and my people shall have been blessed by these, beyond the power of any man or nation to subvert or destroy.

I am a Filipino, and this is my inheritance. What pledge shall I give that I may prove worthy of my inheritance? I shall give the pledge that has come ringing down the corridors of the centuries, and it shall be compounded of the joyous cries of my Malayan forebears when first they saw the contours of this land loom before their eyes, of the battle cries that have resounded in every field of combat from Mactan to Tirad Pass, of the voices of my people when they sing:

“I am a Filipino born to freedom, and I shall not rest until freedom shall have been added unto my inheritance—for myself and my children and my children's children—forever.”