

JANUARY

*Makugihon*

FEBRUARY

*Mahiguugmaon*

MARCH

*Matinabangon*

APRIL

*Matinahuron*

MAY

*Mahapsay og Malinpyo*

JUNE

*Maabtik og Masunod sa  
Iksuklong Oras*

JULY

*Maantigo og Maabilidad*

AUGUST

*Maginhuhuhunaon  
para sa Uban*

SEPTEMBER

*Madaginton*

OCTOBER

*Matinud-anon*

NOVEMBER

*Masaligan*

DECEMBER

*Maalampoon*



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



6



# MATHEMATICS

## 4<sup>th</sup> QUARTER – Module 6: INTRODUCTION TO PROBABILITY



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

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

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

**Mathematics – Grade 6**  
**Alternative Delivery Mode**  
**Quarter 4 - Module 6: Introduction to 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 of 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 a 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 with 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

This module was written to aid in the basic statistics lesson of the fourth quarter of grade 6 Mathematics. The module introduces the concept of simple probability, performing simple experiments, and record outcomes.

This module was designed to ensure that learning continues despite the situation we are facing. The language used recognizes the vocabulary level of grade 6 students. The lessons followed developmentally sequenced teaching and learning processes to meet the curriculum requirement.

After going through the module, you are expected to:

- describe the meaning of probability, such as a 50% chance of raining and one in a million chance of winning. **(M6SP-IVg-19)**
- perform experiments and record outcomes. **(M6SP-IVh-21)**

Believe that learning can continue amidst the health crisis. Good luck, stay safe, and God bless.



## What I Know

**A. Directions:** Read each situation or event that is being described below. Use the words *Impossible, Very unlikely, Unlikely, 50% chance, Likely, Very likely, Certain* to describe the likelihood of each event best. Write your answer on a separate answer sheet.

1. The chances of raining during La Niña phenomenon.
2. The chances of getting a head when tossing a coin.
3. The chances of drawing your only raffle ticket from a group of five thousand tickets.

**B. Directions:** Study the situation below and choose the letter that corresponds to your answer. Write your answer on a separate sheet.

Andrew rolled a fair 6-sided die several times. He recorded the results, as shown in the table below.

| POSSIBLE OUTCOMES | TALLY | NUMBER OF OCCURRENCES |
|-------------------|-------|-----------------------|
| 1                 |       | 2                     |
| 2                 |       | 5                     |
| 3                 |       | 1                     |
| 4                 |       | 3                     |
| 5                 |       |                       |
| 6                 |       |                       |

4. How many times did the face with number 6 land heads up?  
A. 1                      B. 2                      C. 3                      D. 5
5. How many times did Andrew roll the die altogether?  
A. 18                      B. 16                      C. 13                      D. 11

## LESSON

## INTRODUCTION TO PROBABILITY



## What's In

**Directions:** Study the given situation carefully, then answer the question that follows on a separate sheet.

Andy, Akmad and Ameer are competing in a Math Quiz bee. Their probabilities of winning the quiz are as follows:

$$P(\text{Andy wins}) = 0.35$$

$$P(\text{Akmad wins}) = 20\%$$

$$P(\text{Ameer wins}) = \frac{11}{20}$$

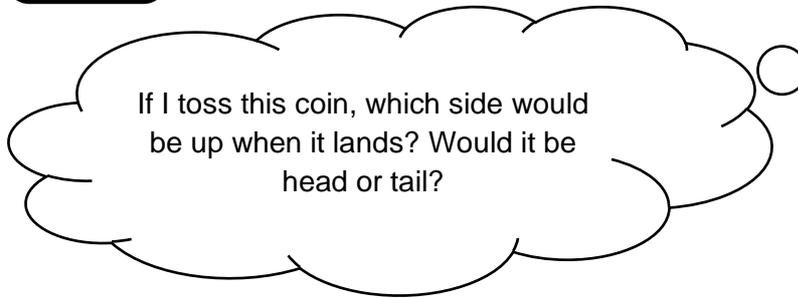
Number the following events with 1 as least likely to happen and 3 as most likely to happen.

\_\_\_\_\_ Andy wins      \_\_\_\_\_ Akmad wins      \_\_\_\_\_ Ameer wins

An event's probability may be expressed or described using a **ratio, fraction, decimal, or percent**.



## What's New



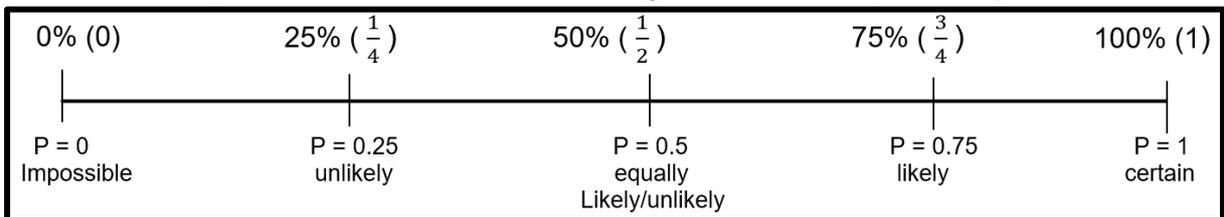
## What is It

### A DESCRIBING THE MEANING OF PROBABILITY

The probability of an event is the chance or likelihood of it to happen. It can be expressed as a ratio, fraction, decimal, or percent. So, probability 1:2 is the same as  $\frac{1}{2}$ , 0.5, or 50%.

The closer the probability to 1, the more likely the event will happen. The closer the probability to 0, the more unlikely the event will happen.

Probability can be plotted on a probability scale ranging from 0 (impossible) to 1 (certain to occur). Here is the number line showing the measure of probability.

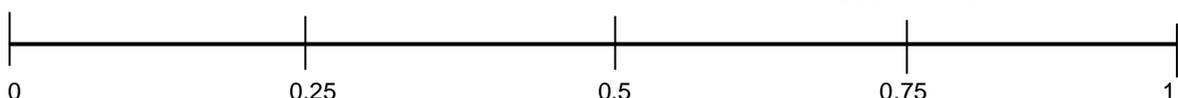


#### EXAMPLE 1:

The weather forecaster says that the probability that it will rain today is 75%. Does it mean that there is a great chance it will rain today?

In the question above, the chance that it will rain today is 75%. Using a number line ranging from 0 to 1, we locate 75%.

**75% = 0.75**



Based on the number line, we can say that the event that it will rain today is **likely to happen** because the number is closer to 1 or 100%.

**EXAMPLE 2:**

A coin is flipped once. What is the probability of getting a tail?

When a coin is flipped, both head and tail are **equally likely** to happen. Hence, the probability of landing a tail is 50 percent.

**B PERFORMING EXPERIMENTS AND RECORDING OUTCOMES**

To test the probability of an event from happening or not, we can experiment. An experiment or trial is a set of procedures that can be performed repeatedly, leading to outcomes or events.

**EXAMPLE 1:**

Gloria flipped a coin a certain number of times and recorded the results as shown in the table below.

| POSSIBLE OUTCOMES | TALLY | NUMBER OF OCCURRENCES |
|-------------------|-------|-----------------------|
| Head              | - I   | 6                     |
| Tail              |       | ?                     |

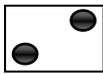
The experiment in this sample 1 is the flipping of the coin. The event in this sample 1 refers to the two possible outcomes: Head and Tail. The tally shows the raw number of occurrences of each outcome in tally marks. Each tally mark, represented by I, is equivalent to one occurrence. However, the fifth mark is drawn diagonally across the previous four marks for easy computation of the total occurrences. For example, to show 6 we have one group of five tally marks and one single tally mark.

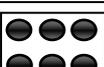
**QUESTION: How many times did Gloria flip the coin?**

- The outcome, Tail has four tally marks; hence the tail appeared 4 times. Four plus the number of times the head appeared, which is 6 to give us a total of ten. Thus, Gloria flipped the coin 10 times.

**EXAMPLE 2**

Henry rolled a regular six-sided die (singular of dice) for a certain number of times and recorded the results as shown in the table below.

| POSSIBLE OUTCOMES   | TALLY | NUMBER OF OCCURRENCES |
|---|-------|-----------------------|
|  |       | 3                     |
|  |       | 2                     |
|  |       | 5                     |

|   |  |   |
|---|--|---|
|  |  | 2 |
|  |  | 3 |
|  |  | ? |

The experiment in Sample 2 is the rolling of a die. There are 6 possible ways for a die to turn up. Since the outcome with 1 dot has three tally marks, it is recorded as 3 to show that it appeared three times.

**QUESTION: How many times did Henry roll the die?**

- The outcome with 6 dots has 5 tally marks, so it appeared 5 times. The total of occurrences is 20. Thus, Henry rolled the die twenty times.



## What's More

**A. Directions:** Describe each of the following events as ***certain, most likely, likely, unlikely, or impossible*** to happen. Give a reason for each of your answers. Write your answers on a separate answer sheet.

| EVENT   | PROBABILITY | REASON |
|---|-------------|--------|
| 1. You are more than 10 years old.  |             |        |
| 2. You will obtain 7 when rolling a regular die.  |             |        |
| 3. Pulling a red marble from a bag with 10 yellow marbles, 6 red marbles, and 1 green marble. |             |        |

**B. Directions:** Read the given situation below and complete the table by supplying the correct answer on each question mark. Then, answer the question that follows. Write your answers on a separate answer sheet.

Irene flipped two identical coins for a certain number of times and recorded the results, as shown in the table below.

| POSSIBLE OUTCOMES | TALLY | NUMBER OF OCCURRENCES |
|-------------------|-------|-----------------------|
| Head & Tail       |       | ?                     |
| Tail & Tail       | -     | ?                     |
| ?                 |       | ?                     |

**QUESTION: HOW MANY TIMES DID IRENE FLIP THE COINS?**



## What I Have Learned

**Directions:** Complete the paragraph by writing the correct word/phrase in each blank. Choose your answers from the list of words/phrases in the box. Write your answers on a separate sheet.

|             |             |          |       |         |
|-------------|-------------|----------|-------|---------|
| tally marks | probability | unlikely | ratio | likely  |
| experiment  | event       | percent  | trial | outcome |

The (1)\_\_\_\_\_ of an (2)\_\_\_\_\_ or outcome is the chance or likelihood of it happening. The probability of an event may be expressed as a (3)\_\_\_\_\_, fraction, decimal, or (4) \_\_\_\_\_. The closer the probability to 1, the more (5) \_\_\_\_\_ the event will happen. The closer the probability to 0, the more (6) \_\_\_\_\_ the event will happen. To test the probability of an event from happening or not, an (7) \_\_\_\_\_ must be performed. An experiment or (8) \_\_\_\_\_ is a set of procedure that can be performed infinitely that can lead to results or (9) \_\_\_\_\_. Each time an outcome occurs, it is recorded in the tally using (10) \_\_\_\_\_.



## What I Can Do

**A. Directions:** Use **impossible**, **unlikely**, **as likely as unlikely**, **most likely**, and **certain** to describe each of the following statements. Write your answer on a separate answer sheet.

1. It will snow tomorrow in Zamboanga City.
2. The likelihood that the water on the beach is high during low tide.
3. The likelihood of getting a correct answer in a multiple-choice item with four choices even if you do not know the test item or have not studied about it.
4. The sun will rise tomorrow.
5. The Inter-Agency Task Force COVID 19 of Zamboanga City says a 50% chance of going back to Modified Enhanced Community Quarantine (MECQ).

**B. Directions:** Read and analyze the problem in the box. Answer the following questions on a separate answer sheet.

There are 2 blue marbles, 3 green marbles, 3 orange marbles, 1 yellow marble and 1 violet marble in a jar. A marble is randomly picked from the jar and returned back to the jar after each time the marble is picked. This procedure is done for a certain number of times. The results of the experiment are shown below.

| POSSIBLE OUTCOMES | TALLY | NUMBER OF OCCURRENCES |
|-------------------|-------|-----------------------|
| Blue marble       |       | 1                     |
| Green marble      |       | 3                     |
| Orange marble     |       | ?                     |
| Yellow marble     |       | ?                     |
| Violet marble     | 0     | 0                     |

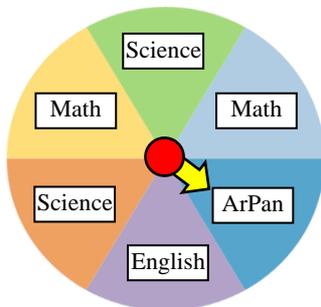
1. In the next round, which marble color will be more likely to be picked? Why?
2. How many times the yellow marble was picked?
3. How many times altogether, the marbles were randomly picked?



## Assessment

**Directions:** Read and analyze each item carefully. Choose and write only the letter that corresponds to your answer on a separate sheet.

**For items 1 and 2, please refer to the spinner below.**



1. Which two subjects have outcomes that are equally likely to occur?
 

|                     |                      |
|---------------------|----------------------|
| A. ARPAN and Math   | C. English and Math  |
| B. Math and Science | D. Science and ARPAN |
2. Which two subjects are least likely to land on the arrowhead?
 

|                      |                     |
|----------------------|---------------------|
| A. English and ARPAN | C. English and Math |
| B. Science and Math  | D. Math and ARPAN   |

**For items 3 to 5, study the situation below.**

In a jar are M & M candies, 8 of which are red, 4 are yellow, 2 are blue, and 7 are brown. Roy picks a candy without looking.

3. What is the total number of possible outcomes?
 

|       |       |       |       |
|-------|-------|-------|-------|
| A. 21 | B. 24 | C. 31 | D. 43 |
|-------|-------|-------|-------|
4. Describe the probability of Roy picking pink candies.
 

|             |            |               |           |
|-------------|------------|---------------|-----------|
| A. Unlikely | B. Certain | C. Impossible | D. Likely |
|-------------|------------|---------------|-----------|
5. Which of the colored candies has more chances to be picked?
 

|         |           |          |        |
|---------|-----------|----------|--------|
| A. Blue | B. yellow | C. Brown | D. red |
|---------|-----------|----------|--------|

**For items 6 and 7, please refer to the problem below.**

Each of the 11 letters of the word "**MATHEMATICS**" is written on a separate card. The cards are placed face down and shuffled. A card is chosen at random.

6. Which of the following letters is the least likely to be chosen?  
 A. M                      B. T                      C. A                      D. E
7. Which of the following letters is most likely to be chosen?  
 A. M                      B. H                      C. I                      D. S

**For items 8 to 10, please refer to the situation below.**

Joana flipped two identical coins for a certain number of times and recorded the results as shown in the table below:

| POSSIBLE OUTCOMES | TALLY | NUMBER OF OCCURRENCES |
|-------------------|-------|-----------------------|
| Head & Head       | -     | 8                     |
| Tail & Tail       |       | 12                    |
| Head & Tail       |       | ?                     |

8. How many times did the outcome, head, and tail appear?  
 A. 2                      B. 3                      C. 4                      D. 5
9. Which tally best represents the outcome, tail, and tail?  
 A. ||| - ||              B. ||| - |||              C. ||| - ||| - ||              D. ||| - ||| - |||
10. How many times did Joana flip the coins altogether?  
 A. 30                      B. 25                      C. 20                      D. 15



## Answer Key

**What I Know:**

1. Very Likely/certain
2. 50% chance
3. Very unlikely

A.  
B.  
4. D  
5. A

**What's In:**

1. Akmad wins
2. Andy wins
3. Ameer wins

**What's New:**

- Either one will be up. It may be a head or a tail because each outcome has 50% chance.

**What's More: A**

1. Answers may vary
2. Impossible
3. Unlikely (the number of red marbles is less than half of the total.)
4. Certain. Most grade 6 pupils are older than 10 yrs old (No 7 in a regular die)
5. Unlikely (the number of red marbles is less than half of the total.)
6. Irene flipped the two coins for 15 times.

**What I Have Learned.**

A.  
B.

1. probability
2. event
3. ratio
4. percent
5. likely
6. unlikely
7. experiment
8. trial
9. outcome
10. tally marks

**What I Can Do.**

1. impossible
2. unlikely
3. unlikely
4. certain
5. likely or unlikely

1. Orange  
2. 1  
3. 10

**Assessment:**

1. B
2. A
3. A
4. C
5. D
6. D
7. A
8. D
9. C
10. B

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<https://tinyurl.com/y5stja4p>

<https://tinyurl.com/y8gl49o6>

# 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 centuries 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.”