JANUARY
Makugihon
FEBRUARY
Mahigugmaon
MARCH
Matinabangon
APRIL
Matinahuron
MAY
Mahapsay og Malimpyo
JUNE
Maabtik og Musunod sa Ihsaktong Orus
JULY
Maantigo og Maabilidad
AUGUST
Maginhunahunaon para sa Uban
SEPTEMBER
Madaginoton
OCTOBER
Matinud-anon
NOVEMBER
Masaligan
DECEMBER
Maalampuon

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

Zest for Progress
Zeal of Partnership

**6**

# MATHEMATICS

## 4th QUARTER – Module 7:
## LISTINGS & DIAGRAMS OF OUTCOMES

**Name of Learner:** _____

**Grade & Section:** _____

**Name of School:** _____

**Mathematics – Grade 6**
**Alternative Delivery Mode**
**Quarter 4 - Module 7: MAKING REPRESENTATION OF LISTINGS AND DIAGRAMS OF OUTCOMES**
**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 follows a step – by – step approach to basic statistics supported by examples and exercises. It covers the key concepts of making listings and diagrams of outcomes and telling the number of favorable outcomes and chances using these listings and diagrams.

This module was designed to cater to diverse learners' academic needs in achieving and improving the twin goals of mathematics in basic education levels, which are critical thinking and problem-solving. 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:

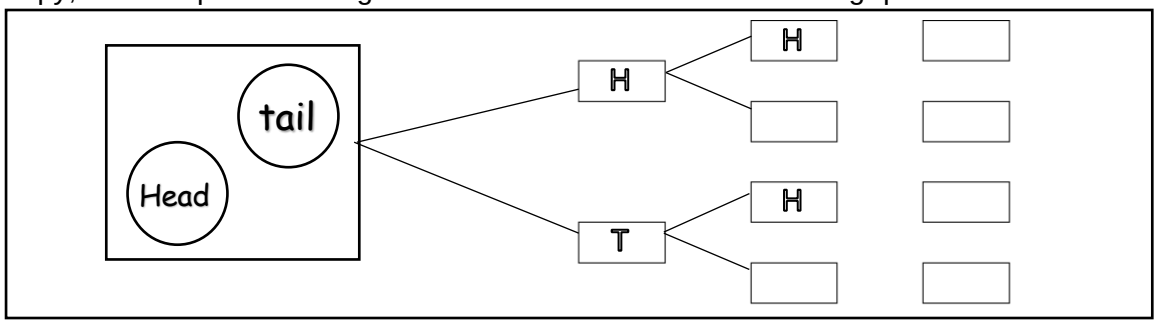
- make listings and diagrams of outcomes (M6SP-IVi-22); and
- tell the number of favorable outcomes and chances using these listings and diagrams. (M6SP-IVi-22)

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

# What I Know

**Directions:** Choose the letter that corresponds to your answer. Write your answer on a separate sheet.

1. Two coins are tossed at the same time. To find the possible ways the coins can land, copy, and complete the diagram below. Then answer the following questions.




Find the probability of:

A. getting two heads
B. getting a head and a tail
C. getting two tails

2. Each of the 11 letters of the word "MATHEMATICS" is written on a separate card. The cards are placed faced down and shuffled. A card is chosen at random. What is the probability that it will show each of the following?

A. The letter M
B. A vowel
C. The letter E
D. The letter T

## LESSON LISTINGS AND DIAGRAMS OF OUTCOMES

# What's In

**ACTIVITY** **GUESS WHAT**

**Directions:** Choose the letter that corresponds to your answer. Write your answer on a separate sheet.

1. Which of the following shows the correct sample space when flipping a 1-peso coin?
   A. {H, T}  B. {H, T, H}  C. {T, H, T}  D. {H, H, T, T}
2. What are the possible outcomes of rolling a die?
   A. {1, 2, 3,}  B. {H, T}  C. {Red, White, Blue}  D. {1, 2, 3, 4, 5, 6}
3. What is the possibility of tossing a coin and have it come out the head?
   A. 25%  B. 50%  C. 75%  D. 100%

4. A canteen serves 3 kinds of drinks and 2 kinds of snacks. How many possibilities are there in choosing a combination of drink and snack for recess?
   A. 2 B. 4 C. 6 D. 8
5. In a spinner of 4 regions, how many possible outcomes that arrow may fall on even numbers?
   A. 2 B. 4 C. 6 D. 8

# What's New

**ACTIVITY** **TAKE MY ORDER**

**Directions:** Look at the menu below. Make a listing of all possibilities in ordering snacks. Write your answer on a separate sheet.

**QUESTION**: In how many ways can you order a burger and drink for a snack? Write the possible combinations of your order inside the order list.

**MENU**

| BURGERS | DRINKS |
|---|---|
| Beef Burger (BB)<br>Chicken Burger (CB)<br>Tuna Burger (TB) | Milktea (M)<br>Buko Juice (B) |

**ORDERS**

# What is It

**Listing and Diagram of All Possible Outcomes of an Event**

- An **outcome** is a possible result of an experiment.
- A **sample space** is the set of all possible outcomes in the experiment.
- **Probability** provides a measure of how likely it is that something will occur. It is a number between and including the numbers 0 and 1. It can be written as a fraction, a decimal, or a percent.
- **Listing** or counting all the possible outcomes for two or more combined events enables you to calculate the **probability** of any particular event occurring.

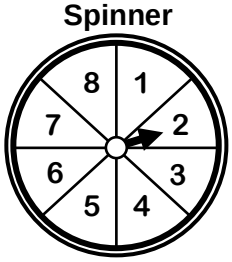
**QUESTION:** How can we use Listing to find a possible outcome?

**PROBLEM 1:** Suppose you spin the spinner. Make a sample space for the spin.

**SOLUTION:** The spinner can land in 8 different regions. To make the sample space, list all the possible outcomes of the spin.

**ANSWER**: The sample space is: 3, 4, 5, 6, 7, 8,1, 2

**Spinner**



**PROBLEM 2:** Look at the list below. How many outfit combinations can you make?

**3 T-Shirts**
- Pollo T-shirt (PO)
- Hooded T-shirt (HO)
- Plain T-shirt (PL)

**2 Pants**
- Long pants (LP)
- Short pants (SP)

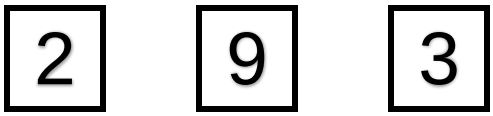
**3 Foot Wear**
- Sneakers (SN)
- Sandals (S)
- Flip-flops (FF)

Ways to solve the problem using Listing Method

| | | | |
|---|---|---|---|
| 1. | PO, LP, SN | 10. | HO, SP, SN |
| 2. | PO, LP, S | 11. | HO, SP, S |
| 3. | PO, LP, FF | 12. | HO, SP, FF |
| 4. | PO, SP, SN | 13. | PL, LP, SN |
| 5. | PO, SP, S | 14. | PL, LP, S |
| 6. | PO, SP, FF | 15. | PL, LP, FF |
| 7. | HO, LP, SN | 16. | PL, SP, SN |
| 8. | HO, LP, S | 17. | PL, SP, S |
| 9. | HO, LP, FF | 18. | PL, SP, FF |

**ANSWER:** There are 18 possible ways for outfit combinations or 3 x 2 x 3 = 18

**PROBLEM 3:** There are 3 number cards, as shown below. Using the Listing method, how many different 2-digit numbers can be formed?




| 2 | | 9 | | 3 | |
|---|---|---|---|---|---|
| {2, 9}: 29 | {2, 3}: 23 | {9, 2}: 92 | {9, 3}: 93 | {3, 2}: 32 | {3, 9}: 39 |

**ANSWER:** There are 6 possible ways to form 2-digit numbers or 3 x 2 = 6

**PROBLEM 4:** What is the probability of choosing 2-digit odd numbers?

**ANSWER:** 93 and 39 are odd numbers, so the probability is $\frac{2}{6}$ or $\frac{1}{3}$ or 33.3% or 0.333

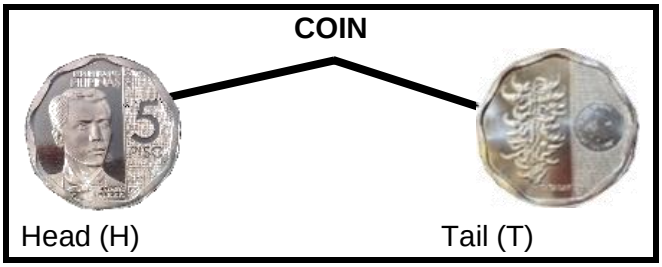
A **tree diagram** is simply a way of displaying all the possible outcomes of an experiment.

When a tree diagram has one action, it has one stage. If the tree diagram has two actions, it has two stages.

**QUESTION:** How can we use Tree Diagrams to find possible outcomes?

**PROBLEM 1:** How many possible outcomes are there to flip a coin?

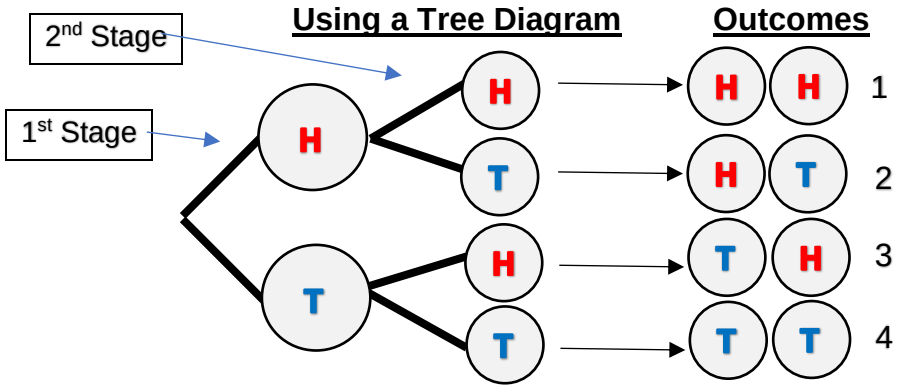
**ANSWER:** 2 possible outcomes




**QUESTION:** What is the probability of getting a tail?

**ANSWER:** $\frac{1}{2}$ or 50% or 0.50

**PROBLEM 2:** How many possible outcomes are there to flip a coin twice in a row?
**SOLUTION:**

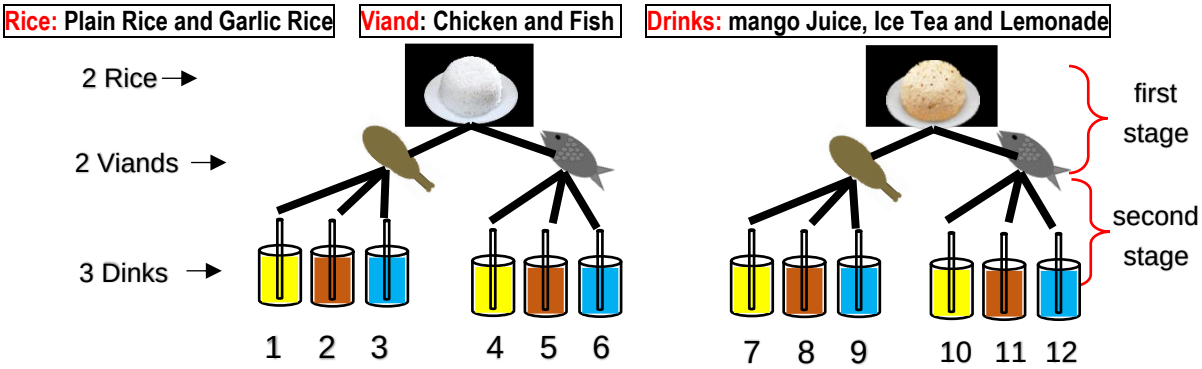



**ANSWER:** 4 possible outcomes

**QUESTION:** What is the probability of getting HH? $\frac{1}{4}$ **or 25% 0r 0.25**

What is the probability of getting HT? $\frac{1}{2}$ **or 50% 0r 0.50**

**PROBLEM 3.** How many different meal combinations to choose from the rice, viand and drinks?




**SOLUTION:** 2 x 2 x 3 = 12

**ANSWER:** 12 different meal combinations

**QUESTION:** What is the probability of choosing a meal combination of plain rice, chicken, and iced tea? $\frac{1}{12}$ **or 8.333% or 0.0833**

# What's More

**A. Directions:** A coin is flipped, and a die is rolled. List all possible outcomes.


| | | | |
|---|---|---|---|
| 1. | 2. | 3. | 4. |
| 5. | 6. | 7. | 8. |
| 9. | 10. | 11. | 12. |

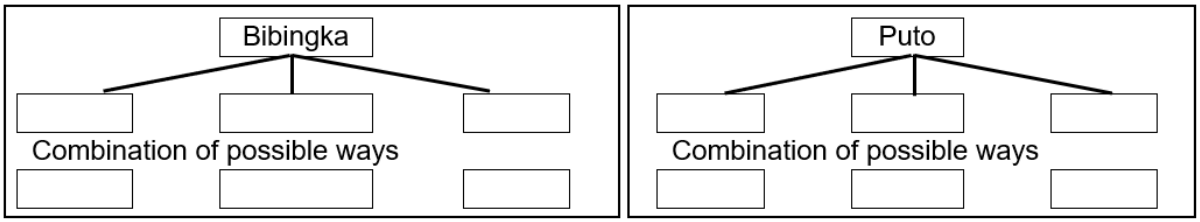
**B. Directions:** Complete the illustration below using a tree diagram to show all the possible ways you can order snacks.

**MENU**

| RICE CAKES | BEVERAGES |
|---|---|
| • Bibingka | • Water |
| • Puto | • Tea |
| | • Juice |

Use B for Bibingka, P for Puto, W for Water, T for Tea, and J for Juice.

**OUTCOMES:**




How many possible combinations are there? _____

What are the possible combinations? _____

# What I Have Learned

**Directions:** Supply the blank spaces with the correct answers.

1. _____ is a possible result of an experiment.
2. _____ is the set all possible outcomes in the experiment.
3. _____ provides a measure of how likely it is that something will occur. It can be written as 4. _____ 5., _____ 6., _____

7-8. What are the two possible ways or strategies you have learned to get the possible outcomes of a particular event or experiment?

# What I Can Do

**Directions:** Read the situation, then answer the questions that follow.

**PROBLEM 1:** Ana is a grade six pupil. One day, she went to the school canteen to buy snacks. The canteen offers 3 choices of flavor for **cupcakes** such as chocolate, mocha, and strawberry, and 2 flavors for **juice** suchas orange, and pineapple. The canteen also offers 3 flavors of **sandwich** like tuna, ham, and beef. In how many ways can Ana select a combination of cupcake, juice, and sandwich for a snack?

a. Make a listing of possible snack combinations of cupcake, juice, and sandwich.
b. In how many ways can Ana select a pair of cupcakes and juice?
c. If you were Ana, which snack combination would you prefer and why?

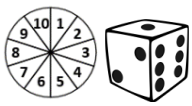
**PROBLEM 2**: There are 4 number cards as shown below.

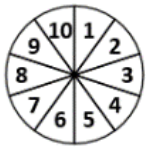
| 7 | 3 | 4 | 8 |
|---|---|---|---|

a. Make a Tree Diagram.
b. How many different 3-digit numbers can be formed?

# Assessment

**Directions:** Read and analyze each item carefully. Write the letter of the correct answer on a separate sheet.

1. What is the possibility of tossing a coin and have it come out tail?
   A. 25% B. 50% C. 75% D. 100%
2. How many possible outcomes when tossing a coin in sample space?
   A. 1 B. 2 C. 3 D. 4
3. How many possible outcomes of spinning two spinners with 5 and 10 regions respectively?
   A. 5 possibilities B. 10 possibilities C. 15 possibilities D. 50 possibilities
4. How many possible outcomes will there be when rolling a die in sample space?
   A. 2 B. 4 C. 6 D. 8
5. Which pair of figures below creates 36 possible outcomes?
   A.  B.  C.  D. 
6. Roy prepared 2 jackets, a red and a black one, a pair of jeans, 2 footwear, boots, and sneakers. How many possible outfit combinations will there be of a jacket, jeans, and footwear?
   A. 4 B. 5 C. 6 D. 7
7. How many possible outcomes will there be if a die is rolled and a four-region spinner is spun?
   A. 3 B. 6 C.10 D. 24
8. Food Zone Carinderia serves three types of sandwiches: egg, ham, and chicken. It also serves three beverages: milk, coffee, and soft drinks. If a customer will choose one sandwich and one beverage, how many possible outcomes are there?
   A. 3 B. 6 C. 9 D. 12
9. What are the possible outcomes of this spinner?
   A. {1, 2, 3, 4, 5, 6} C. {1, 3, 5, 7, 9,}
   B. {2, 4, 6, 8, 10} D. {1, 2, 3, 4, 5, 6, 7, 8, 9,10}



10. What is the probability of spinning 2 and 5 in a 10-region spinner?
    A. $\frac{1}{2}$ B. $\frac{1}{3}$ C. $\frac{1}{4}$ D. $\frac{1}{5}$

## What I Can Do:

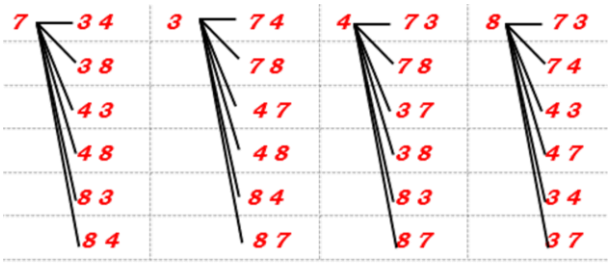
**Problem #1**

| | | | |
|---|---|---|---|
| a. | C, O, T | M, O, T | S, O, T |
| | C, O, H | M, O, H | S, O, H |
| | C, O, B | M, O, B | S, O, B |
| | C, P, T | M, P, T | S, P, T |
| | C, P, H | M, P, H | S, P, H |
| | C, P, B | M, P, B | S, P, B |

b. 6 possible snack combinations

c. answer may vary

**Problem #2 a.**




b. there are 24 3-digit numbers formed

## Assessment:

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

## What I have learned:

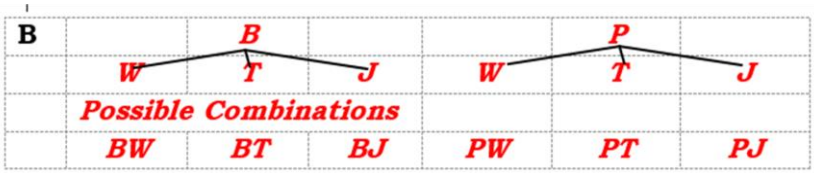
1. Outcome
2. sample space
3. probability
4. fraction, decimal, or percent
5. listing, tree diagram

## What's More:

A

| | | | | |
|---|---|---|---|---|
| {H, 1} | {H, 4} | {T, 1} | {T, 4} |
| {H, 2} | {H, 5} | {T, 2} | {T, 5} |
| {H, 3} | {H, 6} | {T, 3} | {T, 6} |

B




## What's New:

Answer: 6 ways.

Possible combinations: {BB, M}, {CB, M}, {TB, M}
{BB, B}, {CB, B}, {TB, B}

## What's In:

1. A
2. D
3. B
4. C
5. A

## What I Know:

1. a. $\frac{1}{4}$ or 25% or 0.25
   b. $\frac{2}{4}$ or $\frac{1}{2}$ or 50% or 0.50
   c. $\frac{1}{4}$ or 25% or 0.25
2. a. $\frac{2}{11}$ or 18% or 0.18
   b. $\frac{4}{11}$ or 36% or 0.36
   c. $\frac{1}{11}$ or 9% or 0.09
   d. $\frac{2}{11}$ or 18% or 0.18

Answer Key

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https://www.youtube.com/watch?v=2iosRT6knXY

https://www.youtube.com/watch?v=Su29BCpPwSE&feature=emb_title

https://www.cimt.orguk/projects/mepres/book8/bk8i10/bk8_10i3.htm

https://mathbitsnotebook.com/Geometry/Probability/PBSampleSpTree.html

# 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."