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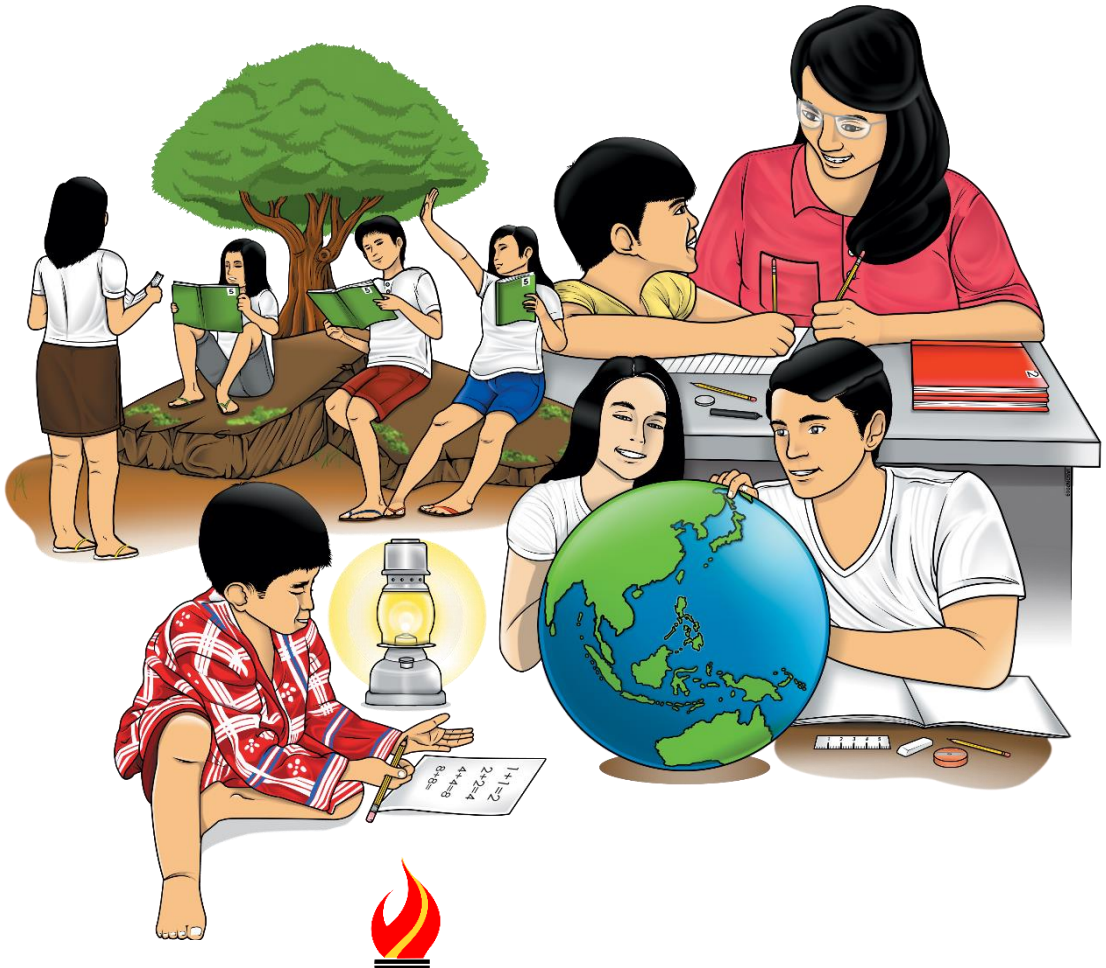
Mathematics

Quarter 4 – Module 8:

Finding the Probability of a Simple Event



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Mathematics

Quarter 4 – Module 8:

Finding the Probability of a Simple Event

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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 need to 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. And 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.

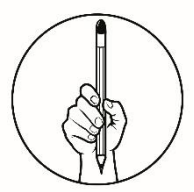
What I Need to Know

This module was designed and written with you in mind. It is here to help you master the skills in describing and calculating the probability of a simple event. You are provided with varied activities to process the knowledge and skills learned and to deepen and transfer your understanding of the lesson. The scope of this module enables you to use it in many different learning situations. The lesson is arranged to follow the standard sequence of the course. But the order in which you read them can be changed to correspond with the textbook you are now using.

This module contains lesson on finding the probability of a simple event(M8GE-IVh-1).

After going through this module, you are expected to:

1. describe the probability of simple event,
2. calculate the probability of simple event, and
3. relate the concept of probability of simple event to real-life situations.



What I Know

PRE-ASSESSMENT

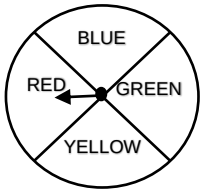
Directions: Answer each of the following items. Write the letter of the correct answer on a separate sheet of paper.

1. What do you call an event that can happen in a unique way?
   A. Complementary Event C. Independent Event
   B. Dependent Event D. Simple Event

2. The local weather forecaster said that there is 70% chance of rain tomorrow. What is the probability that it will not rain tomorrow?
   A. 0.3 B. 0.7 C. 30 D. 70

3. Rica's chance of winning a game is $\frac{2}{3}$. What is the likelihood that Rica will win the game?
   A. certain B. impossible C. likely D. unlikely

4. If the spinner at the right is spun once, what is the probability that it will land on red?



   A. $\frac{1}{4}$ B. $\frac{1}{3}$ C. $\frac{1}{2}$ D. 1

5. A committee has 4 female and 7 male members. If they randomly elect an officer from among themselves, what is the probability that the elected officer a female?
   A. $\frac{3}{11}$ B. $\frac{4}{7}$ C. $\frac{4}{11}$ D. $\frac{7}{4}$

6. What is the probability of getting a tail when a fair coin is tossed once?
   A. $\frac{1}{4}$ B. $\frac{1}{2}$ C. $\frac{3}{4}$ D. 1

7. A fair die is rolled once. What is the probability of rolling a number that is not 0?
   A. $\frac{0}{6}$ or 0 B. $\frac{1}{6}$ C. $\frac{5}{6}$ D. $\frac{6}{6}$ or 1

8. If one letter is chosen at random from the word UNCERTAINTY, what is the probability that the letter chosen is a vowel?
   A. $\frac{3}{11}$ B. $\frac{4}{11}$ C. $\frac{8}{11}$ D. 4

9. Which of the following is TRUE?
   A. Flipping a coin twice has 3 possible outcomes.
   B. The true/false-type question has one possible outcome.
   C. The probability of getting a 0 when a die is rolled is certain.
   D. The probability of getting a club if you draw one card from standard deck of 52 cards is $\frac{1}{4}$.

10. Alex asked his 40 classmates of their favorite snacks. These are the responses of his classmates; 10 students chose banana cue; 12 chose cassava cake and 18 chose pancakes. If one of his classmates is chosen at random, what is the probability that the chosen classmate prefers cassava cake?

A. $\frac{1}{4}$ B. $\frac{3}{10}$ C. $\frac{3}{4}$ D. 30

11. If you draw a card from the standard deck of 52 cards, what is the probability of getting a heart or a number 7?

A. $\frac{1}{52}$ B. $\frac{1}{26}$ C. $\frac{4}{13}$ D. $\frac{17}{52}$

12. The numbers 4 to 10 are written on separate pieces of paper, folded and placed in a box. One number (piece of paper) is drawn from this box. What is the probability that the number chosen is a composite number?

A. $\frac{1}{10}$ B. $\frac{1}{5}$ C. $\frac{1}{2}$ D. $\frac{5}{7}$

13. There are 7 blue marbles, 12 red marbles, 15 green marble, and 2 black marbles in a bag. Suppose you select 1 marble at random, what is the probability that you get a red marble?

A. $\frac{1}{3}$ B. $\frac{1}{18}$ C. $\frac{7}{18}$ D. 14

14. Your bag contains 45 candies which include chocolate, strawberry and durian flavors. The probability of getting a chocolate candy at random is $\frac{1}{3}$. How many strawberry candies and durian candies do you have?

A. 10 B. 15 C. 20 D. 30

15. The blood type of a group of 200 people is distributed as follows: 50 have A blood type, 65 have B blood type, 70 have O blood type and 15 have AB blood type. If a person from this group is selected at random, which of the following has the correct table of probabilities for all blood type?

A.

Blood Type	A	B	O	AB
Probability	$\frac{1}{5}$	$\frac{13}{40}$	$\frac{2}{5}$	$\frac{3}{40}$

B.

Blood Type	A	B	O	AB
Probability	$\frac{1}{5}$	$\frac{3}{40}$	$\frac{2}{5}$	$\frac{7}{40}$

C.

Blood Type	A	B	O	AB
Probability	$\frac{1}{4}$	$\frac{3}{40}$	$\frac{7}{20}$	$\frac{13}{40}$

D.

Blood Type	A	B	O	AB
Probability	$\frac{1}{4}$	$\frac{13}{40}$	$\frac{7}{20}$	$\frac{3}{40}$

Lesson 1

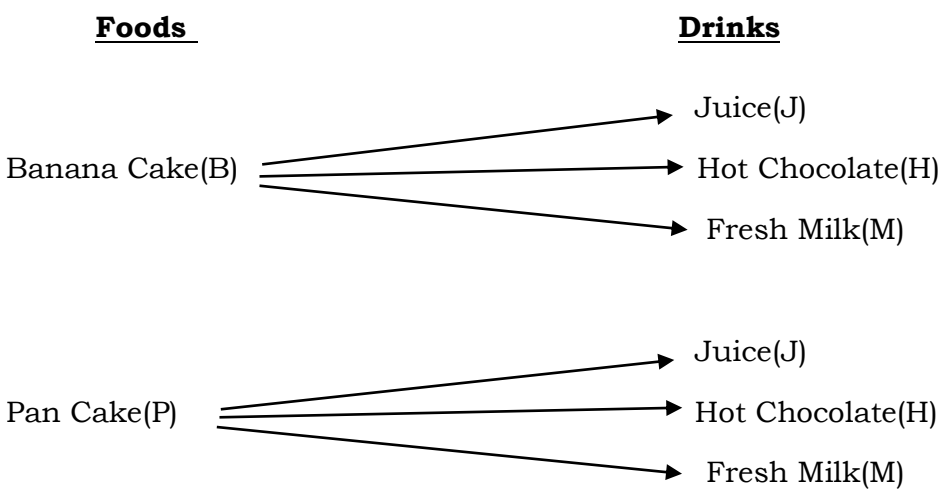
Finding The Probability of a Simple Event

Begin this module by assessing what you have learned on the counting methods and techniques in an experiment.

What's In

Directions: Read the situation carefully and answer the given questions below.

Every morning around 9:00 – 10:00 AM, Mrs. Reyes sells affordable homemade snacks. Each serving contains food and drink. Foods consist of banana cake (B) and pancake (P) while drinks consist of juice (J), hot chocolate (H), and fresh milk (M).



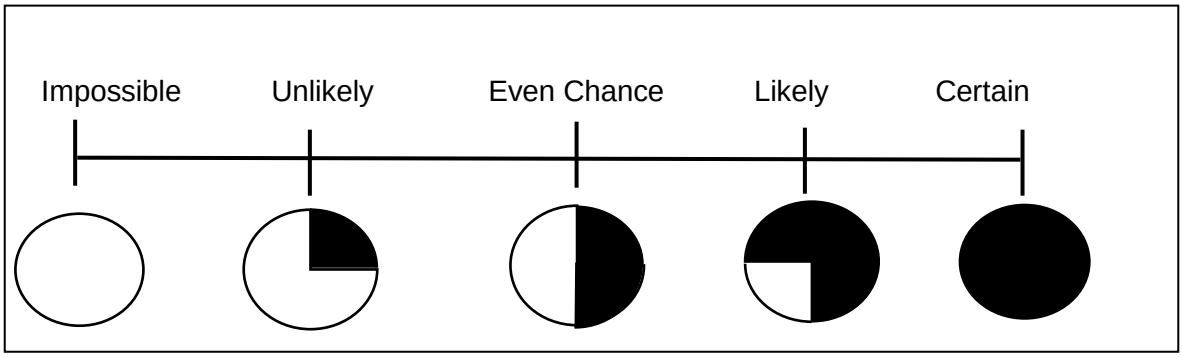
Questions:

1. How many choices of foods are there?
2. How many choices of drinks are there?
3. What are the different possible servings Mrs. Reyes can offer to her customers?
4. How many different possible servings are there in all?

What's New

Activity 1: What is my Level of Certainty?

Directions: Study the figure below then identify whether each given statement is impossible, unlikely, even chance, likely, or certain to happen.

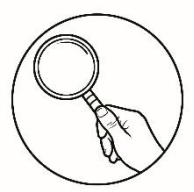


1. There is 50% chance that I will win the game.
2. The weather forecast gives 25 % chance of rain tomorrow.
3. The chance that Jay is chosen to represent his class in the Student Council is 0.6.
4. A week has 8 days.
5. There are 12 months this year.
6. The month of December has 31 days.
7. A 5 turning up in rolling a die once.
8. A tail facing up in tossing a coin once.
9. A pig flies.
10. Noel getting a score of 10 in a 25-item test.

Questions:

1. Which among the statements
   a. are certain to happen?
   b. have even chance to happen?
   c. are impossible to happen?

2. How do you describe the certainty of an event?



What is It

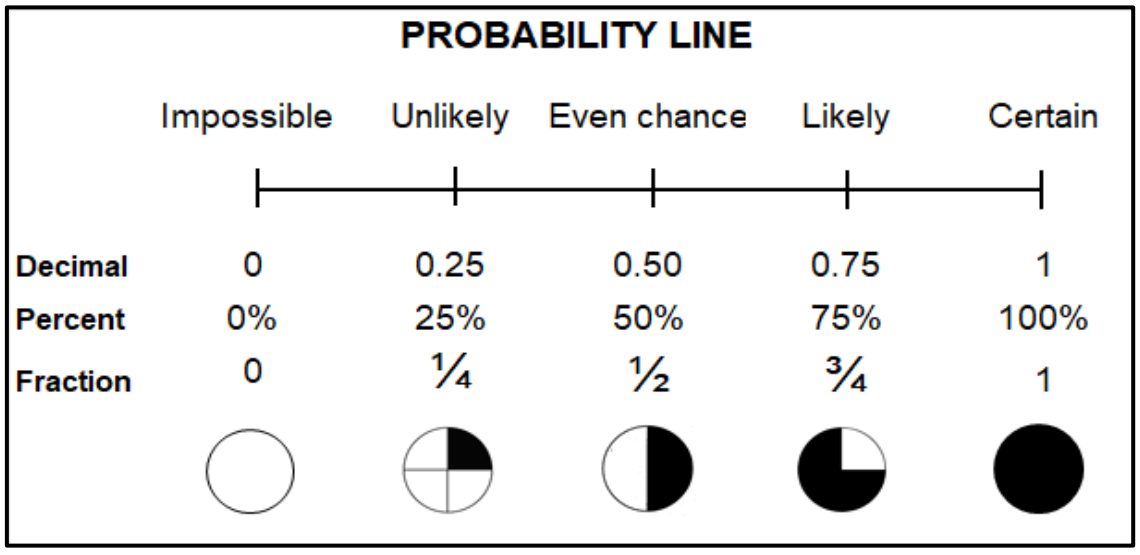
In our daily life, we always make decisions even if we are not certain of the outcomes. Most of the time, we are taking chances despite not knowing the possible results or consequences. This certainty or uncertainty is what we call probability.

Probability is the measure of likelihood or chance that an event will happen or occur. For experiments where each outcome is equally likely to occur, it is the ratio of the number of ways an event can occur to the number of all possible outcomes. Experiment broadly refers to a situation that involves random results. **Experiment** is any activity that can be done repeatedly whose results vary even conditions are the same. Experiment has a well-defined set of possible outcomes, known as the **sample space**. Some examples of experiments are rolling dice, tossing coins, random selection using spinners, drawing a card from a shuffled deck of cards, randomly choosing numbers, choosing a random letter from the alphabet, and many more.

Looking back at the activity presented in the "What's New" part of this module, statements such as "there is 50% chance that I will win the game; the weather forecast gives 25 % chance of rain tomorrow; and the chance that Jay is chosen to represent his class in the Student Council is 0.6, are few examples of statements about probability.

Probabilities are written as fractions or decimals from 0 to 1 or as percent from 0% to 100%. The higher an event's probability, the more likely that the event is to happen.

Presented below is the probability line showing the probability of an event followed by the probability rules.



Probability Rules

1. If an event has a probability of 0, or 0%, then it will never happen or it is impossible to happen.

   Example: A 7 turning up in a rolling a die once.

   It is impossible for 7 to turn up in rolling a die once because the only numbers in the faces a die are 1, 2, 3, ,4, 5, and 6. Therefore, the probability for 7 to turn up is zero, P(7) = $\frac{0}{6}$ = 0, Hence, the occurrence of 7 in rolling a die once is an **impossible event**.

2. If an event has a probability of 0.5 or 50%, then the event has the same chance or even chance to happen or not to happen.

   Example: Winning in playing chess with your friend.

   Usually, in playing a game, the player may either win or lose. So, when you play chess with your friend, you have 50% chance of winning and 50% of losing the game. Therefore, P(win) = P(lose) = ½ = 50%. Hence, your chance of winning or losing the game is an **even event**.

3. If an event has a probability of 1, or 100%, then the event is certain to happen.
   Example:
   - If today is Monday, the probability that tomorrow is Tuesday is 1. Therefore, the event that tomorrow will be a Tuesday if today is a Monday is a certain event.
   - If an employer chooses an employee at random from a group of 50 male employees, the probability that the chosen employee is a male is 1 since all the employees in the group are males. Hence, $P(male) = \frac{50}{50} = 1$. Therefore, the event of choosing a male employee from a group of male employees is a **certain event**.

4. The sum of the probabilities of all the outcomes of an experiment is 1.
   Example: If you flip a fair coin once, there are two possible outcomes, a head or a tail. The probability of getting a tail is $\frac{1}{2}$ and the probability of getting a head is $\frac{1}{2}$. Therefore, the sum of the probabilities of the outcomes is 1.

Some types of Probability

1. Experimental Probability

   It is based on the number of possible outcomes by the total number of trials. When tossing a coin, the total possible outcomes are two, heads and tails. The total number of trials is determined by the total times the coin is flipped. If the coin is flipped 50 times and it lands on heads 28 times, then the experimental probability of head is 28/50.

2. Theoretical Probability

It is an approach that bases the probability on the possible chances of something to happen. For example, if you want to know the theoretical probability that a die will land on a number "3" when rolled, you must determine how many possible outcomes there are. On a die, there are six numbers that are equally likely to occur, offering six possibilities. To land on a three, you have a one-in-six, or 1:6, chance of it landing on a "3". So, the P(3) = 1/6.

3. Subjective Probability

It is based on a person's own personal reasoning and judgment. It is the probability that the outcome a person is expecting will actually occur. There are no formal calculations for subjective probability but instead it is based on a person's own knowledge and feelings. For example, during a sport's game, a fan of one team may state that the team they are rooting for will win. The person bases his decision on facts or opinions regarding the game, the two teams and the likelihood of the team winning.

The focus of this module is the theoretical probability of simple event. A **simple event** is one that can only happen in one way - in other words, it has a single outcome. If we consider our previous example of tossing a coin: we get one outcome that is a head or a tail.

An event can include several outcomes.

- Choosing a "King" from a deck of cards (any of the 4 Kings) **is also** an event.
- Rolling an "even number" in rolling a die once (2, 4 or 6) is an event.

Probability of simple event can be calculated using the formula

$$P\ (event) = \frac{Number\ of\ favorable\ outcomes}{Number\ of\ all\ \ possible\ outcomes\ (Sample\ Space)}\ ,$$

in symbol $P\ (E) = \frac{n(E)}{n(S)}$, where E is the event, *n(E)* is the number of favourable outcomes, while *n(S)* is the total number of possible outcomes of an experiment or the total number of outcomes in the sample space. To find the probability of an event to occur, first we should know the total number of possible outcomes, and second is to know the number of times the event can occur. Then use the formula. If the probability is expressed in fraction, it is desired to express it in simplest form for the uniformity of answers.

Let's take a look at a few examples of probability of simple events.

Example 1- **Probability in Experiment Involving Coin**

If you flip a coin once, what is the probability of getting a head?

Solution:

When you flip a coin once, there are **two** possible outcomes, either a head or a tail. So, to calculate the probability of getting a head, we use the formula for getting the probability of simple events.

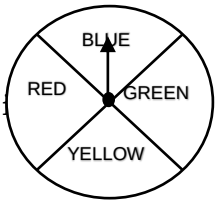
$P(E) = \frac{n(E)}{n(S)}$ where: $P(E)$ is the probability of the event *(H)*.

$n(E)$ is the number of getting a head.

$n(S)$ is the total number of possible outcomes.

$P\ (H) = \frac{1}{2}$. So, the probability of getting a head in flipping a coin once is $\frac{1}{2}$

Example 2 – Probability in Experiment Involving Spinner



Given the spinner at the right, what is the probability that it will land on blue if it is spun once?

Solutions:

The spinner is divided into 4 congruent regions colored blue, green, yellow and red. The number of favorable outcome that the spinner will land on color blue is 1 out of 4. Using the formula;

$P\ (E) = \frac{n(E)}{n(S)}$, where: P(E) is the probability that it will land on blue (B).

$n(E)$ is the number of landing on color blue.

$n(S)$ is the total number of regions in the spinner.

P(B) = $\frac{1}{4}$. Therefore, the probability that it will land on blue is $\frac{1}{4}$.

Example 3 - Probability in Experiment Involving Die

Given a standard die, find the probability of the following events when rolling a die once:

a) getting a 4
b) getting an odd number
c) getting a 7

Solutions:

A fair die has 6 faces and contains the numbers 1, 2, 3 ,4 ,5 and 6. Therefore, our sample space has six elements because there are six possible outcomes that could occur when we roll a die once.

a. **The probability of getting a 4**

*There is only **one** desired outcome of "rolling 4"* on a die and there are ***six*** possible outcomes. Using the formula, we get,

P (4) = $\frac{1}{6}$, therefore the probability of getting a 4 in rolling a die once is $\frac{1}{6}$.

b. The probability of getting an odd number

*There are **three** odd numbers in a die (1, 3, 5)* and *there are **six** possible outcomes*. Using the formula, we get,

P(odd number) = $\frac{3}{6} = \frac{1}{2}$, therefore the probability of getting an odd number in rolling a die once is $\frac{1}{2}$.

c. **The probability of getting a 7**

Notice that there is no 7 since a die has only six faces containing the six numbers 1, 2, 3, 4, 5, and 6. Hence, it is impossible to get a 7. In this case, the probability of getting a 7 is zero. Using the formula, we get,

P(7) = $\frac{0}{6}$ = 0, therefore the probability of getting a 7 in rolling a die once is 0.

Example 4 – Probability in Experiment Involving Standard Deck of Cards

A card is drawn from a well-shuffled standard deck of 52 playing cards. Find the probability of drawing:

a. the '2' of hearts
b. a red king
c. a club
d. a black face card
e. neither a heart nor a red king

Solution:

In a standard deck of 52 playing cards, there are 4 suits namely: spades ♠, hearts ♥, diamonds ♦, clubs ♣. Each suit has 13 cards such as ace, king, queen, jack, 10, 9, 8, 7, 6, 5, 4, 3 and 2. Spades and clubs are black cards. Cards of hearts and diamonds are red cards. The face cards are King, Queen and Jack**.** There are a total of 12 face cards in the deck of 52 playing cards.

a) The probability of drawing the '2' of hearts

There is only **one** "2" of hearts in a deck of cards out of 52. Using the formula, we get,

P(2 of ♥) = $\frac{1}{52}$, therefore the probability of picking the "2" of hearts from a deck of cards is $\frac{1}{52}$.

b) The probability of drawing a red king

There are only two **"red kings"** out of 52 cards, the king of heart and the king of diamond**.** Hence, there are 2 favorable outcomes out of 52 possible outcomes. Using the formula, we get,

P(king of red color) = $\frac{2}{52}$ = $\mathbf{\frac{1}{26}}$**,** therefore the probability of getting a red king from a deck of cards is $\frac{1}{26}$.

c) The probability of drawing a club

There are thirteen cards of club in a deck of cards which are the ace, king, queen, jack, 10, 9, 8, 7, 6, 5, 4, 3, and 2. So, the number of favorable outcomes is 13 out of 52. Using the formula, we get,

P(club) = $\frac{13}{52}$ = $\frac{1}{4}$ or 25% or 0.25. Therefore, the probability of getting a club from a deck of cards is $\frac{1}{4}$ or 25%.

d) The probability of drawing a black face card

The black cards are *spades and clubs*. In each of these suits (spade and club), there are three face cards namely king, queen and jack. Hence, the total number of black face cards is 6 out of 52 cards. Using the formula, we get,

P(black face card) = $\frac{6}{52} = \frac{3}{26}$, therefore the probability of drawing a black face card from a deck of cards is $\frac{3}{26}$.

e) neither a heart nor a red king

Only cards of hearts and diamonds are red in the deck of cards. There are 13 cards of heart including the king of heart. Additionally, there is only one "red king" card that is not counted yet—the king of diamond. Hence, we have a total of 14 cards which is a heart or a red king. Since these cards are the cards which are NOT chosen, we can subtract this number from the total number of cards in the deck. Hence, there are 52 – 14 = 38 choices of cards to be drawn. So, the probability of picking neither a heart nor a red king is

P(E) = $\frac{38}{52} = \frac{19}{26}$, therefore the probability of drawing neither a heart nor a red king in a deck of cards is $\frac{19}{26}$.

Example 5 - Probability in Experiments involving Marbles

In Ana's bag, there are 5 blue marbles, 4 red marbles, 1 green marble, and 2 black marbles. Suppose you draw 1 marble at random, calculate the probability of:

a) drawing a black marble.
b) not drawing a green marble.
c) drawing a blue or a red marble.

Solution:

In the problem, there are 5 blue marbles, 4 red marbles, 1 green marble and 2 black marbles, or a total of 12 marbles. Hence, there are 12 possible outcomes when we draw 1 marble from Ana's bag.

a. The probability of getting a black marble

The number of favorable outcomes is 2 because there are 2 black marbles out of 12. Using the formula, we get,

P(black) = $\frac{2}{12} = \frac{1}{6}$, therefore the probability of drawing a black marble is $\frac{1}{6}$.

b. The probability of not getting a green marble

Note that there is only **1 green marble** out of 12. Hence, the remaining number of marbles that is **not green is 11**. Using the formula, we get,

P(not green) = $\frac{11}{12}$, therefore the probability of getting a marble that is not green is $\frac{11}{12}$.

c. The probability of getting a blue or a red marble

Note that there are 5 blue marbles and 4 red marbles. Hence it gives us 9 favorable outcomes for the two colors out of 12 possible outcomes. Using the formula, we get,

P(blue or red) = $\frac{5+4}{12} = \frac{9}{12} = \frac{3}{4}$, therefore the probability of getting a blue or red marble is $\frac{3}{4}$.

Example 6 - Probability involving Numbers

The numbers 1 to 12 are written separately on pieces of paper. Each paper is folded and placed in a box. A piece of paper with a number is drawn from this box. Find the probability of getting an

a. even number. b. an odd number divisible by 3.

Solution:

Possible outcomes are 1, 2, 3, 4, 5, 6, 7, 8, 9,10,11 and 12. Therefore, there are 12 elements of the sample space.

a. The probability of getting an even number

In the problem, the number of favorable outcomes is 6 because there are 6 even numbers such as 2, 4, 6, 8, 10 and 12. To find the probability of getting an even number, we use the formula

P(even number) = $\frac{6}{12} = \frac{1}{2}$, therefore the probability of getting an even number is $\frac{1}{2}$.

b. The probability of getting an odd number divisible by 3

In the problem, the odd numbers are 1, 3, 5, 7, 9, and 11. Among these numbers, only 3 and 9 are divisible by 3. It means that the total number of favourable outcomes is 2 out of 12. Using the formula, we get,

P(odd number divisible by 3) = $\frac{2}{12} = \frac{1}{6}$, **therefore the probability of getting an odd number divisible by 3 is** $\mathbf{\frac{1}{6}}$.

Example 7 – Other Probability Problems involving simple events

a. In the word **MATHEMATICS**, what is the probability that the letter chosen is a consonant if one letter is chosen at random?

Solution:

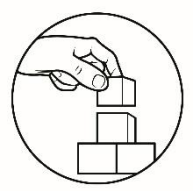
In the word MATHEMATICS, there are eleven letters and seven of which are consonants. Using the formula, we get,

P(consonant) = $\frac{7}{11}$, therefore the probability of choosing a consonant is $\frac{7}{11}$.

b. Suppose that a fruit is chosen at random from a box containing 120 fruits which are apples, oranges and mangoes. If the probability of getting an apple at random is $\mathbf{\frac{1}{4}}$, how many oranges and mangoes are there in the box?

Solution:

In the problem, the probability of getting an apple is $\frac{1}{4}$. The total number of fruits in the box is 120. So, $\frac{1}{4}$ of 120 is **30**, hence there are 30 apples. Subtracting 30 from 120, the result is 90. Therefore, there are 90 oranges and mangoes in the box.



What's More

Activity 1. Time to Judge!

Directions: Determine whether each of the following is an example of a simple event or not. Put a check inside the box if it is.

Event	Simple Event	Not
1. A perfect square number turning up in rolling a die once.		
2. Choosing a vowel from the word "HONESTY".		
3. Getting 2 heads in flipping a coin twice.		
4. Drawing a red ball from a bag containing 6 blue and 4 red balls.		
5. Drawing a jack or an ace card from a deck of 52 cards		

Question:

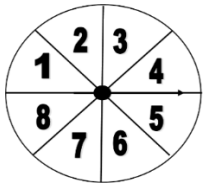
1. How do you describe simple events?
2. Is it difficult to determine an event if it is simple or not? Why?
3. What is your basis in determining whether an event is simple or not?

Activity 2. Compute Me!

Directions: Read the given situation carefully and answer what is asked.

A. Given the spinner at the right, if it is spun once, compute the probability that it will land on

1. a number 5
2. a number less than 8
3. an even number divisible by 4



B. From a standard deck of 52 playing cards, one card is drawn at random, compute the probability of getting

1. an ace card
2. a non-face card
3. neither a spade nor a jack

C. Your bag contains 3 chocolate candies, 5 orange candies and 7 durian candies. If one candy is drawn at random from the bag, find the probability of getting:
   1. Durian candy
   2. Chocolate candy
   3. Durian or Orange candy

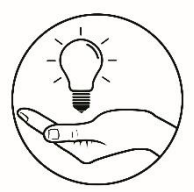
Questions:
1. How did you compute the probability of an event?
2. What formula did you use?

Activity 3. Involve Me!

Philippines is facing a COVID-19 pandemic which prompted DepEd to change their learning modalities to cater the students' need and safety as well. In Pag-Asa National High School, teacher Angel is a grade 8 adviser. She conducted a survey on on all of her 50 students regarding their most preferred learning modalities on which the students can choose (a) Online learning; (b) Modular; (c) Face to face; and (d) Blended learning. After the survey, the following results were obtained:

Learning Modalities	Number of Grade 8 Students
Online learning	3
Modular	30
Face to face	7
Blended	10
Total	

Questions:
1. How many grade 8 students answered the survey?
2. What is the least preferred learning modality? Most preferred?
3. If a student is chosen at random, what is the probability that he/she prefers a) Online learning? b) Modular learning?



What I Have Learned

Directions: To summarize the things you have learned.

Define Probability

1. _____

Probabilities can be written in

2. _____
3. _____
4. _____

Describe simple event.

5. _____

Examples of Simple Event

6. _____
7. _____
8. _____
9. _____

Formula to find Probability of Simple Event

10. _____

What I Can Do

Directions: You are ready now to apply what you have learned in finding the probability of simple event. Read carefully and analyze the situation below, then answer the questions that follow.

Hannah is a student and an online seller. She sells Personal Preventive Equipment (PPE) like face mask (cloth), alcohol, and hand sanitizer to prevent the spread of the COVID-19 virus. The table below shows the sold out product in a week.

Product (PPE)	Number of product sold out in a week
Face mask (cloth)	45
Alcohol	15
Hand sanitizer	5
Total	**60**

Questions:

1. What is the probability that the purchased product is an alcohol?
2. What is the probability that the purchased product is a hand sanitizer?
3. What is the probability that the purchased product is a face mask?
4. What is the bestselling product?
5. If you are the seller, based on the information presented above, which product will you prefer to sell? Why?

Assessment

Post-Assessment:

Directions: Answer each of the following items accurately. Write the letter of the correct answer on a separate sheet of paper.

1. What is referred to as the likelihood or chance that an event will happen or occur?
   A. Event B. Experiment C. Probability D. Outcome

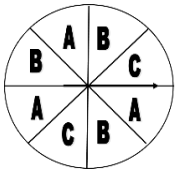
2. There is $\frac{7}{10}$ chance of rain today. How is this probability written in decimal form?

A. 0.007 B. 0.07 C. 0.7 D. 7.0

3. If the spinner at the right is spun once, what is the probability that it will land not on B?

A. $\frac{3}{8}$ C. 3

B. $\frac{5}{8}$ D. 5



4. A module reproduction team has 9 male and 6 female members. If every member is equally likely to be elected as the chairperson of the team, what is the probability of electing a male?

A. $\frac{3}{5}$ B. $\frac{2}{5}$ C. $\frac{2}{3}$ D. $\frac{5}{2}$

5. Which of the following spinner below has the probability of 0.25 that it will land on black?

A.  B.  C.  D. 

6. Carlo is asked to choose a number from 1 to 20. What is the probability of choosing a number that is divisible by 5?

A. 80% B. 60% C. 40% D. 20%

7. A fair die is rolled once. What is the probability that the number turning up is not divisible by 3?

A. $\frac{5}{6}$ B. $\frac{1}{6}$ C. $\frac{1}{3}$ D. $\frac{2}{3}$

8. Jessa asked her 30 classmates of their most favorite snack. The results were 10 students chose banana cue, 5 chose cassava cake, and 15 chose pan cake. What is the probability that a chosen classmate prefers banana cue?

A. $\frac{1}{3}$ B. $\frac{1}{2}$ C. $\frac{3}{4}$ D. 1

9. Marie's pencil case contains 7 blue pencils, 8 yellow pencils and 3 red pencils. If a pencil is randomly chosen from the case, what is the probability of getting a blue or yellow?

A. $\frac{7}{18}$ B. $\frac{5}{6}$ C. $\frac{4}{9}$ D. $\frac{1}{6}$

10. A large box contains 365 tickets, one for each day of an ordinary year. Suppose one ticket is selected at random, what is the probability that the selected day is in December?

A. $\frac{30}{365}$ B. $\frac{6}{73}$ C. $\frac{31}{365}$ D. $\frac{12}{365}$

11. Drawing a card from a deck of 52 cards, what is the probability of picking neither a heart nor an ace?

A. $\frac{35}{52}$ B. $\frac{9}{13}$ C. $\frac{37}{52}$ D. 35

12. Ben, Alex, Ric, and Mae are arguing on the probability of a 5 turning up in rolling on a fair die once. Who among them is correct?

A.

Ben
Event: 5
S = {1, 2, 3, 4, 5, 6}
$P(5) = \frac{1}{6}$

C.

Alex
Event: 5
S = {5}
P(5) = 1

B.

Ric
Event: 5
S = {1, 2, 3, 4, 6}
$P(5) = \frac{1}{5}$

D.

Mae
Event: 5
S = {1, 2, 3, 4, 5, 6}
$P(5) = \frac{5}{6}$

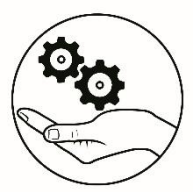
13. Which of the following situations is most likely to happen?
    A. Drawing a consonant from the letters of the word "HARMONY".
    B. All members of a graduating class to be valedictorians.
    C. For an item in a True-False test to be false.
    D. Rain to fall during the summer season.

14. Teacher Mae is a grade 9 adviser. She conducted a survey on the preferred learning modalities which the students can choose from which are (a) Online learning, (b) Modular, (c) face to face, and (d) blended learning. There were 50 students who responded in the survey. The probability that a randomly chosen student prefers modular learning modality is $\frac{3}{5}$. What does this mean?

    A. There are 15 students in the class who prefer modular learning modality.
    B. There are 30 students in the class who prefer modular learning modality.
    C. Modular learning modality is the least preferred from among the options.
    D. There are more students who prefer the other learning modalities.

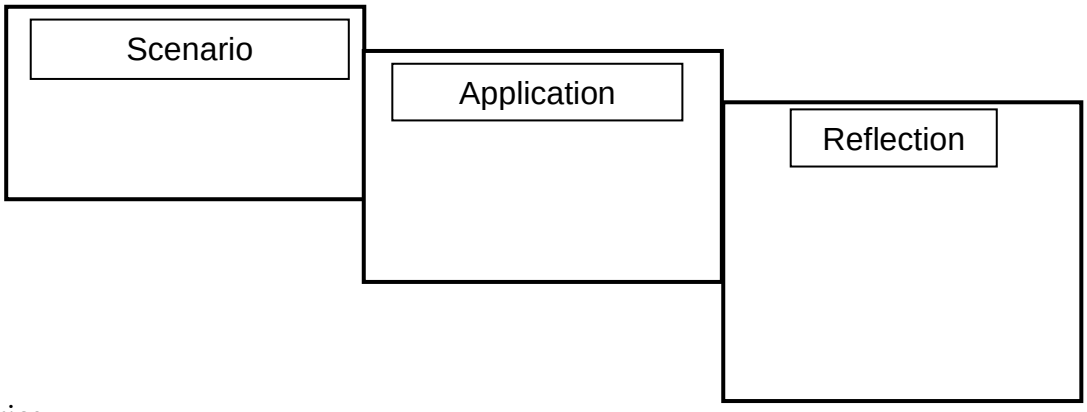
15. Only Grade 10, 11, or 12 students can represent Manila High School in the National Press Conference. Four out of the 5 slots have been filled. The remaining slot is to be filled by a randomly chosen student from those grade levels. If the ratio of the number of Grade 10 students to the total number students in the said grade levels is 81:250, and the ratio of the number of Grade 11 students to the total number students in the said grade levels is 20:50, from which grade level does the student to fill the fifth slot have the greatest chance to be chosen?

    A. Grade 10
    B. Grade 11
    C. Grade 12
    D. All grades levels are equally likely.



Additional Activities

Directions: In answering this, use a separate sheet of paper. Give a scenario or situation wherein you can apply your knowledge about probability of simple events in real life.



Rubrics

	4	3	2	1
Situation	Complete, Organize and clear	Complete and organize	Complete and disorganize	Incomplete and disorganized
Application	concrete, realistic and clear	concrete and realistic	concrete and unrealistic	Not concrete and unrealistic
Reflection	Complete, clearly summarized the lesson and connected to real life learning	Complete and clearly summarized the lesson	Incomplete and not clearly summarized the lesson	Learning not summarized

Answer Key

What's More	What's In	What I know
ACTIVITY 1 1. Simple event 2. Simple event 3. Not Simple event 4. Simple event 5. Not Simple event ACTIVITY 2 A. 1. $\frac{1}{8}$ 2. $\frac{7}{8}$ 3. $\frac{1}{4}$ B. 1. $\frac{1}{13}$ 2. $\frac{10}{13}$ 3. $\frac{9}{13}$ C. 1. $\frac{7}{15}$ 2. $\frac{1}{5}$ 3. $\frac{4}{5}$ ACTIVITY 3 1. 50 2. Online learning, modular 3. $\frac{3}{50}, \frac{3}{5}$	1. 2 2. 3 3. (B,J), (B,H), (B,M) (P,J), (P,H), (P,M) 4. 6 What's New 1. even chance 2. unlikely 3. likely 4. impossible 5. certain 6. certain 7. unlikely 8. even chance 9. impossible 10. unlikely	1. D 2. A 3. C 4. A 5. C 6. B 7. D 8. B 9. D 10. B 11. C 12. D 13. A 14. D 15. D

What I Have Learned	What Can I Do	Additional Activities	Assessment
1. The chance that an event will happen 2. fraction 3. decimal 4. percent 5. all possible outcomes are equally likely to occur 6. flipping a coin 7. tossing a die 8. drawing a card from a standard deck of 52 cards 9. choosing a marble at random 10. $P(E) = \frac{no.of\ favorable\ outcomes}{no.of\ all\ possible\ outcomes}$	1. $\frac{1}{4}$ 2. $\frac{1}{12}$ 3 . $\frac{3}{4}$ 4. Face mask 5. face mask	1. students may have varied answers	1. C 2. C 3. B 4. A 5. B 6. D 7. D 8. A 9. B 10. C 11. B 12. A 13. A 14. B 15. B

References

Emmanuel P. Abuzo et.al, Mathematics Learner's Module, (Book Media Press, 2013), 562-579.

Jennie M. Bennett et.al, Mathematics Course 1, (Holt, Rinehart and Winston, 2007), 668-681.

Website Links

http://www.algebra-class.com/examples-of-probability.html

https://sites.google.com/site/mathclc/graphs

https://probabilityformula.org/simple-events.html

https://www.math-only-math.com/playing-cards-probability.html

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