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Mathematics

Quarter 4- Week 6
Module 6: Finding the Probability of Simple Event

AIRs - LM

Mathematics 8
Quarter 4- Week 6 Module 6: Finding the Probability of a Simple Event
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Region I

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Target

Do you think it is possible for you to determine the chance of occurrence of an event? Have you at a certain time asked yourself what are the possible routines that I can take in going to a school? What are my chances of getting the correct answer in a True/False-type question? Will I probability win in this game?

How do you deal with these questions? Were you able to answer them with certainty?

In this lesson, you will learn to:

1. find the probability of a simple event. **(M8GE-IVh-1)**

At the end of this module, you are expected to:

1. know and understand the concept of probability
2. Find the probability of a simple event
3. Explain and interpret the probability of an event.

Let us find out how much you already know about this module. Answer the pre-assessment in a separate sheet of paper.

PRE-ASSESSMENT

Directions: Choose the letter of the correct answer. Write your answer on a separate sheet of paper. Take note of the items that you were not able to answer correctly and find the right answer as you go through this module.

1. What do you call the measure or estimation of how likely an even can occur?
   A. Event B. Probability C. Outcome D. Sample space
2. What is the formula used in finding the probability of an event E?
   A. $P(E) = \frac{number\ of\ outcomes\ favorable\ to\ E}{total\ number\ of\ possible\ outcomes}$ B. $P(E) = \frac{number\ of\ outcomes\ favorable\ to\ E}{total\ number\ of\ favorable\ outcomes}$
   C. $P(E) = \frac{number\ of\ outcomes}{total\ number\ of\ outcomes}$ D. $P(E) = \frac{number\ of\ outcomes\ favorable\ to\ E}{number\ of\ events}$
3. In throwing a fair die, what is the probability of getting an even number?
   A. 1/6 B. 1/3 C. 4/6 D. ½
4. A card is drawn in random from a deck of 52 playing cards. Find the probability that the card drawn is an ace.
   A. 1/13 B. 2/13 C. 7/52 D. 9/52
5. A call center operator selects a telephone number randomly. What is the probability that the number is a multiple of 5?
   A. 3/10 B. 7/10 C. 1/5 D. 2/5
6. There are 2 red balls, 3 yellow balls and 4 green balls in a bag. If a ball is drawn at random from the bag, what is the probability that the ball drawn is red?
   A. 2/9 B. 1/3 C. 2/3 D. 0
7. In item number 6, what is the probability that the ball drawn is yellow?
   A. 2/9 B. 1/3 C. 2/3 D. 0
8. A letter is drawn in random from the word ***PROBABILITY***. Find the probability that the letter drawn is a 'B'.
   A. 1/11 B. 2/11 C. 3/11 D. 4/11
9. A bag contains 20 balls with whole numbers 1, 2, 3 … 20 printed on it respectively. A ball is drawn from the bag, what is the probability that the number drawn is an odd number?
   A. ½ B. 3/20 C. 7/20 D. 8/20
10. A pack of buttons has 10 white buttons, 8 red buttons, and 4 black buttons. If a button is picked at random, what is the probability that the button picked is white?
    A. 2/11 B. 3/11 C. 4/11 D. 5/11
11. In item number 10, what is the probability that the button picked is black?
    A. 2/11 B. 3/11 C. 4/11 D. 5/11
12. What is the chance of a tail landing up when a coin is tossed once?
    A. 1/6 B. ¼ C. 1/2 D. 1
13. Which of the following is ***TRUE***?
    A. Answering a true/false type of question has one possible outcome
    B. Flipping a coin thrice has 3 possible outcomes.
    C. The probability of getting a head when a coin is tossed is ½.
    D. The probability of rolling 7 in a die is 1/7.

14. A glass jar contains 40 marbles with colors red, green, blue, and yellow. The probability of getting a green marble is 1/5. What does it mean?
    A. There are 5 green marbles in the jar.
    B. There are 8 green marbles in the jar.
    C. There are more green marbles that the other.
    D. There is only one green marble in the glass jar.

15. You tossed a five-peso coin five times and you got heads each time. You tossed again and still a head turned up. Do you think the coin is biased? Why?
    A. I think the coin is biased because it favored the heads.
    B. I think the coins is biased because it is expected to turn up tail for the next experiments.
    C. I think the coin is not biased because both faces of the coin have equal chances of turning up.
    D. I think the coin is not biased because the probability of turning heads is 3/4 while that of tails is only 1/4.

Lesson 1 Finding the Probability of a Simple Event

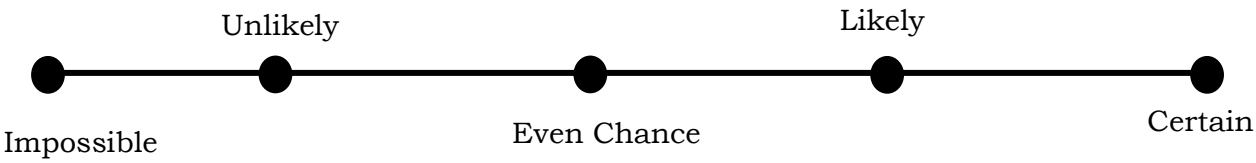
Previously, you studied about counting the number of occurrences of an outcome in an experiment.

In this module, you will learn how to determine the occurrences of a simple event and to apply the concept of probability in your daily life.

Jumpstart

Activity 1: How sure you are?

Relate each illustration with your day-to-day activities. Fill in the blanks with the correct words that would make the following sentences meaningful.



1. Now is your _____ to change for the better.
2. I am _____ that you can do better as what is expected from you.
3. Given the chance to win the Math contest, I prefer the _____.
4. It is _____ to get a high grade if I am not studying well.
5. You and I have _____ to succeed in life.

Guide Questions:

1. Are those words familiar to you?
2. What topic comes to your mind when you see the words in the illustration?
3. What qualitative terms can be used to express probable occurrences of events in life?
4. How else can be possible occurrences or likelihood of an event be expressed?
5. Based on the activity, how do you describe probability?

Discover

Life has a lot of uncertainties. Oftentimes, our decisions in life are done under conditions of uncertainty. These are the probabilities of life.

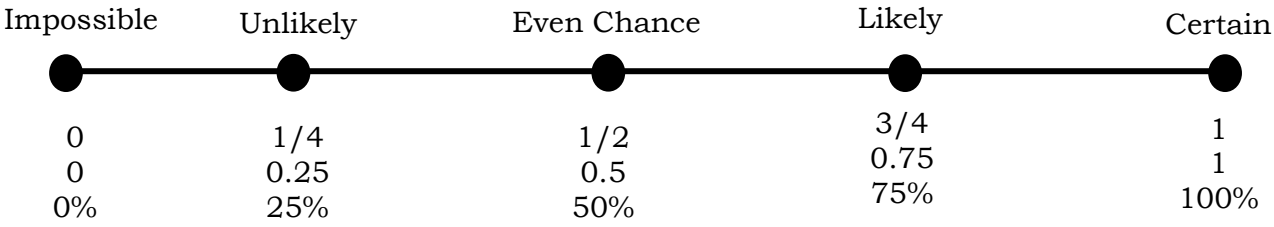
The branch of mathematics that deals with uncertainty is the theory of probability. **Probability** is a measure or estimation of how likely it is that an event can occur.

Activities such as tossing or flipping a coin or picking a card from a standard deck of cards without looking could be repeated over and over again and which well-defined results are called experiments. The results are called outcomes.

Probability of Events

The probability of an event, **P (event),** is a number from 0 to 1 which tells how likely the event is to happen.

Take a closer look at the probability line below.



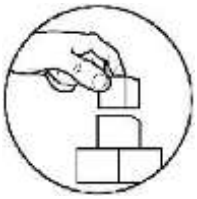
Probability Rules	Illustrative Examples
1. The probability of any event is a number (either a fraction, a decimal, or a percent) from 0 to 1.	The weather forecast shows a 70% rain. P (rain) = 70%
2. If an event will never happen, then the probability is 0.	When a single die is rolled, find the probability of getting an 8. Since the sample space consists of 0,1,2,3,4,5, and 6, it is impossible to get an 8. Hence, P (8) = 0/6 = 0.
3. If an event is sure to happen, then the probability is 1.	When a single die sir rolled, what is the probability of a number less than 7? Since all the outcomes {1,2,3,4,5,6} are less than 7, P (number less than 7) = 6/6 = 1
4. The sum of the probabilities of all the outcomes in the sample space is 1.	In rolling a fair die, each outcome in the sample space has a probability of 1/6. Hence, the sum of the probabilities of the outcomes is 1.

In a random experiment with equally likely outcomes, the probability of an

event E is $P(E) = \frac{number\ of\ outcomes\ favorable\ to\ E}{total\ number\ of\ possible\ outcomes}$

Other examples:

- What is the probability of getting a HEART from a deck of cards?
  P (heart) = 13/ 52 = 1/4
- There are 20 marbles in a container: 4 are red, 5 are blue and 11 are yellow. What is the probability that a blue marble will be picked?
  P (blue marble) = 5/20 = ¼.



Explore

Activity 2: What is my Chance?

To earn your skill in finding the probability of a simple event, let us answer the activity. Read and carefully look at the given event. Match ***column A*** with the corresponding answer in ***Column B***. Your answer will help you understand the concept of probability of an event.

In a box, there are 5 red balls, 2 black balls and 3 blue balls. Find the probability of each of the following events.

Column A	**Column B**
___ 1. A red is chosen	A. 4/5
___ 2. A black is chosen	B. 1/2
___ 3. A blue is chosen	C. 3/10
___ 4. Not a blue is chosen	D. 7/10
___ 5. Not a black is chosen	E. 1/5

Activity 3: See my Probability!

To improve your skills in finding the probability of an event, let us answer this activity. Solve for the probability of each event carefully, then write your answer on the space provided before each number.

A card is drawn at random from a pack of 52 playing cards. Find the probability that the card drawn is;

a. An Ace
b. A red card
c. A '12'
d. A diamond card
e. Not a heart c

Now that you know the important ideas about the topic, let us go deeper by moving on to the next section.

Deepen

Activity 4: This time, I am Sure!

Find the probability of each of the following events. Write your answer on the space provided before each number.

_____ 1. Alden Galvez is asked to choose a day of a week. What is the probability of choosing a day which starts with **S**?

_____ 2. Choosing a month in a year, what is the probability of selecting a month with 31 days?

_____ 3. If a letter is chosen at random from the word **PERSEVERANCE**, what is the probability that the letter chosen is **E**?

_____ 4. If one letter is chosen at random from the word **TRUSTWORTHY,** what is the probability that the letter chosen is a consonant?

_____ 5. The faces of a cube are numbered 11 to 16. If Jeremie rolled the cube once, what is the probability of rolling an even number?

_____ 6. A box contains 7 red balls, 5 orange balls, 4 yellow balls, 6 green balls and 3 blue balls. What is the probability of drawing out an **orange** ball?

_____ 7. Of the 45 students in a class, 25 are boys. If a student is selected at random for a field trip, what is the probability of selecting a girl?

_____ 8. A coin is tossed once. What is the probability of showing a tail (T)?

_____9. A spinner is divided equally and numbered as follows: 1,1,2,3,3,4,1,1,2,4,1,2,3,4,1,2. What is the probability that the pointer will stop at an even number?

_____ 10. What is the probability of getting an 8 from a deck of 52 card

Gauge

Assessment: Post-Test

Direction: Find out how much you have learned from the lesson. Choose the correct answer and write only the letter of your answer in a separate sheet of paper.

1. What do you call the measure or estimation of how likely it is that an even can occur?
   A. Event B. Probability C. Outcome D. Sample space
2. What is the formula used in finding the probability of an event E?
   A. $P(E) = \frac{number\ of\ outcomes\ favorable\ to\ E}{total\ number\ of\ possible\ outcomes}$ C. $P(E) = \frac{number\ of\ outcomes}{total\ number\ of\ outcomes}$
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3. In throwing a fair die, what is the probability of getting an odd number?
   A. 1/6 B. 1/3 C. 4/6 D. ½
4. A card is drawn in random from a pack of 52 playing cards. Find the probability that the card drawn is a queen.
   A. 1/13 B. 2/13 C. 7/52 D. 9/52
5. A call center operator selects a telephone number randomly. What is the probability that the number is a multiple of 5?
   A. 3/10 B. 7/10 C. 1/5 D. 2/5
6. There are 2 red balls, 3 yellow balls and 4 green balls in a bag. If a ball is drawn in random, what is the probability that the ball drawn is red?
   A. 2/9 B. 1/3 C. 2/3 D. 0
7. In item number 6, what is the probability that the ball drawn is yellow?
   A. 2/9 B. 1/3 C. 2/3 D. 0
8. A letter is drawn in random from the word ***SAFETY***. Find the probability that the letter drawn is a 'T'.
   A. 1/6 B. 2/6 C. 3/6 D. 4/6
9. A bag contains 20 balls with whole numbers 1, 2, 3 … 20 printed on it respectively. A ball is drawn from the bag, what is the probability that the number drawn is an even number?
   A. ½ B. 3/20 C. 7/20 D. 8/20
10. A pack of button has 10 white buttons, 8 red buttons, and 4 black buttons. If a button is picked in random, what is the probability that the button picked is white?
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