NAME: _____ SECTION: _____

LESSON 6: COUNTING METHODS AND TECHNIQUES IN AN EXPERIMENT



I. OBJECTIVES

The learner counts the number of occurrences of an outcome in an experiment: (a) table; (b) tree diagram; (c) systematic listing; and (d) fundamental counting principle. ***M8GE-IVf-g-1***



II. LESSON

DIFFERENT COUNTING METHODS AND TECHNIQUES IN AN EXPERIMENT

TABULAR FORM - This method uses columns and rows where to enter all possible outcomes of an experiment.

TREE DIAGRAM - It is a diagram used to show all the possible outcomes in a probability experiment. It consists of line segments coming from a starting point to the outcome point. All possible outcomes are visually represented by the branches.

SYSTEMATIC LISTING - It is a method of determining the number of outcomes of an experiment by enumerating or making a list of all possible outcomes.

FUNDAMENTAL COUNTING PRINCIPLE (PRODUCT RULE) - It is a technique of finding the number of possible outcomes of an experiment without listing. We can find the total number of ways that two or more separate tasks can happen by multiplying the numbers of ways each task can happen separately.

Example: ***List all the possible outcomes and determine the total number of outcomes when a die is rolled and a coin is tossed using the tabular form, tree diagram, systematics listing, and fundamental counting principle.***

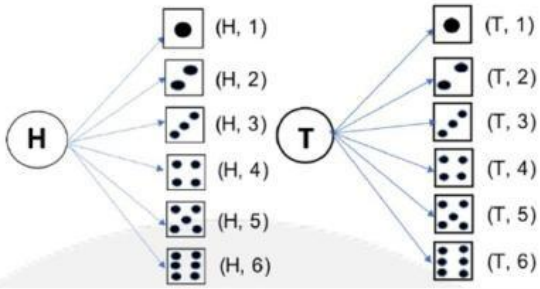
The possible outcomes of tossing a coin and rolling a die are as follows:

$(\boldsymbol{Coin})\ \boldsymbol{S} = \{\boldsymbol{H}, \boldsymbol{T}\}$ $(\boldsymbol{Die})\ \boldsymbol{S} = \{\boldsymbol{1}, \boldsymbol{2}, \boldsymbol{3}, \boldsymbol{4}, \boldsymbol{5}, \boldsymbol{6}\}$

USING TABULAR FORM

	Die					
Coin	1	2	3	4	5	6
Head(H)	(H,1)	(H,2)	(H,3)	(H,4)	(H,5)	(H,6)
Tail(T)	(T,1)	(T,2)	(T,3)	(T,4)	(T,5)	(T,6)

USING TREE DIAGRAM



USING SYSTEMATIC LISTING

$\{(H,1),(H,2),(H,3),(H,4),(H,5),(H,6),$
$(T,1),(T,2),(T,3),(T,4),(T,5),(T,6)\}$

USING FUNDAMENTAL COUNTING PRINCIPLE (PRODUCT RULE)

A coin has 2 possible outcomes, the head (H) and the tail (T), while a die has 6 possible outcomes $(1, 2, 3, 4, 5, 6)$.

$$2 \times 6 = 12$$

Therefore, there are $\boldsymbol{12\ possible\ outcomes}$ in tossing a coin and rolling a die.



III. ACTIVITY

I. Read the questions carefully and choose the correct answer.

1. Two dice are rolled, how many possible outcomes are there?

2. Pepper's ice cream parlor has 5 types of ice cream, 2 kinds of cones and 3 different toppings. How many possible combinations are there?

3. What technique of counting possible outcomes is illustrated on the right?

	1	2	3
A	(A,1)	(A,2)	(A,3)
B	(B,1)	(B,2)	(B,3)

A. Fundamental Counting Principle C. Tabular
B. Systematic listing D. Tree diagram

4. The possible outcomes when a coin is tossed twice are HH, HT, TH, and TT. What method of determining the total number of outcomes of the experiment is used?
A. Fundamental Counting Principle C. Tabular
B. Systematic listing D. Tree diagram

5. In a 5-item TRUE or FALSE test, which of the following will give us the number of ways of answering the wh
A. 2 x 2 x 2 x 2 x 2 C. 3 x 3 x 3 x 3 x 3
B. 2 x 3 x 3 x 3 x 3 D. 5 x 5 x 5 x 5 x 5



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LIVEWORKSHEETS