

DAILY LESSON LOG OF M10SP-IIIb-1 (Week Two-Day Three)

School		Grade Level	Grade 10
Teacher		Learning Area	Mathematics
Teaching Date and Time		Quarter	Third
I. OBJECTIVES			
A. Content Standards	The learner demonstrates understanding of key concepts of combinatorics.		
B. Performance Standards	The learner is able to use precise counting technique and probability in formulating conclusions and making decisions.		
C. Learning Competencies/ Objectives	Learning Competency: Solves problems involving permutations (M10SP-IIIb-1) Learning Objectives: 1. Solve problems involving permutations with repeated elements; 2. State orally ones analysis of a word problem; and 3. Apply the concept of permutations in real – life situations.		
II. CONTENT	DISTINGUISHABLE PERMUTATIONS		
III. LEARNING RESOURCES			
A. References			
1. Teacher's Guide	256 – 257		
2. Learner's Materials	283 – 300		
3. Textbook pages	Canlapan, R. B. (2016). Statistics and Probability. Makati City: Diwa Publishing.		
4. Additional Materials from Learning Resource (LR) portal			
B. Other Learning Resources	https://www.careerbless.com/aptitude/qa/permutations_combinations.php		
IV. PROCEDURES			
A. Review previous lesson or presenting the new lesson	Review: Evaluate each expressions: 1. $P(5,1)$ 2. $P(8,3)$ 3. $P(10,2)$		

	KEY: 1. 5 2.336 3.90												
B. Establishing a purpose for the lesson	I. In some instances, you may encounter permutation problems involving repeated elements. You know that the letters of the word COP may have 6 distinct permutations. Do you think that the letters COC will also have 6 distinct permutations? Work on this by listing method. II. Presentation of Learning Objectives												
C. Presenting examples/ instances of the new lesson	Problem no. 1 In how many ways can you arrange the letters of the word MATH? Problem no. 2 In how many ways can you arrange the letters of the word MAMA Guide questions for discussion: 1. How did you solve problem number 1? What formula can be used to solve the problem? 2. How did you solve problem number 2? Is the same formula used in problem number 1 can be used to solve problem number 2? Why?												
D. Discussing new concepts and practicing new skills #1	Teacher – directed instruction: Problem number 1 is an example of distinguishable permutation while problem number 2 is an example of distinguishable permutation. Distinguishable permutation refers to the permutations of a set of objects where some of them are alike. The number of distinguishable permutations of n objects when p are alike												
E. Discussing new concepts and practicing new skills #2	Let’s fill in the table below: <table><tr><th>TERM</th><th>n!</th><th>Breakdown of Elements</th><th>Number of Distinct Permutations</th></tr><tr><td>COC</td><td>3! = 6</td><td>C = 2, O = 1</td><td>3</td></tr><tr><td>MAMA</td><td>4! = 24</td><td>M = 2, A = 2</td><td>6</td></tr></table> (Note that the teacher will demonstrate how to fill in the table with the term ‘MAMA’. Only the term ‘COC’ will be filled-in by the students)	TERM	n!	Breakdown of Elements	Number of Distinct Permutations	COC	3! = 6	C = 2, O = 1	3	MAMA	4! = 24	M = 2, A = 2	6
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F. Developing mastery (leads to formative assessment 3)	Teacher – Directed instruction: In finding the number of permutations of the letters ‘COC’, notice that $\frac{4!}{2!2!} = 6$. Same with the number of permutations for the word ‘MAMA’ that is derived by $\frac{3!}{2!1!} = 3$												

G. Finding practical applications of concepts and skills in daily living	You are to put 7 books in a shelf. 2 books are of the same Math book, 3 books are of the same English book, a Filipino book and a Science Book. How many ways can you arrange the books in the shelf? 420
H. Making generalizations and abstractions about the lesson	How do we solve for the permutation of repeated elements or distinguishable permutation? The number of distinguishable permutations, P, of n objects where p objects are alike, q objects are alike, r objects are alike, and so on, is $P = \frac{n!}{p! q! r! \dots}$
I. Evaluating Learning	Read and answer the following questions: - Find the number of distinguishable permutations of the digits of the number 348 838. Answer: 60 - In how many ways can the letters of the word 'LEADER' be arranged? Answer:360
J. Additional activities or remediation	There are 4 different Mathematics books and 5 different Science books. In how many ways can the books be arranged on a shelf if: - there are no restrictions? - books of the same subject must be placed together? Key: a. 362 880 b.5 760
V. REMARKS	
VI. REFLECTION	
A. No. of learners who earned 80% of the evaluation	
B. No. of learners who require additional activities for remediation who scored below 80%	
C. Did the remedial lesson work? No. of learners who have caught up with the lesson.	
D. No. of learners who continue to require remediation	

E. Which of my teaching strategies worked well? Why did these work?	
F. What difficulties did I encounter which my principal or supervisor can help me solve?	
G. What innovation or localized materials did I use/ discover which I wish to share with other teachers	

Prepared by:

CATHERINE B. MERTADO

Math Teacher, Jagobiao NHS