

LEARNING ACTIVITY SHEET**GRADE 10 Mathematics**

Name: _____

Date: _____

Rating Score: _____

Activity 1: Select the Best!

Direction: Read each item carefully. Write down the letter that corresponds to the correct answer before the number.

- ____ 1. It refers to the different possible arrangements of a set of objects.
A. Permutation B. Combination C. Selection D. Differentiation
- ____ 2. Which situation illustrates permutation?
A. Forming a committee of councilors
B. Selecting 10 questions to answer out of 15 questions in a test
C. Choosing 3 literature books to buy from a variety of choices
D. Assigning rooms to conference participants
- ____ 3. Evaluate: $5! + 4!$
A. 9 B. 20 C. 144 D. 154
- ____ 4. Calculate: $P(12,4)$
A. 40 320 B. 11 880 C. 990 D. 495
- ____ 5. If $P(9,r) = 504$, what is r ?
A. 3 B. 5 C. 6 D. 7
- ____ 6. If $P(n,4) = 17\ 160$, then $n =$ ____
A. 9 B. 11 C. 13 D. 14
- ____ 7. If $x = P(7,4)$, $y = P(8,4)$ and $z = P(9,3)$, arrange x , y , and z from smallest to greatest.
A. x, y, z B. z, x, y C. y, x, z D. x, z, y
- ____ 8. Calculate: $\frac{7!}{3!2!}$
A. 420 B. 840 C. 1680 D. 2520
- ____ 9. What is the product of a positive integer n and all the positive integers less than it?
A. Powers of n B. multiples of n C. n -factors D. n factorial
- ____ 10. Which of the following situations or activities involve permutation?
A. Matching shirt and pant
B. Forming different triangles out of 5 points on a plane, no three of which are collinear
C. Assigning telephone numbers to subscribers
D. Forming a committee from the members of a club
- ____ 11. What is $P(8, 5)$?
A. 56 B. 336 C. 1400 D. 6720
- ____ 12. If $P(n, 4) = 5040$, what is n ?
A. 12 B. 10 C. 9 D. 8

Specific Week: Week 1 and 2**Target Competency:** Illustrates the permutation of objects (M10SPIIIa-1) and solves problems involving permutations (M10SPIIIb-1)**Note to the Teacher:** This LAS is designed to develop the students' comprehension, understanding and think deeper about permutations, differentiate the kinds of permutations and solve some worded problems. Refer to LM pages 275-299

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- ____ 13. Given $x = P(n,n)$ and $y = P(n, n-1)$, what can be concluded about x and y ?
- A. $x > y$ B. $x < y$ C. $x = y$ D. $x = -y$
- ____ 14. If $P(9,r) = 3024$, what is r ?
- A. 2 B. 4 C. 5 D. 6
- ____ 15. The number of permutations of n objects taken r at a time is
- A. $P(n,r) = \frac{n!}{(n-r)!}$ C. $P(n,r) = \frac{n!}{(n+r)!}$
- B. $P(n,r) = \frac{n}{(n-r)!}$ D. $P(n,r) = \frac{n!}{(n-r)}$
- ____ 16. Two different arrangements of objects where some of them are identical are called ____.
- A. Distinguishable permutations C. Circular permutations
- B. Unique combinations D. Circular combinations
- ____ 17. How many different 4-digit even numbers can be formed from the digits 1, 3, 5, 6, 8, and 9 if no repetition of digits is allowed?
- A. 1 680 B. 840 C. 420 D. 120
- ____ 18. In how many ways can 8 people be seated around a circular table if two of them insist on sitting beside each other?
- A. 360 B. 720 C. 1 440 D. 5 040
- ____ 19. Find the number of distinguishable permutations of the letters of the word PASS.
- A. 4 B. 12 C. 36 D. 144
- ____ 20. In a town fiesta singing competition with 12 contestants, in how many ways can the organizer arrange the first three singers?
- A. 132 B. 990 C. 1 320 D. 1 716
- ____ 21. Find the number of distinguishable permutations of the letters of the word EDUCATED.
- A. 1 680 B. 10 080 C. 20 160 D. 40 320
- ____ 22. How many ways can 10 chairs be arranged 6 chairs at a time in a room?
- A. 151 002 B. 151 200 C. 151 020 D. 115 200
- ____ 23. How many ways can 6 clients be seated on a round table?
- A. 120 B. 102 C. 210 D. 201
- ____ 24. Which of the following expressions represent the number of distinguishable permutations of the letters of the word CONCLUSIONS?
- A. $11!$ B. $\frac{11!}{8!}$ C. $\frac{11!}{2!2!2!}$ D. $\frac{11!}{2!2!2!2!}$
- ____ 25. A teacher wants to assign 4 different tasks to her 4 students. In how many possible ways can she do it?
- A. 16 B. 20 C. 24 D. 28
- ____ 26. 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

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$$A. P = \frac{n!}{p!q!r!...}$$

$$C. P = \frac{n}{p!q!r!...}$$

$$B. P = \frac{n!}{p!+q!+r!...}$$

$$D. P = \frac{n!}{p.q.r!...}$$

- ____ 27. The number of permutations of n distinct objects arranged in a circle is given by $(n-1)!$
 A. True B. False C. Maybe D. Sometimes
- ____ 28. Suppose there are 10 coins of which 5 are one-peso coins, 3 are five-peso coins, and 2 are ten-peso coins. How many permutations are there?
 A. 2 250 B. 2 205 C. 2 025 D. 2 520
- ____ 29. How many distinct permutations can be formed from all the letters of the word PARALLEL?
 A. 3 306 B. 3 360 C. 3 036 D. 3630
- ____ 30. There are 8 students who entered a bus with only 6 empty seats. In how many ways can these pupils be seated?
 A. 20 016 B. 20 160 C. 20 016 D. 20 610

Activity 2: Answer Me!

A. Evaluate each of the following expressions and write your answer in the blank. (Use calculator when necessary.)

- | | |
|-------------------------------------|---|
| 1. $P(6,2) =$ _____ | 6. $P(10, 6) =$ _____ |
| 2. $P(8,3) =$ _____ | 7. $\frac{P(8,3)}{4!} =$ _____ |
| 3. $P(10,8) =$ _____ | 8. $P(8,8) + P(8,7) =$ _____ |
| 4. $P(12,2) =$ _____ | 9. $P(5,1) \cdot P(5,2) \cdot P(3,2) =$ _____ |
| 5. $\frac{P(12,2)}{P(8,3)} =$ _____ | 10. $P(9,4) - P(5,3) =$ _____ |

B. Solve for the unknown in each item and write your answer in the blank. (Use calculator when necessary.)

- | | |
|--------------------------------------|--------------------------------------|
| 1. $P(n,6) = 720$
$n =$ _____ | 6. $P(8,r) = 6\,720$
$r =$ _____ |
| 2. $P(7,r) = 840$
$r =$ _____ | 7. $P(n,3) = 336$
$n =$ _____ |
| 3. $P(5,r) = 60$
$r =$ _____ | 8. $P(n,4) = 3\,024$
$n =$ _____ |
| 4. $P(n,3) = 504$
$r =$ _____ | 9. $P(12,r) = 1\,320$
$r =$ _____ |
| 5. $P(n,5) = 30\,240$
$n =$ _____ | 10. $P(13, r) = 156$
$r =$ _____ |

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Activity 3: Go Beyond!

Answer each permutation problem correctly. (Show your solutions properly in the space provided)

1. There are 8 basketball teams competing for the top 4 standings in order to move up to the semi-finals. Find the number of possible rankings of the four top teams.

2. In how many different ways can 12 people occupy the 12 seats in a front row of a mini-theater?

3. How many 4-digit numbers can be formed from the digits 1, 3, 5, 6, 8, and 9 if no repetition is allowed?

4. How many ways can 8 students be seated in five chairs?

5. The SBC club organizes a car race in which four cars A, B, C, and D are entered. In how many ways can the race be finished if there are no ties?

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