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|  | TEACHER’S ACTIVITY | STUDENT’S ACTIVITY |
| PRESENTATION | The teacher presents the topic with the aid of these steps. |  |
| STEP 1 | **IDENTIFICATION OF PRIOR IDEA** |  |
|  | The teacher asks the students to briefly describe a MS Excel sheet. | The students answer the question. |
| STEP 2 | **EXPLORATION** |  |
|  | The teacher explores by further by asking the students to state the number of rows and columns in their sitting arrangement. | The students answer the question. |
| STEP 3 | **DISCUSSION** |  |
|  | **Matrix definition**  A matrix is a rectangular array of numbers or variables that are organised into rows and columns. The order of a matrix (which is known as the size of the matrix) is determined by the number of rows and columns in the matrix. The order of a matrix with 3 rows and 2 columns is represented as a 3 2 and is read as 3 by 2.  Example, B , X , Y  B is a 2 by 3 matrix, X is a 2 by 2 matrix, and Y is a 3 by 2 matrix.    **Notation of Matrices**  If a matrix has *m* rows and *n* columns, then it will have *m* *n* elements. A matrix is represented by the uppercase letter, in this case, ‘A’, and the elements in the matrix are represented by the lowercase letter and two subscripts representing the position of the element in the number of row and column in the same order, in this case, ‘*aij*’, where *i* is the number of rows and *j* is the number of columns. For example, in the given matrix Y, element in the 3rd row and 2nd column is –5.  **Types of Matrices**  There are various types of matrices based on the number of elements and the arrangement of elements in them.  **Row matrix:** A row matrix is a matrix that has a single row. Example: .  **Column matrix:** A column matrix is a matrix that has a single column. Example: .  **Square matrix:** A square matrix is a matrix that has equal number of rows and columns. Example: B .  **Rectangular matrix:** A rectangular matrix is a matrix that has unequal number of rows and columns. Example: Y .  **Identity matrix:** An identity matrix is a square matrix in which each of the elements of its principal diagonal is 1 and each of the other elements is 0. It is denoted with the letter *I*. It is also called **unit matrix**. Examples: , .  **Null matrix:** A null or zero matrix is a matrix in which all its elements is 0. Examples: , . | The students listen to the teacher and copy the note. |
| STEP 4 | **APPLICATION** |  |
|  | Example 1  Given a matrix A , identify the following elements:   1. *a*11 2. *a*23 3. *a*32   Solution   1. *a*11 1 2. *a*23 - 6 3. *a*32 2   Example 2  Given the matrix B , what is the order of matrix B? Hence, evaluate *b*24 *b*31.  Solution  Matrix B has 3 rows and 4 columns. Therefore, matrix B has the order 3 4.  *b*24 9 and *b*31 -3,  *b*24 *b*31 -3 | The students listen to the teacher and ask questions. |
| STEP 5 | **EVALUATION** |  |
|  | The teacher evaluates the lesson with the questions below:   1. Define a matrix. 2. What is the difference between a rectangular matrix and a square matrix? 3. Given matrices Y and Q , which of matrix Y and Q is a square matrix and why? Identify element *y*22. | The students answer the questions. |
| CONCLUSION | The teacher concludes the lesson by giving correction to the evaluation question. |  |
| ASSIGNMENT | Given the matrix A , state the order of A and find the element *a*12 and *a*22. |  |
| REFERENCE | New Concept Mathematics for senior secondary school book 3 by H N Odogwu, et al. |  |