**MATHEMATICS**

**GRADE 10**

**MATRICES 2**

Identity Matrix and Solving Simultaneous Equation Matrix Method

IDENTITY MATRIX

The identity matrix is. It is a square matrix with ones in the leading diagonal and zeroes in the non-leading diagonal. When a matrix is multiplied by its inverse the product is the identity matrix.

Example 1:Find the inverse of matrix A

If you recall the inverse of matrix A can be calculated by Adjoint. The determinant of A is The adjoint of matrix A is .

Applying scalar multiplication we multiply each element in the adjoint matrix by

After which you multiply to obtain the final matrix: .

A MATRIX MULTIPLIED BY ITS INVERSE

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Simplifying: ==.

Any matrix multiplied by the identity matrix will result in the original matrix.

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SIMULTANEOUS EQUATION (MATRIX METHOD)

Solve

1. Write the coefficients in the equations presented in a 2x2 matrix called A, express the variables in a column matrix called X and the solutions in a column matrix called B. This forms the matrix equation expressed below:
2. To find X, you pre-multiply both sides by, hence This will result . Any matrix multiplies by the identity matrix result in the original matrix, B.

Apply scalar multiplication to get:

Simplify:

**Therefore:**