Subject: Further Maths

Task Instructions:

Watch the following videos on matrices and make notes. This is the content covered in the GCSE Further Maths Course which you will need to be familiar with. If you did not study Further Maths at GCSE, it is essential that you are familiar with this material.

What is a matrix?

https://www.youtube.com/watch?v=8Vbh3j-uEi4

Multiplying a matrix by a scalar:
https://corbettmaths.com/2019/06/25/multiplying-by-a-scalar/

Multiplying a matrix by a matrix:

https://corbettmaths.com/2019/04/24/multiplying-matrices-2x2-by-2x1/

https://corbettmaths.com/2019/04/24/multiplying-matrices-2x2-by-2x2/

Identity matrix

https://corbettmaths.com/2019/06/24/identity-matrix/

Matrix transformations

https://corbettmaths.com/2019/12/31/transformation-matrices-video/

Any questions or problems, please email me:

h.walsh@hayesfield.com

Success Criteria for this task

To demonstrate your understanding of these skills, please answer the following questions:

1. Here are two matrices: **A** = $\begin{pmatrix} 12 \\ -7 \end{pmatrix}$ and **B** = $\begin{pmatrix} 13 & 6 \\ -4 & -5 \end{pmatrix}$

   a) Write down the order of each of the matrices

   b) Work out 2**A**

2. For the matrices **A** = $\begin{pmatrix} 2 & 1 \\ -2 & 3 \end{pmatrix}$ and **B** = $\begin{pmatrix} 4 & -1 \\ 1 & 2 \end{pmatrix}$
   Work out:
   a) AB
   b) BA
   c) Comment on your answer

3. Write down the identity matrix.

4. $\begin{pmatrix} -3 & 1 \\ 5 & 2 \end{pmatrix}$ maps the point (3, p) to the point (-5, q).

   Find the value of p and q

5. The unit square OABC has vertices O (0,0) A (1,0) B(1,1) and C (0,1).
   The square is mapped onto OA'B'C' by the matrix
   M = $\begin{pmatrix} 0 & -1 \\ 1 & 0 \end{pmatrix}$
   a) Work out the coordinates of the points A', B' and C'
   b) Write down the transformation represented by the matrix **M**
   c) Find the transformation represented by the matrix $\mathbf{M}^2$.

Your work should be handwritten and handed into Mrs Walsh by Friday 5th September.