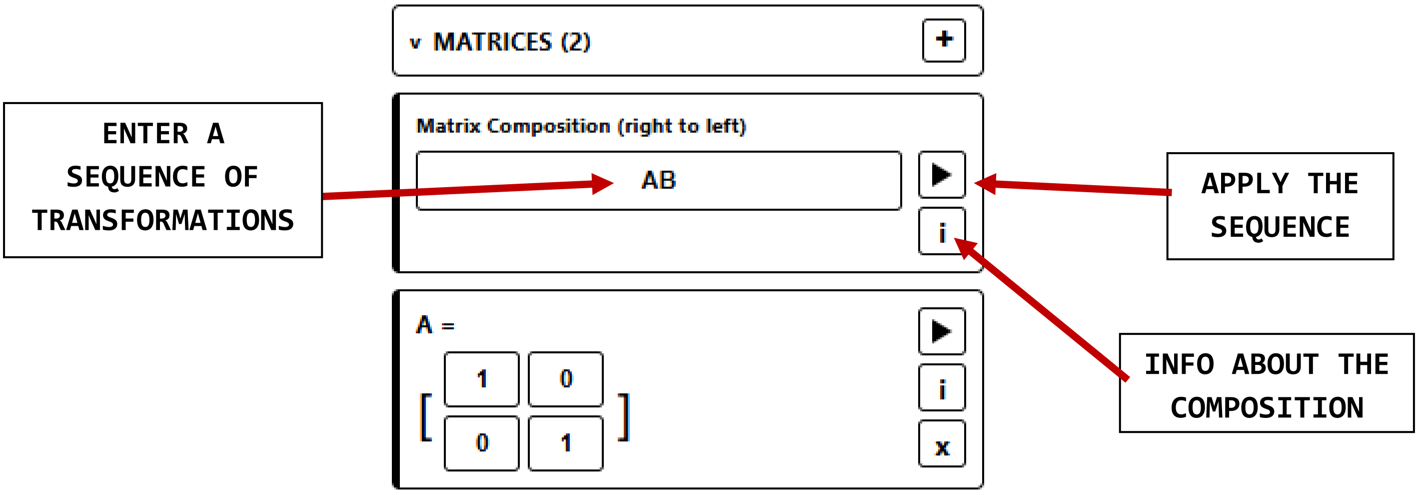
Combining 2D Transformations

- Open Vectorama (www.korovatron.co.uk/vectorama)
- Add **transformation matrices** to the panel for standard **rotations**, **reflections** and **enlargements**.
- Add a **UNIT SQUARE** from the **VECTOR PRESETS**.



For each of the following, find a **single equivalent matrix** transformation and **fully describe** the single equivalent transformation.

Rotation 90° anticlockwise followed by **Reflection in the x axis** ( )	**Reflection in the x axis** followed by **Rotation 90° anticlockwise** ( )
Reflection in the y = x followed by **Rotation 90° clockwise** ( )	**Rotation 90° clockwise** followed by **Reflection in the y = x** ( )

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Shape $\boldsymbol{A}$ maps to shape $\boldsymbol{B}$ by an **enlargement**, scale factor 3, centre the origin.

Shape $\boldsymbol{B}$ maps to shape $\boldsymbol{C}$ by a **rotation** through **180°**, centre the origin.

Shape $\boldsymbol{A}$ can be mapped to shape $\boldsymbol{C}$ by a **single** transformation.

Find this matrix and describe the single equivalent transformation

$$\begin{pmatrix} & \\ & \end{pmatrix}$$

The transformation matrix **P** represents a 90° anticlockwise rotation about the origin.

Describe fully the **single** transformation represented by the matrix $\mathbf{P}^3$

$$\begin{pmatrix} & \\ & \end{pmatrix}$$

The transformation matrix $\boldsymbol{Q} = \begin{pmatrix} 1 & 0 \\ 0 & -1 \end{pmatrix}$

The transformation matrix $\boldsymbol{R} = \begin{pmatrix} -1 & 0 \\ 0 & 1 \end{pmatrix}$

Describe fully the **single** transformation represented by the matrix **QR**.

The transformation matrix $\begin{pmatrix} 0 & -1 \\ -1 & 0 \end{pmatrix}$ maps point **P** to point **Q**

The transformation matrix $\begin{pmatrix} 1 & 0 \\ 0 & -1 \end{pmatrix}$ maps point **Q** to point **R**

Point **R** is (-4, 3). Work out the coordinates of point **P**.