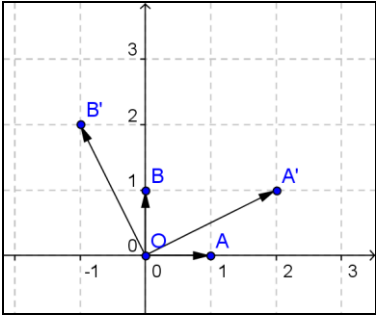
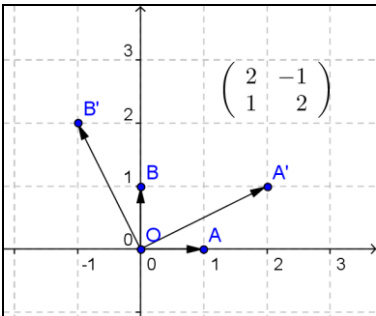
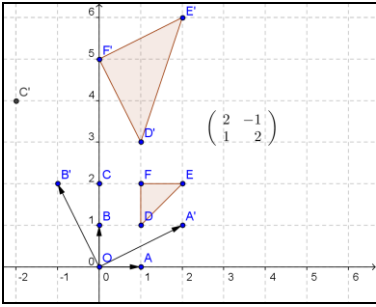


## MEI How to Guides for GeoGebra

### Creating a transformation matrix from the image of $\begin{pmatrix} 1 \\ 0 \end{pmatrix}$ and $\begin{pmatrix} 0 \\ 1 \end{pmatrix}$

<p><b>Adding points for <math>\begin{pmatrix} 1 \\ 0 \end{pmatrix}</math> and <math>\begin{pmatrix} 0 \\ 1 \end{pmatrix}</math> and their images</b></p> <ol style="list-style-type: none"> <li>1 In the Input bar enter: <math>O=(0,0)</math>, <math>A=(1,0)</math> and <math>B=(0,1)</math></li> <li>2 Right-click on each of <math>O</math>, <math>A</math> and <math>B</math>, select properties and enable "Fix Object".</li> <li>3 In the Input bar enter <math>A'=(2,1)</math> and <math>B'=(-1,2)</math> (any points can be used for these).</li> <li>4 Use "Vector between two points" (3<sup>rd</sup> menu) to create vectors <math>OA</math>, <math>OB</math>, <math>OA'</math> and <math>OB'</math>.</li> </ol>	
<p><b>Creating the transformation matrix</b></p> <ol style="list-style-type: none"> <li>5 In the Input bar enter: <math>a=x(A')</math>, <math>b=y(A')</math>, <math>c=x(B')</math> and <math>d=y(B')</math></li> <li>6 In the Input bar enter <math>M=\{\{a,c\},\{b,d\}\}</math></li> <li>7 Insert a text box (10<sup>th</sup> menu), select <math>M</math> from the Objects menu and enable LaTeX formula.</li> </ol>	
<p><b>Apply the matrix to a point or shape</b></p> <ol style="list-style-type: none"> <li>9 Add a new point (2<sup>nd</sup> menu), <math>C</math>.</li> <li>10 In the input bar enter: <math>C'=M*C</math></li> <li>11 Create a shape: e.g. to create the triangle <b>poly1</b> add points <math>D</math>, <math>E</math> and <math>F</math>, select "Polygon" (5<sup>th</sup> menu) and then click on each of the points <math>D</math>, <math>E</math> and <math>F</math> (and <math>D</math> again to complete it).</li> <li>12 In the input bar enter: <b>ApplyMatrix[M,poly1]</b></li> </ol>	

View on GeoGebraTube: <https://tube.geogebra.org/material/show/id/218249>