
MATH
Combined
Transformation

Vocabulary

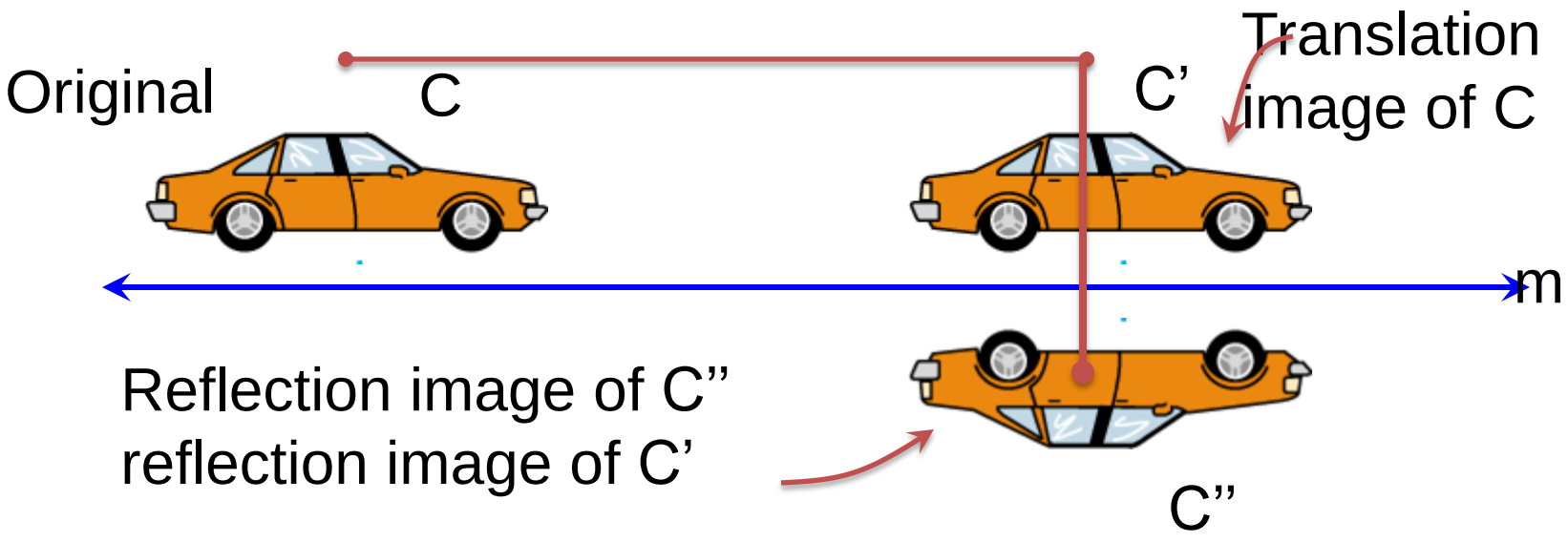
Combined transformations is a transformation followed by another transformation.

Example 1: If A is Translation and B is Rotation, combined transformation **AB** means transformation B followed by Transformation A.
Rotate first and then translate after.

Example 2: If A is Translation and B is Rotation, combined transformation **BA** means transformation A followed by Transformation B
Translate first and then Rotate after.

Combined Transformation

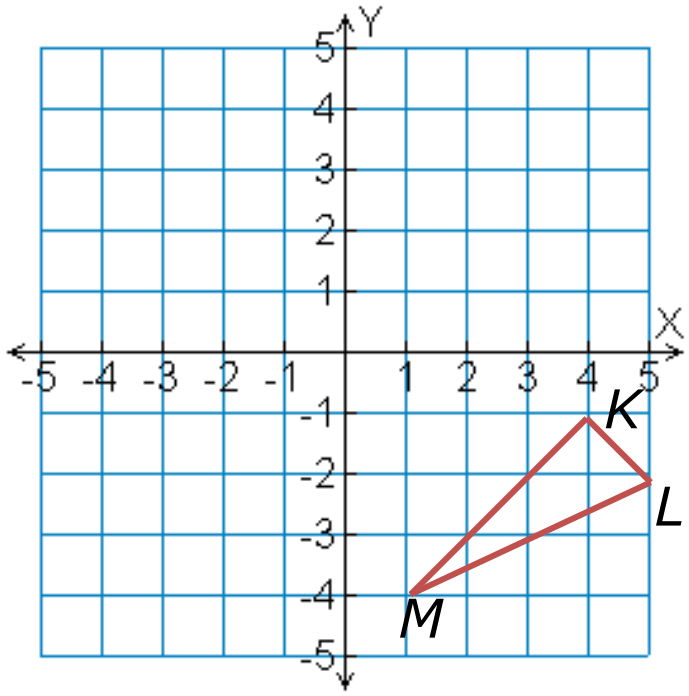
Combined Transformation **AB** where transformation **A** is reflection and transformation **B** is translation.



Example : Drawing Combined transformation

Draw the result of the combined transformation.

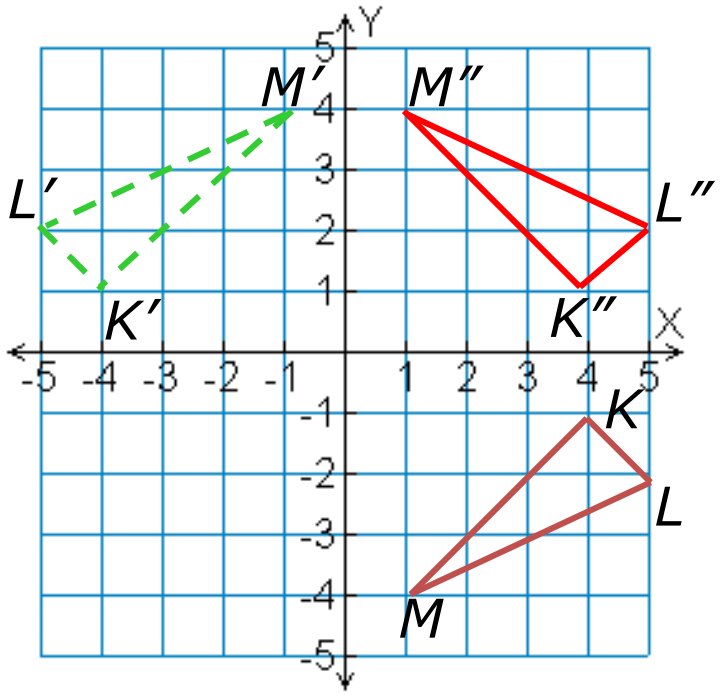
Δ*KLM* has vertices *K*(4, –1), *L*(5, –2), and *M*(1, –4). Rotate Δ*KLM* 180° about the origin and then reflect it across the *y*-axis.



Example Continued

Step 1 The rotational image of (x, y) is $(-x, -y)$.

$K(4, -1) \rightarrow K'(-4, 1)$,
$L(5, -2) \rightarrow L'(-5, 2)$, and
$M(1, -4) \rightarrow M'(-1, 4)$.



Step 2 The reflection image of (x, y) is $(-x, y)$.

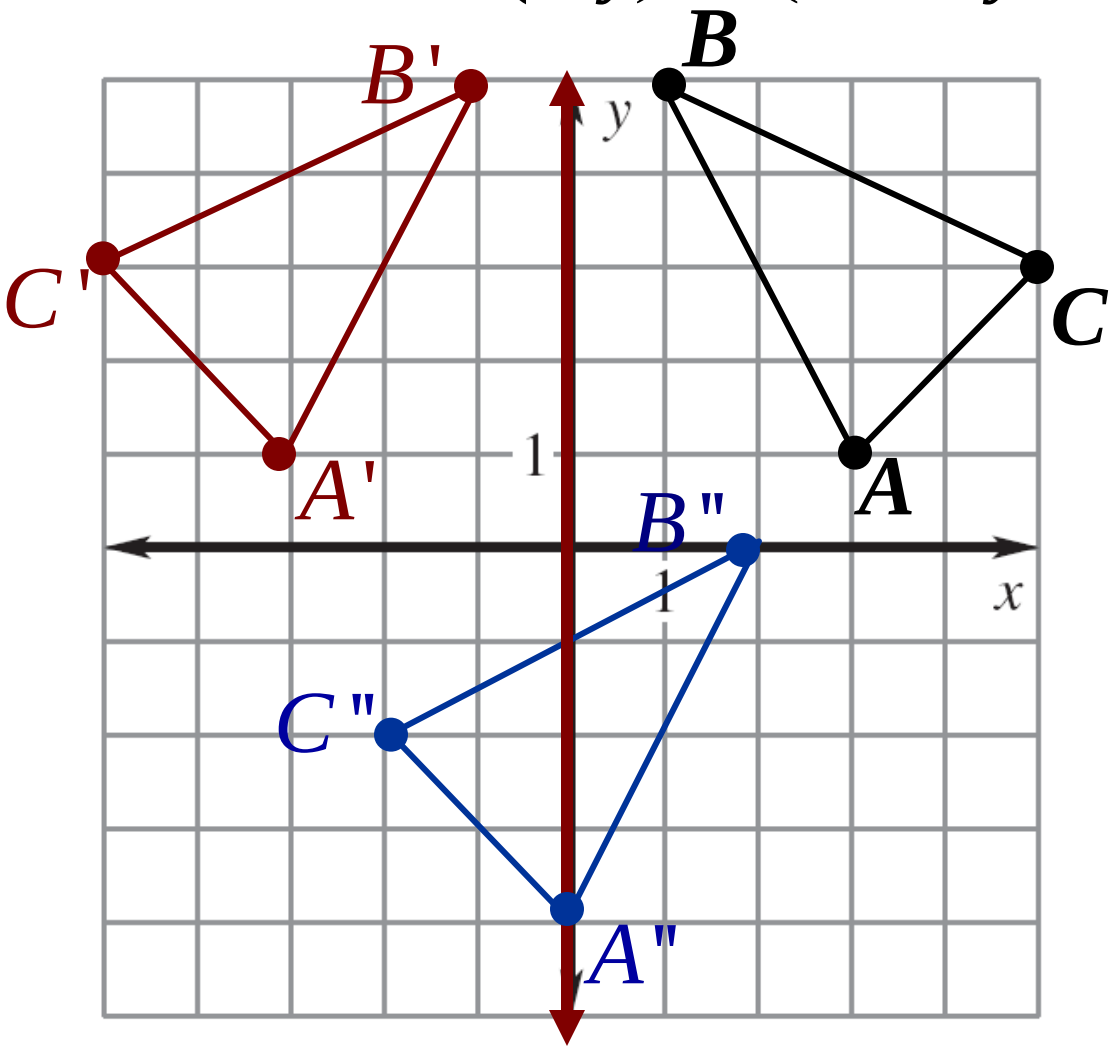
$K'(-4, 1) \rightarrow K''(4, 1)$,
$L'(-5, 2) \rightarrow L''(5, 2)$, and $M'(-1, 4) \rightarrow M''(1, 4)$.

Step 3 Graph the image and preimages.

The vertices of ΔABC are $A(3, 1)$, $B(1, 5)$ and $C(5, 3)$. Graph the image of ΔABC after a combined transformations in the order they are listed.

Reflection: y-axis

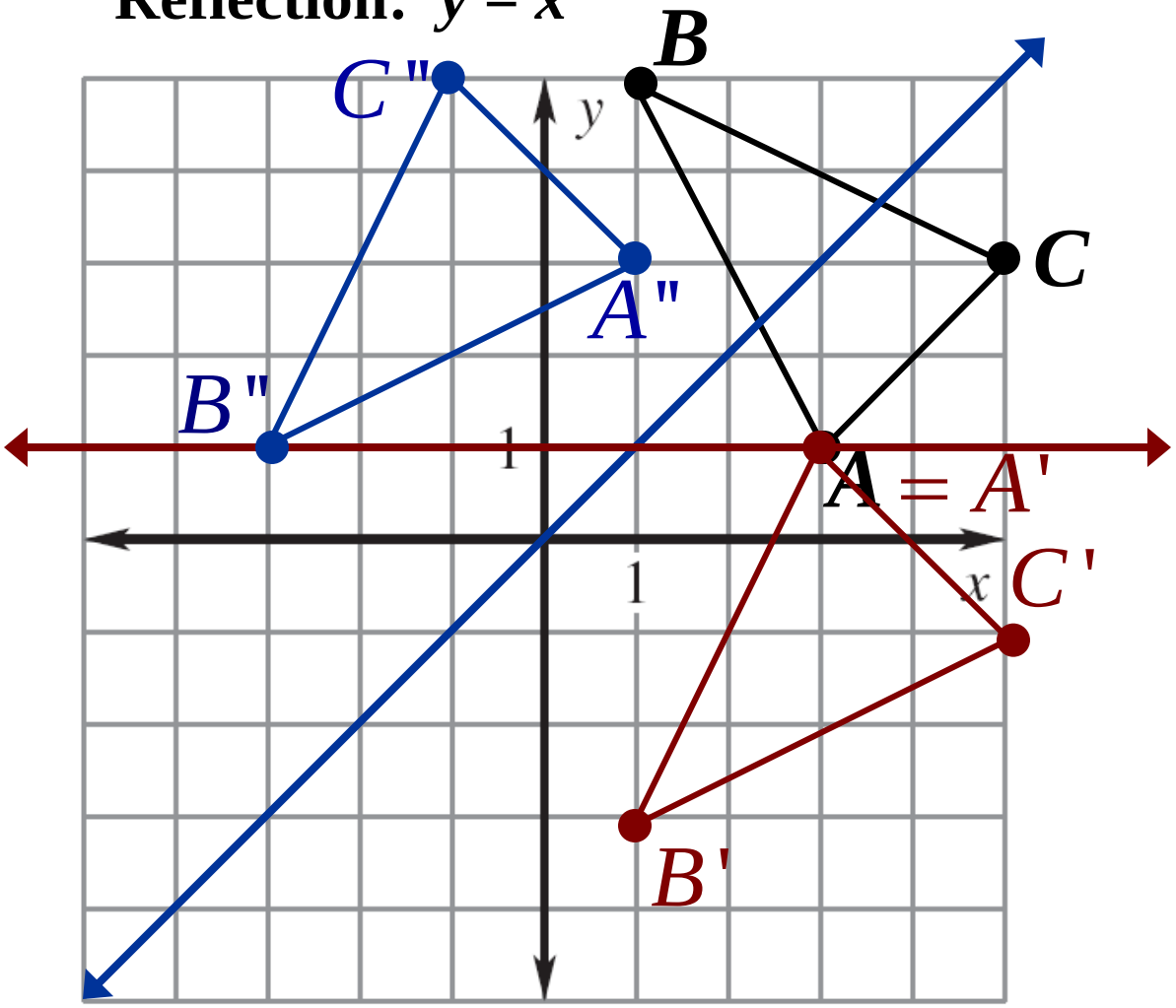
Translation: $(x, y) \rightarrow (x + 3, y - 5)$



The vertices of ΔABC are $A(3, 1)$, $B(1, 5)$ and $C(5, 3)$. Graph the image of ΔABC after a combined transformations in the order they are listed.

Reflection: $y = 1$

Reflection: $y = x$



$(x, y) \rightarrow (y, x)$

$A' = (3, 1)$

$A'' = (1, 3)$

$B' = (1, -3)$

$B'' = (-3, 1)$

$C' = (5, -1)$

$C'' = (-1, 5)$