

## Translation

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*Rule syntax:*  $T_{\langle 2, -3 \rangle} \Delta ABC$        $T(x + 2, y - 3) \Delta ABC$

## Reflection

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*Rule syntax:*  $R_{(axis)} \Delta ABC$       *Note the upper-case R*

### Common Reflections

*About the x-axis:*       $(x, y) \rightarrow (x, -y)$       *About y = x:*       $(x, y) \rightarrow (y, x)$

*About the y-axis:*       $(x, y) \rightarrow (-x, y)$       *About y = -x:*       $(x, y) \rightarrow (-y, -x)$

*About Vert. line x = k:*       $(x, y) \rightarrow (2k - x, y)$

*About Horiz. line y = k:*       $(x, y) \rightarrow (x, 2k - y)$

## Rotation

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*Rule syntax:*  $r_{(angle, pt)}(\Delta ABC)$       *Note the lower-case r*

### Rotation about the origin

$90^\circ:$        $(x, y) \rightarrow (-y, x)$        $270^\circ:$        $(x, y) \rightarrow (y, -x)$

$180^\circ:$        $(x, y) \rightarrow (-x, -y)$        $360^\circ:$        $(x, y) \rightarrow (x, y)$

## Dilation

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*Rule syntax:*  $D_{(scale, pt)} \Delta ABC$

### Dilation with scale $s$ from the origin

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

$$\text{scale} = \frac{\text{image size}}{\text{original size}}$$