

Lesson 2.7 – Sequencing Reflections and Translations

In this lesson we will be moving objects using a combination of a translation and a reflection.

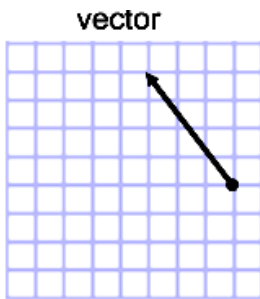
Quick Questions

- In order to reflect an object, what do we need to know?
- When we reflect an object, does the labeling on the vertices stay in the same order? Explain.

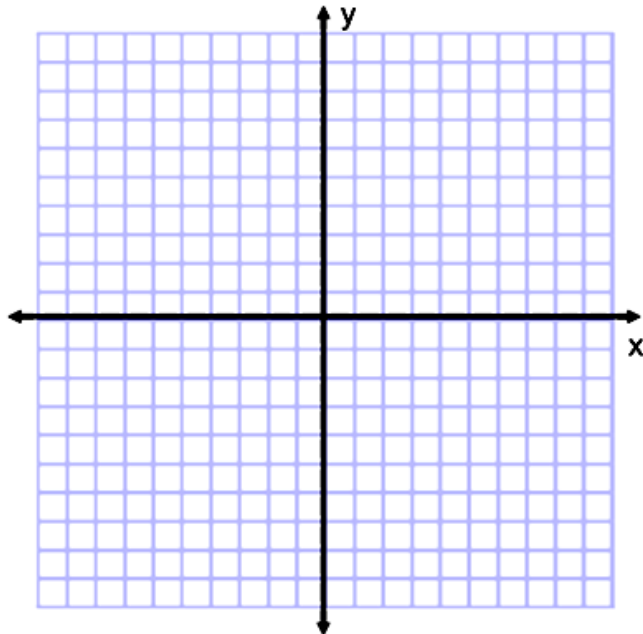
Set 1 – Translate and reflect each object in the order that the transformations are given. Draw and label each object after each rigid motion using ‘primes’ and “double-primes”. Answer any questions.

A. Plot the points $A(2, -8)$, $B(6, -3)$ and $C(9, -7)$. Connect the points to form triangle ABC .

First, translate using the vector below. Label the image $A'B'C'$.



Then, reflect triangle $A'B'C'$ through the x - axis and label it $A''B''C''$.



Look at triangle ABC . The vertices are labeled in a _____ direction.

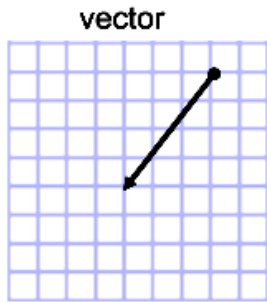
Look at triangle $A'B'C'$. The vertices are labeled in a _____ direction.

Look at triangle $A''B''C''$. The vertices are labeled in a _____ direction.

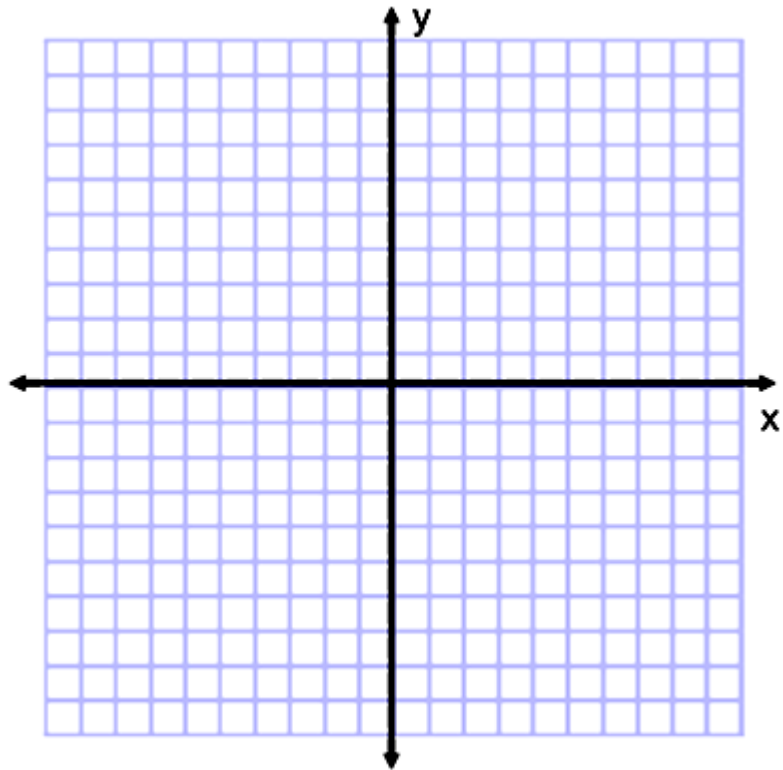
B. Plot the points $F(1, 3)$, $G(1, 5)$, $H(4, 3)$ and $I(4, 6)$. Connect the points to form quadrilateral $FGHI$.

First, reflect quadrilateral $FGHI$ through the x - axis. Label the image $F'G'H'I'$.

Then, translate $F'G'H'I'$ using the vector below and label it $F''G''H''I''$

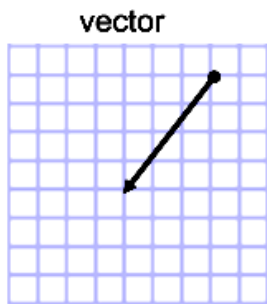


During which transformation does the order of the labeling switch to an opposite direction?



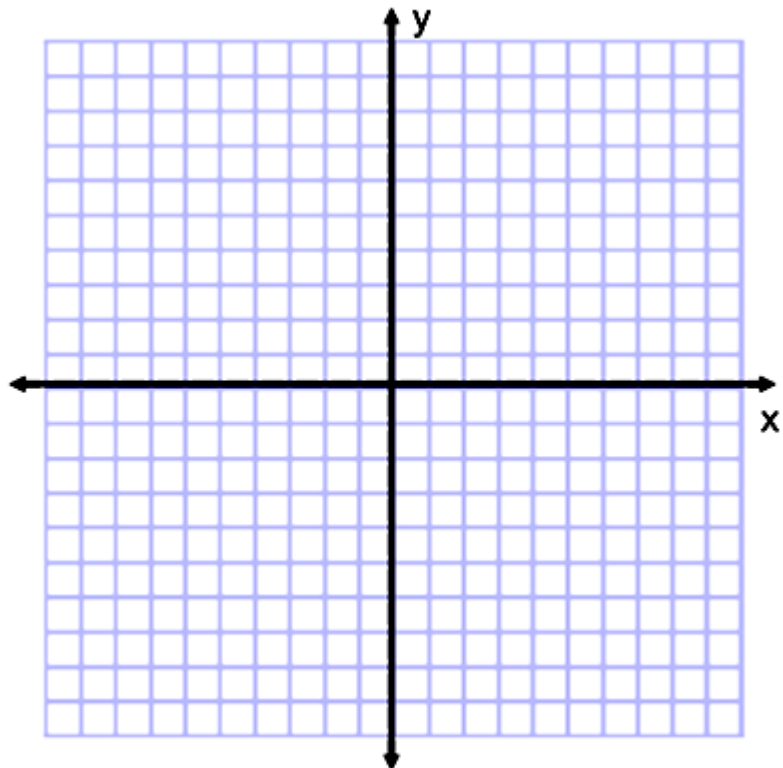
C. Plot the points $F(1, 3)$, $G(1, 5)$, $H(4, 3)$ and $I(4, 6)$. Connect the points to form quadrilateral $FGHI$.

First, translate quadrilateral $FGHI$ using the vector below. Label the image $F'G'H'I'$.



Then, reflect $F'G'H'I'$ through the x - axis and label it $F''G''H''I''$

During which transformation does the order of the labeling switch to an opposite direction?



Compare **B** and **C**. Does switching the order of reflecting and translating between the two sets take $F''G''H''I''$ to the same final location?

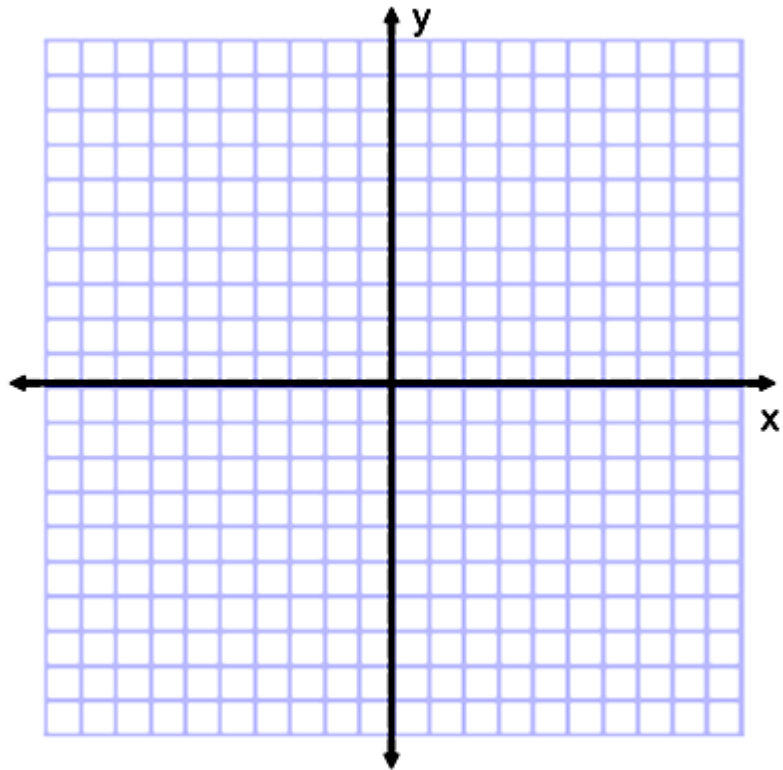
D. Plot the points $S(0,3)$, $T(4,0)$ and $U(-1,-1)$. Connect the points to form triangle STU .

Draw vector $\overrightarrow{AB}$ that moves a point 5 units to the right. Translate triangle STU using this vector. Label the new image $S'T'U'$.



Then, reflect $S'T'U'$ over the y -axis. Label it $S''T''U''$.

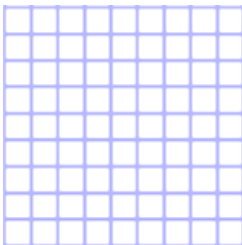
During which transformation does the order of the labeling switch to an opposite direction?



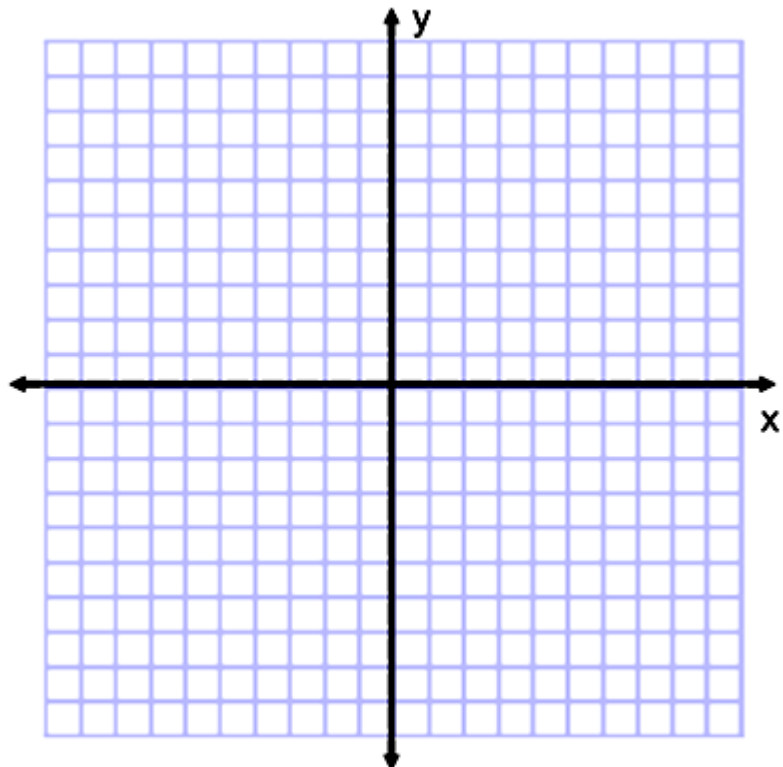
E. Plot the points $S(0,3)$, $T(4,0)$ and $U(5,4)$. Connect the points to form triangle STU .

First, reflect STU over the y -axis. Label it $S'T'U'$.

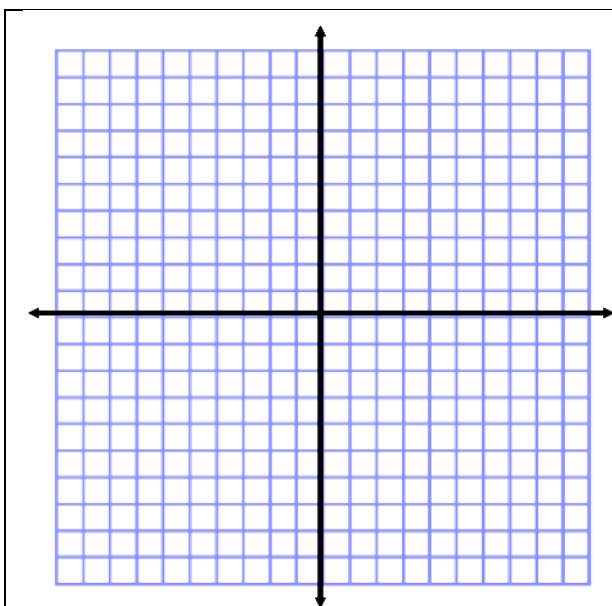
Draw vector $\overrightarrow{AB}$ that moves a point 6 units to the down. Translate triangle $S'T'U'$ using this vector. Label the new image $S''T''U''$.



During which transformation does the order of the labeling switch to an opposite direction?



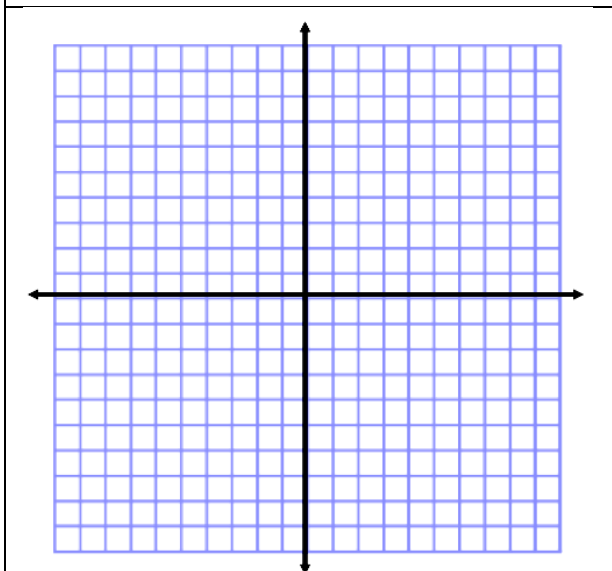
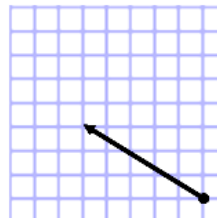
Compare **D** and **E**. Does the different sequencing of transformations in the two sets take $S''T''U''$ to the same final location?



R#1

Label the axes. Plot the following points, connect the points to form triangle DEF: D(-4, -1) , E (-1, -1) , F(-2, -6). Translate DEF using the vector below. Label the new image D'E'F'. Then, reflect D'E'F' over the y - axis. Label the new image D''E''F''.

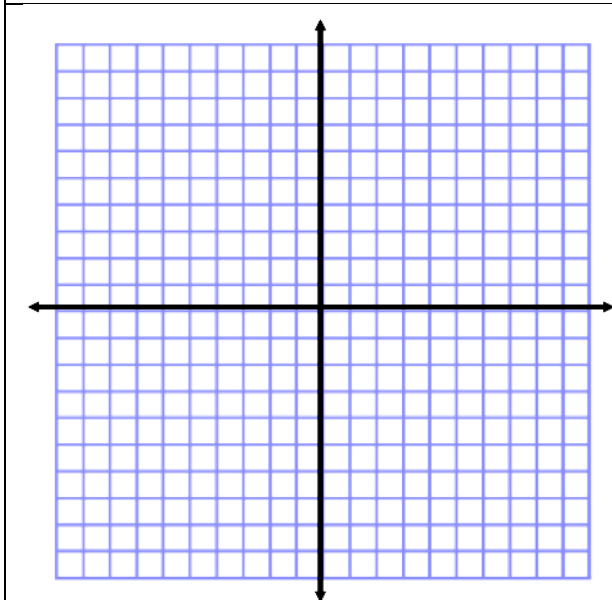
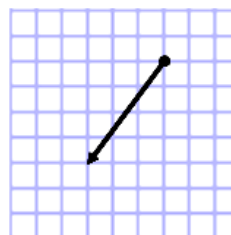
vector



R#2

Label the axes. Plot the following points, connect the points to form triangle XYZ: X(5, -2) , Y (2, 0) , Z(1, -6). Reflect XYZ over the x -axis and label it X'Y'Z'. Then translate X'Y'Z' using the vector below.

vector



R#3

Label the axes. Plot the following points, connect the points to form quadrilateral ABCD: A(2, 2) , B(6, 2) , C(8, 6) , D(2, 6). Translate quadrilateral ABCD to the left 10 spaces and up 1 space. Label the new image A'B'C'D'. Then, reflect A'B'C'D' over the x -axis and label the new image A''B''C''D''. Lastly, reflect A''B''C''D'' over the y - axis and label the quadrilateral A'''B'''C'''D'''.

Is the order of the of quadrilateral ABCD the same as quadrilateral A'''B'''C'''D'''?