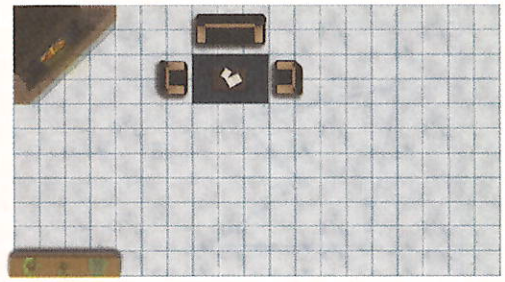
Essential Question How can you use a sequence of transformations to map a preimage to its image?

VISUAL LEARNING ASSESS

EXAMPLE 1 Understand a Sequence of Transformations

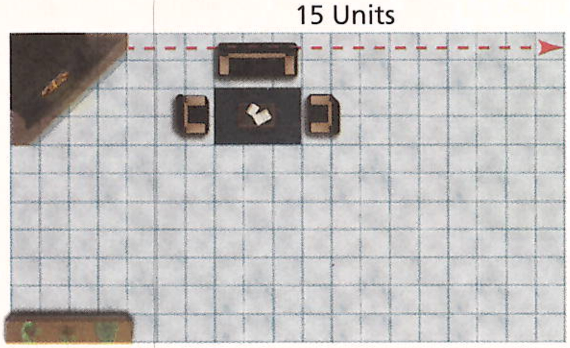
Scan for Multimedia

Ava is using interior design software to design the layout of her family room. How can she move the corner fireplace to the top right corner of the room?

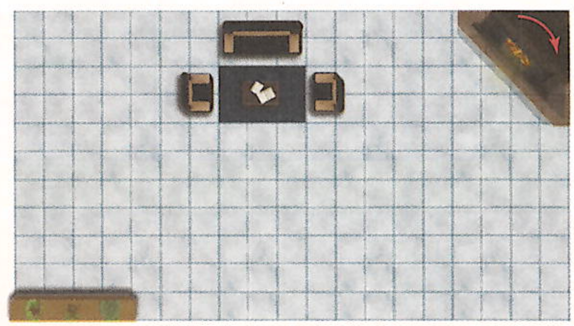


Be Precise You can compose transformations by applying a sequence of two or more transformations. How can you use a sequence of transformations to represent the problem?

STEP 1 Ava translates the fireplace 15 units to the right.



STEP 2 Then Ava rotates the fireplace 90° clockwise about the its center.



Try It!

Ava decided to move the cabinet to the opposite wall. What sequence of transformations moves the cabinet to its new position?

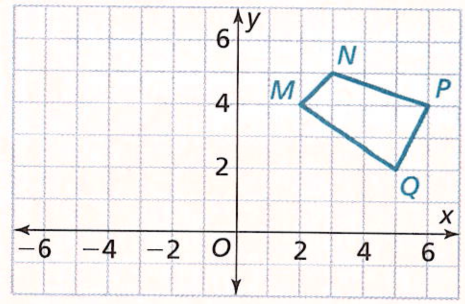
Convince Me! Ava decides that she would like the chairs to be placed directly across from the couch. What is a sequence of transformations that she can use to move the chairs to their new positions?

EXAMPLE 2 Complete a Sequence of Transformations on a Coordinate Plane

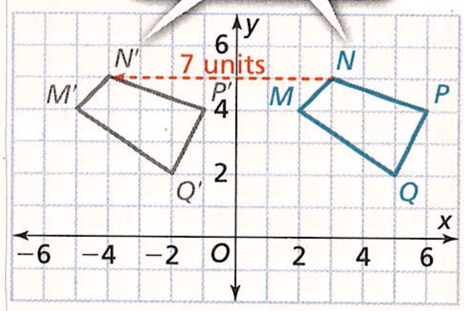
Translate quadrilateral *MNPQ* 7 units left, and then reflect it across the line $x = -3$.

This is called a *glide reflection*, because it is a sequence of a translation and a reflection.

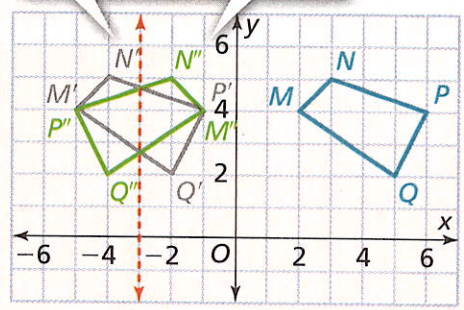
Be Precise The image of point N' is N'' (read "*N* double prime").



STEP 1 Translate quadrilateral *MNPQ* 7 units left.

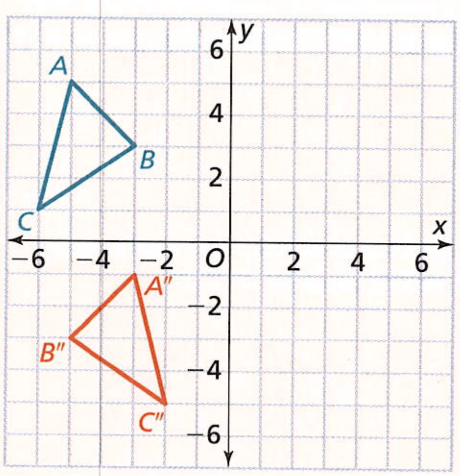


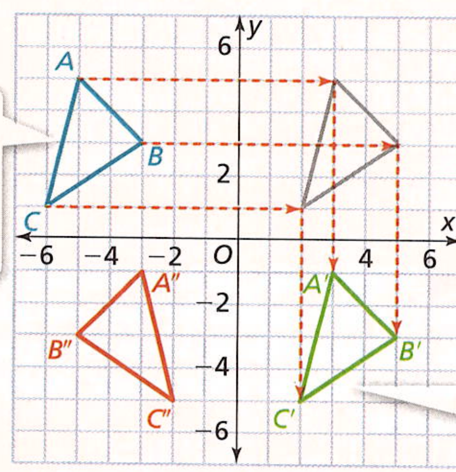
STEP 2 Reflect quadrilateral $M'N'P'Q'$ across the line $x = -3$.



EXAMPLE 3 Describe a Sequence of Transformations

What is a sequence of transformations that maps $\triangle ABC$ onto $\triangle A''B''C''$?





Try It!

What is another sequence of transformations that maps $\triangle ABC$ onto $\triangle A''B''C''$?