Geometry

Chapter 9
Section 9-4

Vocabulary

Isometry	(Same distance) Any transformation that preserves distance is an isometry (translations, reflections, rotations, and glide reflections)
Glide Reflection	A transformation that is a composition of a translation and a reflection.

Isometries

The composition of two or more isometries can be written as one of the four isometries:

Identifying Isometries

Starting with the footprint at the top left:

What isometries could you use to get to the other footprints on the top row?

How could you use isometries to get to the footprints on the bottom row?

Reflections and Parallel Lines

take note

Theorem 9-2 Reflections Across Parallel Lines

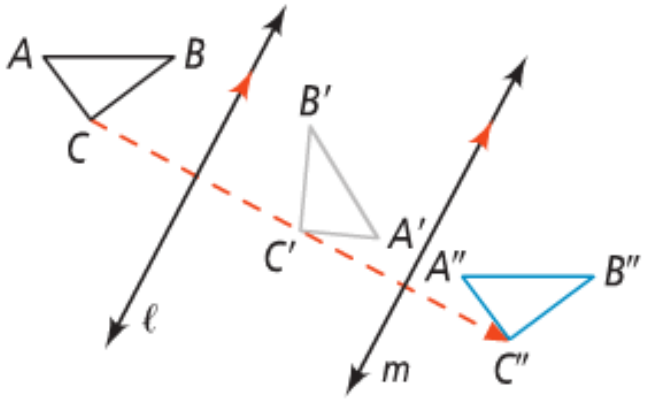
A composition of reflections across two parallel lines is a translation.

You can write this composition as

$(R_m \circ R_\ell)(\triangle ABC) = \triangle A''B''C''$

or $R_m(R_\ell(\triangle ABC)) = \triangle A''B''C''$.

$\overline{AA''}$, $\overline{BB''}$, and $\overline{CC''}$ are all perpendicular to lines ℓ and m.



Reflecting Across Parallel Lines

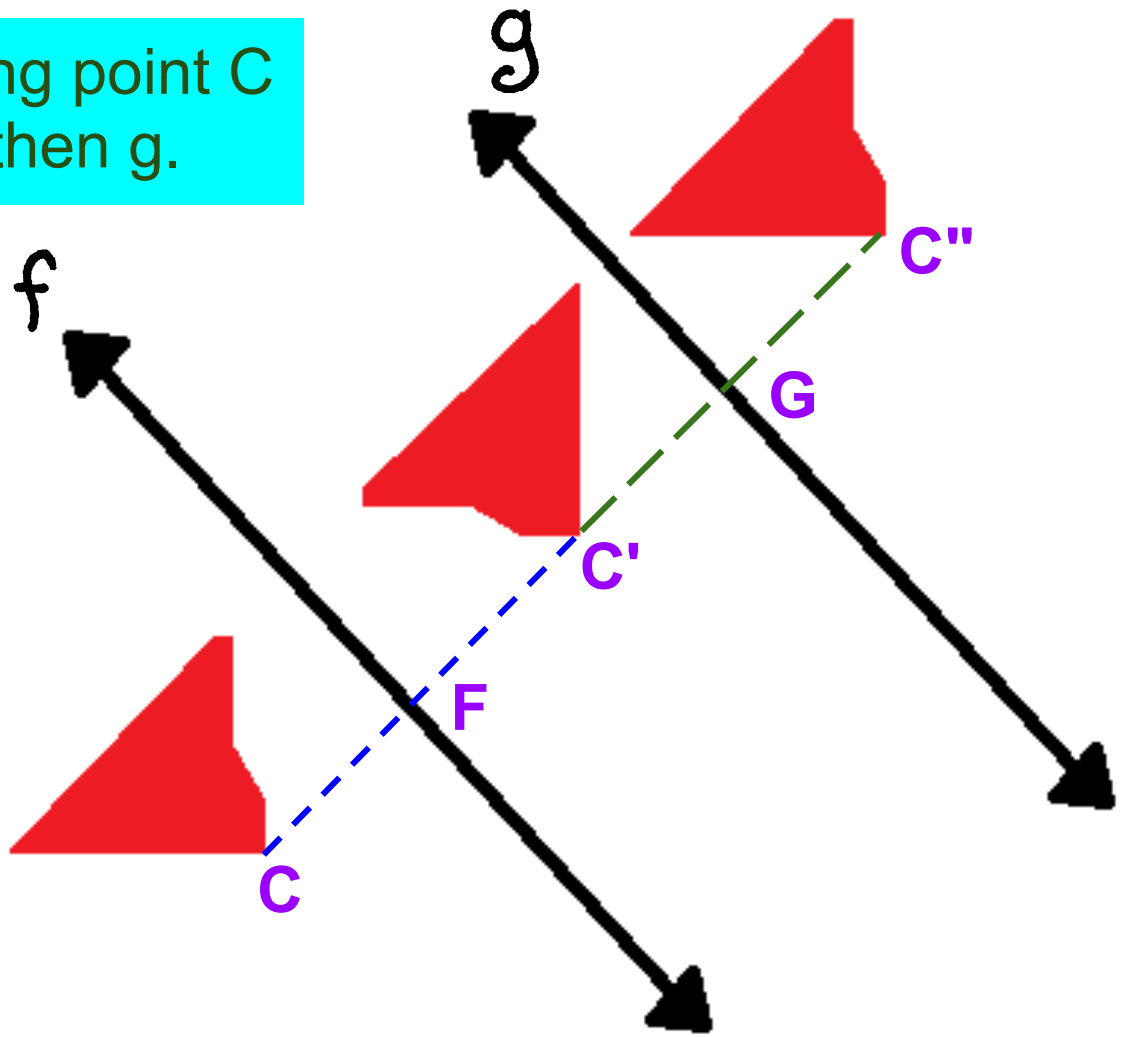
Reflect the shape containing point C across parallel lines f and then g.

Label points C' and C".

Where is the midpoint of the segment CC'?

Where is the midpoint of the segment C'C"?

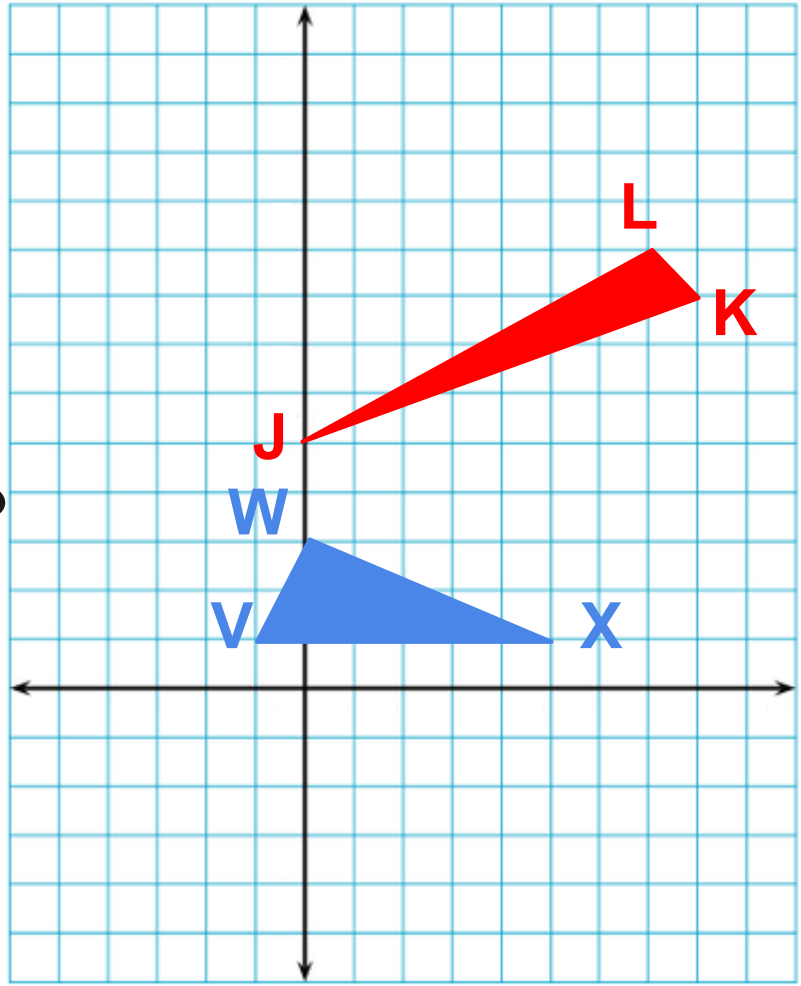
How are the segments CC" and FG related?



Reflection Compositions

Find $(R_{x\text{-axis}} \circ R_{y=5})(\Delta JKL)$?

Find $(R_{y=x+3} \circ R_{y=3-x})(\Delta VWX)$?



Reflections and Intersecting Lines

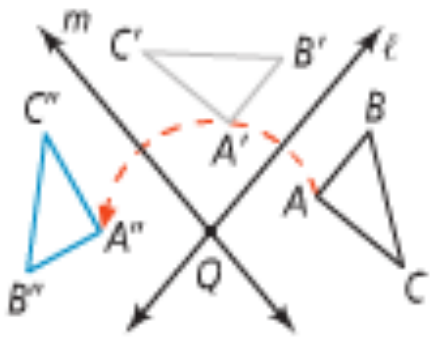
take note

Theorem 9-3 Reflections Across Intersecting Lines

A composition of reflections across two intersecting lines is a rotation.

You can write this composition as $(R_m \circ R_\ell)(\triangle ABC) = \triangle A''B''C''$ or $R_m(R_\ell(\triangle ABC)) = \triangle A''B''C''$.

The figure is rotated about the point where the two lines intersect. In this case, point Q.



Homework

Pages 574 - 575
6 - 36 by 3's