Lesson 10: Sequences of Rigid Motions

Classwork

Exercises

1. In the following picture, triangle $ABC$ can be traced onto a transparency and mapped onto triangle $A^{'}B^{'}C^{'}$.

Which basic rigid motion, or sequence of, would map one triangle onto the other?



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1. In the following picture, we have two pairs of triangles. In each pair, triangle $ABC$ can be traced onto a transparency and mapped onto triangle $A^{'}B^{'}C^{'}$.

Which basic rigid motion, or sequence of, would map one triangle onto the other?

Scenario 1:

Scenario 2:

1. Let two figures $ABC$and $A^{'}B^{'}C^{'}$ be given so that the length of curved segment $AC$ equals the length of curved segment $A^{'}C^{'}$, $\left|∠B\right|=\left|∠B^{'}\right|=80°$, and $\left|AB\right|=\left|A^{'}B^{'}\right|=5$. With clarity and precision, describe a sequence of rigid motions that would map figure $ABC$onto figure $A^{'}B^{'}C^{'}$*.*

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Problem Set

1. Let therebe the translation along vector $\vec{v}$, let there be the rotation around point $A$*,* $-90$ degrees (clockwise), and let there be the reflection across line $L$. Let $S$ be the figure as shown below. Show the location of $S$ after performing the following sequence: a translation followed by a rotation followed by a reflection.



1. Would the location of the image of $S$in the previous problem be the same if the translation was performed last instead of first, i.e., does the sequence: translation followed by a rotation followed by a reflection equal a rotation followed by a reflection followed by a translation? Explain.
2. Use the same coordinate grid to complete parts (a)–(c).



* 1. Reflect triangle $ABC$ across the vertical line, parallel to the $y$-axis, going through point $(1, 0)$. Label the transformed points$A$*,* $B$*,* $C$ as $A'$,$ B'$,$ C'$, respectively.
	2. Reflect triangle $A'B'C'$ across the horizontal line, parallel to the $x$-axis going through point $(0, -1)$. Label the transformed points of $A'$, $B'$, $C'$ as $A^{''}$, $B^{''}$, $C''$, respectively.
	3. Is there a single rigid motion that would map triangle $ABC$ to triangle $A^{''}B^{''}C^{''}$?