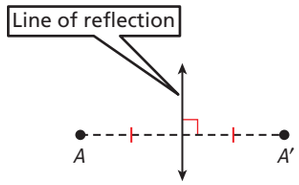
Section Overview

Professional Development

Reflections — Lesson 12-1

Why? Reflections are used by architects and engineers to create aesthetically pleasing structures.

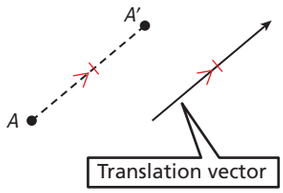
A **reflection** is a transformation across a line of reflection such that the line of reflection is the perpendicular bisector of each segment joining each point and its image.



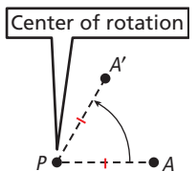
Translations and Rotations — Lesson 12-2, 12-3

Why? Translations and rotations are used by computer animators and graphic artists to manipulate images.

A **translation** is a transformation along a vector such that each segment joining a point A and its image A' has the same length as the vector and is parallel to the vector.



A **rotation** is a transformation about a point P, called the center of rotation, such that each point and its image are the same distance from P and such that all angles with vertex P formed by a point and its image are congruent. In the figure, $\angle APA'$ is the angle of rotation.

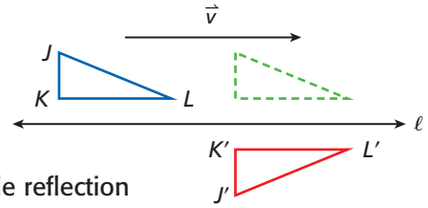


Compositions of Transformations — Lesson 12-4

Why? Compositions of transformations can be used to describe moves in board games.

A **composition of transformations** is one transformation followed by another.

A **glide reflection** is a composition of a translation and a reflection across a line parallel to the translation vector.



$\triangle J'K'L'$ is a glide reflection of $\triangle JKL$: a translation along $\vec{v}$ followed by a reflection across line ℓ.