Objective: In this lesson, you will develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.

\[ PA = PA', PB = PB', \text{ and } PC = PC' \]

\[ m\angle APA' = m\angle BPB' = m\angle CPC' = x^\circ \]

\[ \triangle ABC \text{ rotates about point } P \text{ to yield } \triangle A'B'C'. \]

Example

Polygon ABCDE rotates 52° about the origin to create polygon A'B'C'D'E'. If \( m\angle BCD = 31^\circ \), what is \( m\angle B'C'D' \)?

Any point in the preimage and the corresponding point in the image are at equal distances from the line of reflection.

The line joining two such points is perpendicular to the line of reflection.

\( \overline{GH} \) is a perpendicular bisector of \( \overline{AA_{GH}} \).
Example

Polygon $ABCD$ is reflected across line $L$ to form $A'L'C'D'$. What is the relationship between line $L$ and $C'L'$?

DRAW A PICTURE

Polygon $ABCD$ is translated to the right to form polygon $A'B'C'D'$. All connecting line segments have the same slope and are parallel to each other. The measures of angles and lengths of sides in the image are equal to the corresponding angles and lengths in the preimage.

Example

Polygon $ABCDEF$ is translated 12 units to the left to create polygon $A'B'C'D'E'F'$. If $DE = 7$ units, what is $D'E'$?

Summary

Rigid Transformation -

The three basic types of rigid transformations are _____________, _____________, _____________.

Page 2