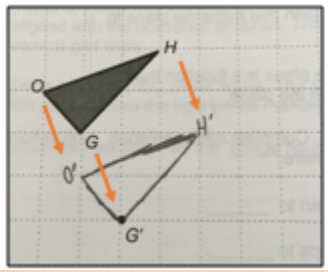
Packet 13: Translations, Rotations, and Reflections

Dear Parents/Guardians,

Packet 13 introduces students to geometric transformations. Using patty paper, students explore translations, rotations, and reflections, noting how the transformation moves the plane and the location change of a given figure. Students perform transformations on coordinate planes, recording their moves in pictures, words, coordinates and symbolic notation.

Translations

A translation, or "slide," of the plane, shifts all the points the same distance and in the same direction.

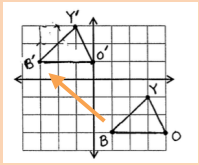


Notice triangle OGH has been translated. The translated figure, called the image, is named triangle O'H'G'.

The line segments of OHG taken to create O'H'G' are the same length.

The angle measurements of OHG taken to create O'H'G' are the same measure.

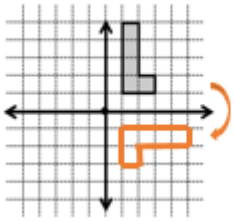
Students explore translations using patty paper to trace and slide figures within the plane. They connect this work to sliding figures on a coordinate plane.

Visual/Picture	Verbal/Words	Numerical	Symbolic
	The translation mapped all points 4 units to the left, and 4 units above their original position.	$B(1,-3)$ maps to B'. B' is $(1-4, 3+4)$ or $(-3,1)$.	$(x,y) \rightarrow (x-4, y+4)$

Rotations

A rotation, or "turn," of a plane, rotates the plane through a given angle about a given point.

Rotate the plane 90° around the origin (0,0).



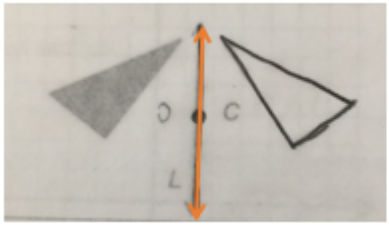
Visualize turning the coordinate plane to the right 90°.

Even though the figure has been rotated:

- Segments taken to segments are the same length.
- Angles taken to angles are the same measure.
- Parallel lines taken to parallel lines are still parallel.

Reflections

A reflection, or "flip," of a plane, flips the plane over a given line.



All the points in the plane moved to a new location, except for the points on the line of reflection (in this diagram, line L).

Even though the figure has been reflected:
- Segments taken to segments are the same length.
- Angles taken to angles are the same measure.
- Parallel lines taken to parallel lines are still parallel.

By the end of the packet, your student should know…

How to perform translations using patty paper and on coordinate planes Lesson 13.1

How to perform rotations using patty paper and on coordinate planes Lesson 13.2

How to perform reflections using patty paper and on coordinate planes Lesson 13.3

How to describe and compare properties of translations, rotations and reflections Lesson 13.3

Additional Resources

Resource Guide (RG)
Part 2, pages 47-50

Transformations Explanations:
http://youtu.be/7h46hKwyahQ
http://youtu.be/KbNFTUgNJw4