Native American Designs

- Many Native American designs have geometric properties.
  - Planar Transformations
    - Pre-image-the original figure prior to a transformation occurring.
    - Image-the new figure produced after a transformation has occurred.
    - Reflection-a figure is *flipped* over a line of reflection, creating a mirror image of the figure.
    - Rotation-a figure is *turned* or rotated through a given angle and in a given direction about a fixed point called the center of rotation.
    - Translation-a *slide*, each point of a figure is moved the same distance in the same direction.

Native American Designs

- **Symmetry**
  - **Line of Symmetry-**a figure has line symmetry if it can be divided by a line into two parts that are mirror images of each other.
  - **Rotational Symmetry-**a figure has rotational symmetry if a turn of the smallest possible degree between 0 and 180 degrees produces an image that maps back onto the original figure.

Native American Designs

- Look at the following Native American Designs.
  - Could the design have been created by a reflection? A translation? A rotation?
  - Does the design have a line or lines of symmetry?
  - Does the design have rotational symmetry?
- Images found at:

Morning Star Gallery

513 Canyon Rd.
Santa Fe, NM 87501

indian@morningstargallery.com

Native American Designs

Insert Description Including Tribe of Origin

Insert Image Here

Description, Tribe of Origin
Circa XXXX

Native American Designs

- **You will create your own design.**
  - Create your design using a Geometry drawing utility such as Geometer's Sketchpad, GeoGebra or Cabri.
  - Print your design. (5 points)
  - Include a reflection (blue), translation (red) and rotation (yellow) in your design. (5 points each, total 15 points)
  - Your design must have at least one line of symmetry (green). (5 points)
  - Your design must have at least one example of rotational symmetry (purple). (5 points)
  - You will also receive up to 5 points for design originality. (5 points)
  - Score out of 35 total points possible