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.
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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.
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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

Description, Tribe of Origin
Circa XXXX
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