RAFT IDEAS

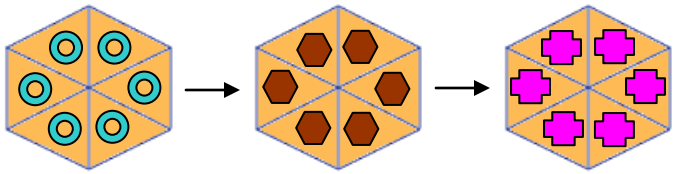
Topics: 2 & 3-Dimensional Shapes, Problem Solving & Logic

Materials List
- ✓ File folders, cardstock, or adding machine tape
- ✓ Three different color stickers or other means of decorating the three sets of 6 triangles

This activity can be used to teach:
Common Core Math Standards:
- Symmetry (Grade 4, Geometry, 3)
- Two and three-Dimensional objects (Grade 7, Geometry, 6)
- Problem Solving and Reasoning (Mathematical Practices Grades 3-12)

raft resource area for teaching
www.raft.net

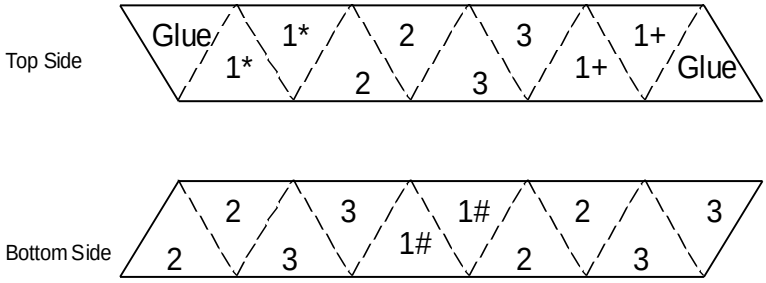
Fun with Hexaflexagons



Here is a fun activity that integrates math and art. The hexaflexagon is a two dimensional (flat) object that has three faces. How is that possible???

Assembly

1. Cut strips of adding machine tape and fold as shown to make equilateral triangles. Alternately use a Hexaflexagon Ellison Die to punch out the pattern (Die cuts available at RAFT). Use crisp paper (old file folders work well) or card stock. Accurate folding is essential to the smooth operation of the hexaflexagon.
2. After cutting the hexaflexagon, mark the top side triangles with the three different color stickers according to the pattern below, then flip over the strip and mark the bottom side as shown.



3. Flip back to the topside and fold the 1* triangle over the 1* triangle (left over right) and the 1+ triangle over the 1+ triangle (right over left). Flip over and fold the 1# triangle over the 1# triangle. The two faces marked "Glue" should be facing each other and your hexaflexagon should now be in the shape of a hexagon; carefully glue or tape these two faces together.

To Do and Notice

Now for the magic! Gently mountain fold and valley fold the hexagon to make a three-pointed star. Open the hexagon to reveal the third face by opening the petals at the center point. If the three-pointed star cannot be opened then reverse the mountain/valley folds and try again. Open gently. It may take a couple of tries to master this process, but be patient and success will be yours!

Taking it Further – Make hexaflexagons with more triangles (see web links).

Web Resources (Visit www.raft.net/raft-idea?isid=70 for more resources!)
- Create hexaflexagons using picture files: http://www.flatfeetpete.com/flexagon/
- Videos https://www.youtube.com/watch?v=VIVIegSt81k and https://www.youtube.com/watch?v=-TMwDB_bEXI
- Make a 3-D version: www.enchantedlearning.com/math/geometry/hexaflexagon/instructions.shtml