

Fearful Symmetry STEM Nova Award for Cub Scouts

The Fearful Symmetry STEM Nova Award is designed to help you explore how symmetry affects your life each day.

Wolf, Bear, and Webelos Scouts are eligible to earn this award.

This packet covers Requirement 3 of 5



REQUIREMENT #3

3. Choose TWO options from **A** or **B** or C or D or E , and complete ALL the requirements for the options you choose.

A. Make a paper lantern.

- 1) Fold a large piece of paper in quarters lengthwise.**
- 2) Cut decorative or symbolic shapes into the two folded edges.**
- 3) Unfold, tape the two edges of the paper together, and smooth into a cylinder. Hang by a string.**

B. Learn about the kolam artwork of southern India.

- 1) Look at some pictures of kolams. Find as many similarities as possible within each kolam. Is there a repeated pattern? If you turn it a little, do you get the same picture? If you look at it in a mirror, do you get the same picture?**
- 2) Use sand, chalk dust, flour, or some other material to make a kolam of your own.**

C. Learn about the litema wall decorations from Lesotho and South Africa.

- 1) Look at some pictures of litema. What does one basic tile look like? In how many ways can you see that tile arranged (turned a different direction, flipped backward, etc.)**
- 2) Use clay, paper, or some other material to make a litema of your own.**

D. Learn about the design of Navajo rugs.

- 1) Look at some pictures of Navajo rugs. Find as many similarities as possible within each rug. Is there a repeated pattern? Is there a mirror image? How many?**
- 2) Using different colors of paper, or other materials, make your own Navajo-like rug.**

E. Learn about Seminole or Miccosukee patchwork designs.

- 1) Look at some pictures of Seminole or Miccosukee patchwork. Find as many similarities as possible within each piece. What does a basic block of each pattern look like? How many different basic blocks are used in the design?**
- 2) Using different colors of paper, or other materials, make your own Seminole-like patchwork.**

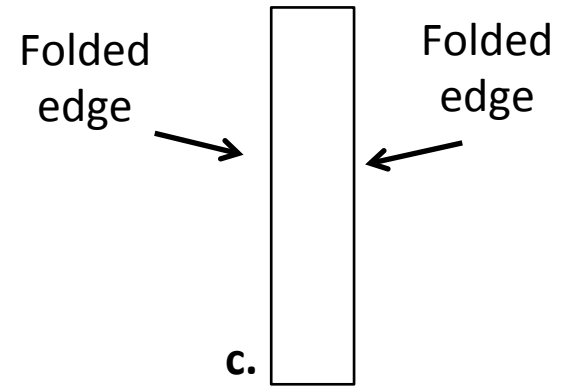
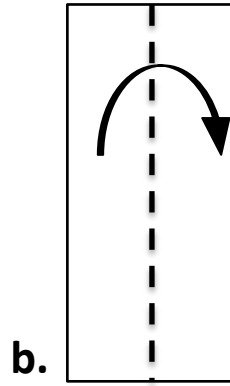
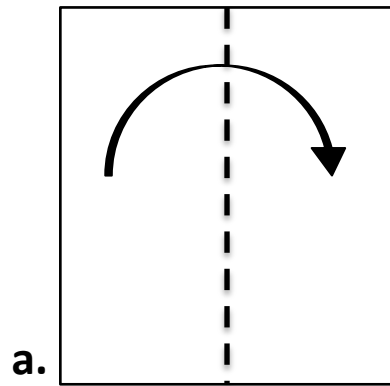
INSTRUCTIONS

To complete Requirement #3, using Option A and Option B, work through the following pages.

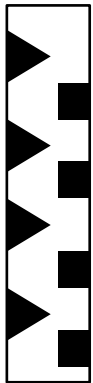
Then, with the help of your parents, send a picture of your lantern and kolam art to your Nova Counselor.

A. Make a paper lantern.

1. Fold a large piece of paper in quarters lengthwise.



2. Cut decorative or symbolic shapes into the two folded edges.



(example only)

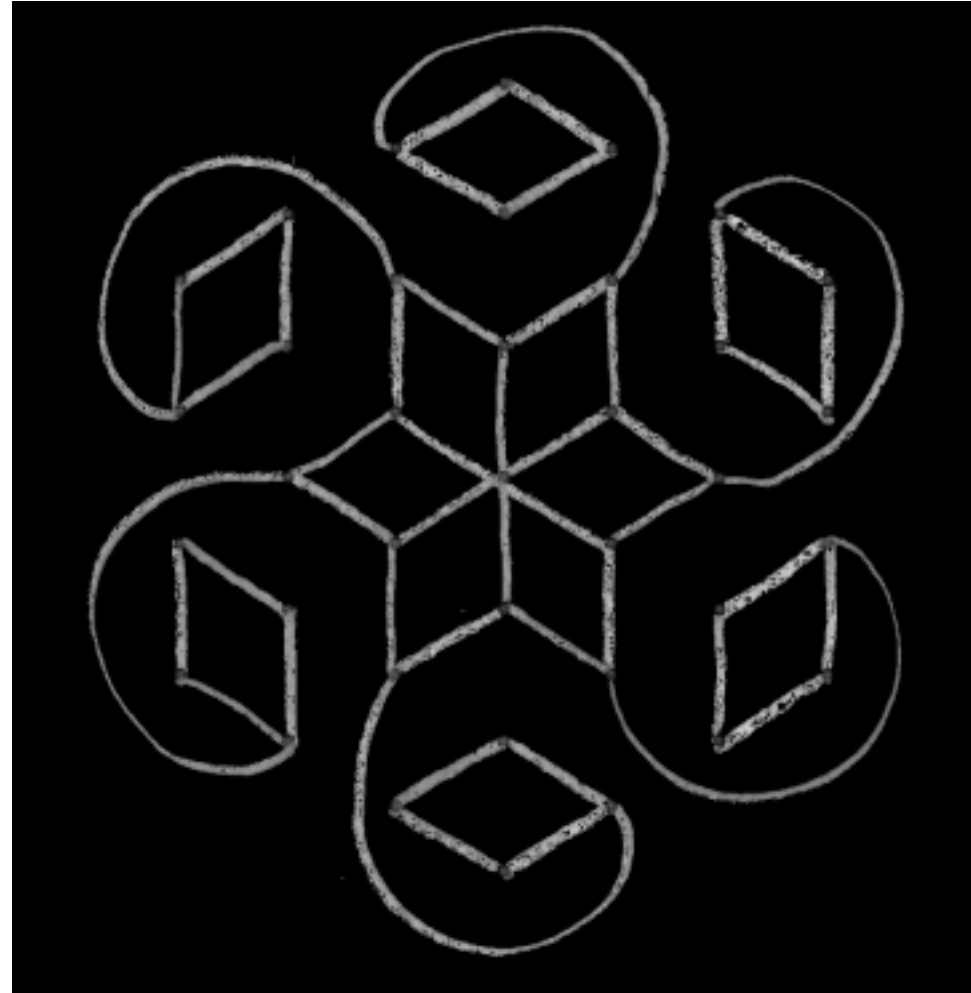
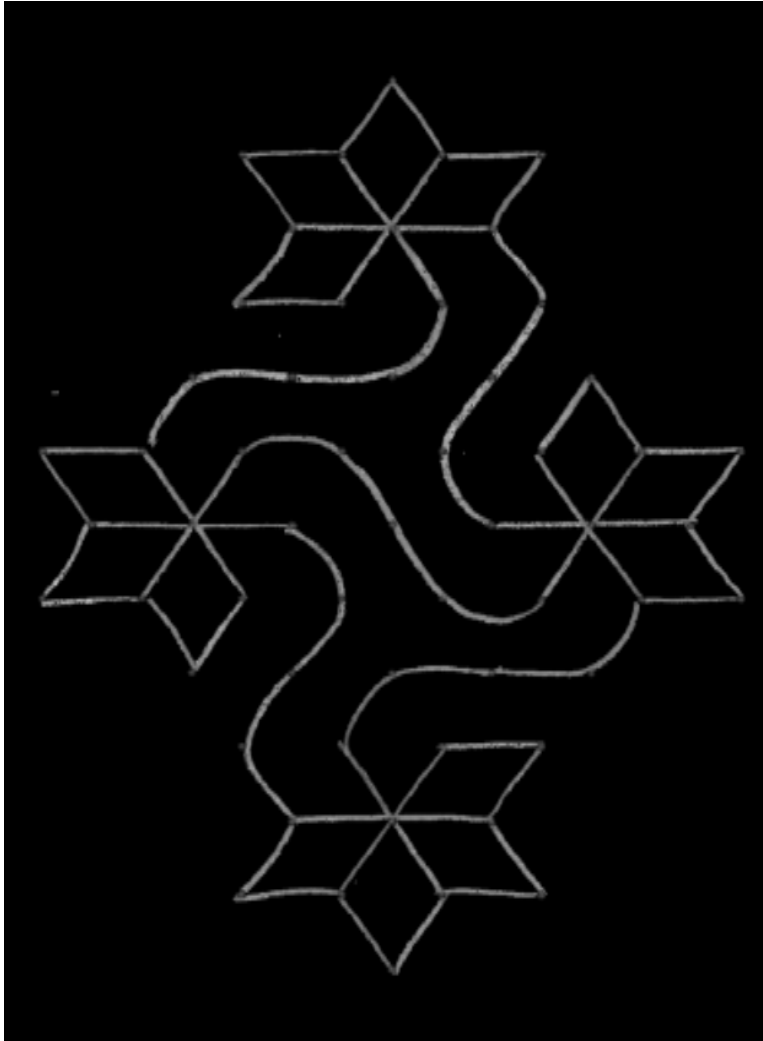
3. Unfold, tape the two edges of the paper together, and smooth into a cylinder.
Hang by a string.



B. Learn about the kolam artwork of southern India.

Kolam is a traditional art form in southern India in which people draw patterns on the ground outside the door of their house by sprinkling rice flour, rock powder, or some other light-colored material on the ground. For special occasions, flour that has been dyed bright colors may be used. Each morning, a new kolam is drawn. Throughout the day, the drawing gets walked on, blown away by the wind, and washed away by the rain. The next morning, the area is cleaned and a new kolam is drawn. Kolam designs are almost always have symmetry. Symmetry is when a shape looks identical to its original shape after it has been flipped or turned. Symmetry is thus, a mirror image.

1. Look at some pictures of kolams. Find as many similarities as possible within each kolam. Is there a repeated pattern? If you turn it a little, do you get the same picture? If you look at it in a mirror, do you get the same picture?



2) Use sand, chalk dust, flour, or some other material to make a kolam of your own.

Design it on this page, and then use sand, chalk dust, flour, or some other material to make your kolam.