

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 1 of 5**



REQUIREMENT #1

Choose **A** or B or C and complete ALL the requirements.

A. Watch an episode or episodes (about one hour total) of a show that involves symmetry, mirrors, or artistic patterns. Then do the following:

- 1) Make a list of at least two questions or ideas from what you watched.**
- 2) Discuss two of the questions or ideas with your counselor.**

B. Read (about one hour total) about anything that involves symmetry, mirrors, or artistic patterns. Then do the following:

- 1) Make a list of at least two questions or ideas from what you read.
- 2) Discuss two of the questions or ideas with your counselor.

C. Do a combination of reading and watching (about one hour total) about anything that involves symmetry, mirrors, or artistic patterns. Then do the following:

- 1) Make a list of at least two questions or ideas from what you read and watched.
- 2) Discuss two of the questions or ideas with your counselor.

INSTRUCTIONS:

-To complete Requirement #1, using Option A:

1. Watch all of the following video clips listed on the next page. They are about symmetry, mirrors, and artistic patterns. *****Adults: monitor your scouts online and ensure they are following Cub Scout Cyber Chip guidelines.** Please note that some of the videos show a craft project. Scouts are NOT required to do the craft projects shown in these videos.

2. Make a list of at least two questions or ideas from the videos you watched.

3. Discuss these two questions with a registered Nova Counselor.

VIDEOS TO WATCH

a. Intro to Symmetry (3 minutes)

<https://www.youtube.com/watch?v=YFzktJNmnPU>

b. Painting Insects in Symmetry (4 minutes)

<https://www.youtube.com/watch?v=WkItXR9a1II>

c. Symmetry Song (3 minutes)

<https://www.youtube.com/watch?v=SJIhywRfvh8>

d. Leaf Arrangement (2 minutes)

https://forestry.ca.uky.edu/tree_id_videos

Click on "Leaf Arrangement" Video on bottom row

e. Kolam Art (6 minutes)

https://www.youtube.com/watch?v=OLP45cOJf_s

f. Symmetrical Snowflake (5 minutes)

<https://www.youtube.com/watch?v=zgaAqGeVTdl>

g. Kite Symmetry (3 minutes)

<https://education.abc.net.au/home#!/media/2971367/kite-symmetry>

h. How to make a kaleidoscope (3 minutes)

<https://www.youtube.com/watch?v=yShrIOj34r0>

i. How NASA Engineers Use Origami To Design Future Spacecraft (4 minutes)

<https://www.youtube.com/watch?v=Ly3hMBD4h5E>

j. Engineering with Origami (19 min)

https://www.youtube.com/watch?v=ThwuT3_AG6w

k. An Intro to the James Webb Telescope (4 minutes)

<https://www.youtube.com/watch?v=6VqG3Jazrfs>

l. James Webb Mirror Unfolding (1 minute)

<https://www.nasa.gov/feature/goddard/2020/nasa-s-james-webb-space-telescope-full-mirror-deployment-a-success/>