

# NATIVE AMERICAN EDUCATION FOR ALL RESOURCES

Partnership of IllumiNative and the National Indian Education Association



Grade Level	Subject	Lesson Title
3-5	Math	Navajo Weaving: A Lesson in Math and Tradition

**Activity Description:** The beautiful patterns woven into Navajo blankets not only tell a cultural story but they also demonstrate several math concepts in geometry. This activity will share the traditional process of weaving a Navajo blanket through video and story. Then, young people can learn and practice tessellation, a geometric art process, to create a design of their own.

## MATERIALS NEEDED

- WiFi access (recommended)
- Paper and pencil
- A piece of thin cardboard (like a manila folder or cereal box)
- Crayons or coloring pencils (optional)
- [The Goat in the Rug](#) as told to Charles L. Blood and Martin Link read aloud
- YouTube video [Navajo Rug Weaving: Monument Valley](#)
- (optional) [Tessellations](#) online lesson from *Teach Kids Art*

## STEPS

The Navajo are known for their beautiful woven blankets and distinct patterns. The deep colors and patterns tell stories and show the culture and history of the Navajo. The shapes on the rug usually have very sharp, defined edges and repeat to make a pattern. These patterns use geometry, a type of math for measurement and shapes. Read a story and watch the process of a traditional Navajo weaver to learn more. Then, practice designing your own blanket by using a *tessellation*, an art method in geometry.

**Activity Steps:**

1. First, listen to [The Goat in the Rug](#) read aloud on YouTube
  - a. How is the traditional way of making a Navajo rug connected to nature?
  - b. Why is the goat an important character in this story?
2. Watch a traditional method of [Navajo Rug Weaving: Monument Valley](#) on YouTube
  - a. How is this video similar to “The Goat in the Rug” story?
  - b. Traditional Navajo blankets are expensive. Why do you think they have such a high value?

**Math Activity: Tessellations**

Follow this [lesson plan on “Tessellations”](#) or use the steps below if you do not have WiFi. A *tessellation* is a shape with defined edges such as triangles or rectangle shapes that make a puzzle-like pattern when they are laid side by side. This is like a tile floor pattern.

1. Use a piece of thin cardboard to draw a shape that has sharp lines.
2. Lay this shape on a piece of paper and trace around it with a pencil.
3. Lay the shape next to the one you just drew to make it fit like a puzzle piece. Trace the shape with your pencil.
4. Keep tracing the shape over and over making sure they are all touching each other like a puzzle.
5. When you are done, color your tessellation to make a neat design. Then you can try other shapes and patterns.

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ILLUMINATIVE



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## HELPFUL TIPS

**Parents and caregivers:** This activity can be fun especially for young people who love math or art. While learning about Navajo weaving, share with your child that the blankets that are made by traditional Navajo weavers are expensive because they are a cultural form of art and take time and care to make. Encourage your child to explore the types of cultural art made in your region. For more learning together, try the following activities:

- This activity helps young people [practice weaving like the Navajo](#) using some items found at home. There are step-by-step directions in this printable document. You will need a
- Tessellations can be very fun and they can become more complex. For a slightly more advanced activity from *Geometry Playground*, try this at home [lesson on translation tessellations](#) to design a more detailed pattern.

## WANT TO LEARN MORE?

**Families and educators:** There are many beautiful patterns in Navajo weaving that can be used to share cultural stories as well as lessons in art, math, and social studies. Visit these sites below:

- For a more in-depth look at Navajo weaving, visit [Mrs. Cook's Art Class](#) webpage. This includes a brief history, methods, and terminology as well as a way to practice weaving skills at home.
- For lessons and additional teaching topics from Navajo weaving, follow this [Hózhó: Navajo Beauty, Navajo Weavings curriculum guide](#) from Mathers Museum.

### Activity Resources:

- *The Goat in the Rug* as told to Charles L. Blood and Martin Link read aloud <https://www.youtube.com/watch?v=nCek0vg9Fys>
- "Navajo Rug Weaving: Monument Valley" YouTube video by FinleyHoliday <https://www.youtube.com/watch?v=DeAllgHhPAE>
- "Tessellations" lesson from *Teach Kids Art* <http://www.teachkidsart.net/tessellations/>

### Additional Resources:

- "Making a Translation Tessellation" from *Geometry Playground* on Exploratorium.edu [http://annex.exploratorium.edu/geometryplayground/Activities/GP\\_Activities\\_3-5/MakingATranslationTessellation\\_3-5\\_v5.pdf](http://annex.exploratorium.edu/geometryplayground/Activities/GP_Activities_3-5/MakingATranslationTessellation_3-5_v5.pdf)
- "Navajo Weaving" activity guide <https://www.cusd80.com/cms/lib6/az01001175/centricity/domain/4107/lesson%205%20-%20navajo%20weaving.pdf>
- *Mrs. Cook's Art Class* webpage <https://mrs-cook.weebly.com/navajo-loom-weaving.html>
- *Hózhó: Navajo Beauty, Navajo Weavings* curriculum guide by Mathers Museum <https://mathersmuseum.indiana.edu/doc/Hozhocurr.pdf>