

Curriculum topics:

- Circles
- Geometric Shapes
- Patterns & Relationships
- Native American Culture
- Artistic Exploration

Subjects:

**Math, Art,
Social Studies**

Grade range: 1 – 5

Who we are:

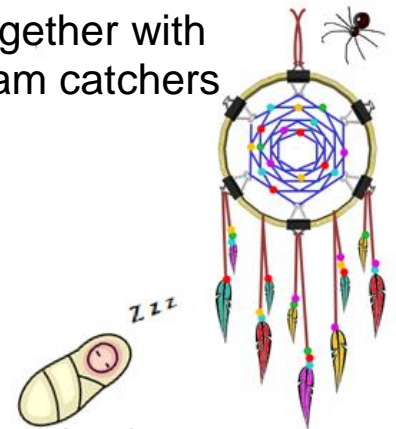
Resource Area for Teaching (RAFT) helps educators transform the learning experience through affordable “hands-on” activities that engage students and inspire the joy and discovery of learning.

For more ideas and to see RAFT Locations

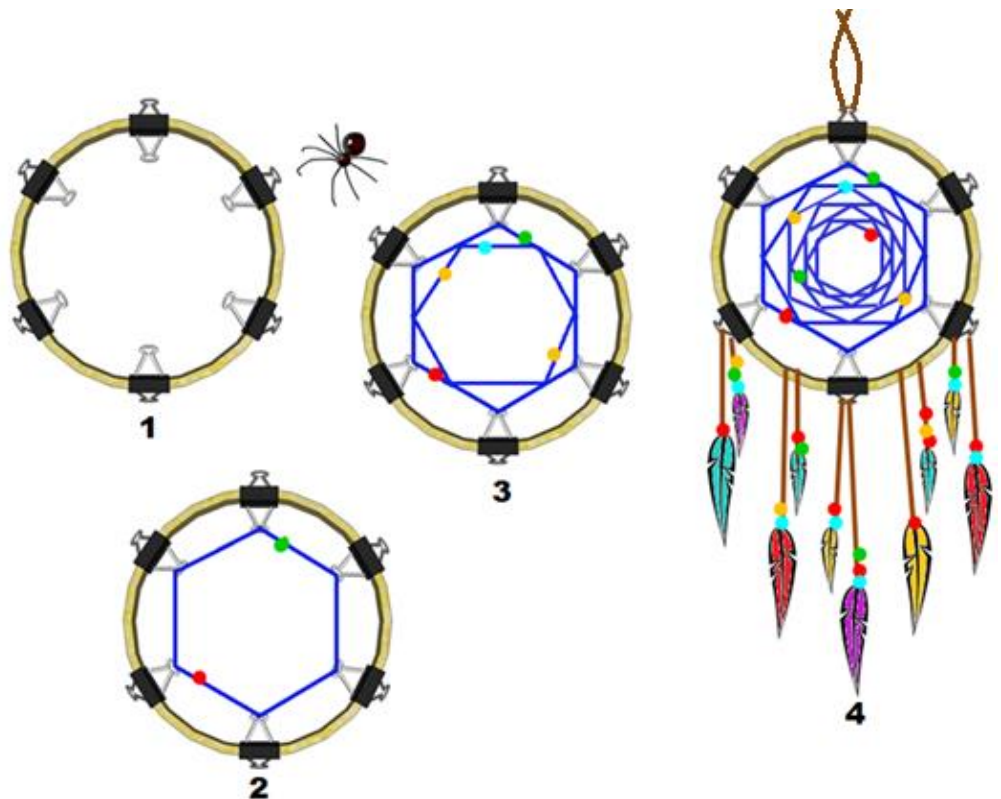
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MATHEMATICAL DREAM CATCHERS!

Weave math and culture together with Native American Indian dream catchers



Combine traditional Native American culture and modern mathematical concepts to explore geometric shapes and patterns!



Materials required

Per person:

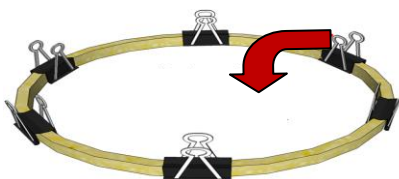
- Hoop, 15 to 25 cm (6" to 10") in diameter
- Mini binder clips, 8
- Pony beads, 1 each of 5 different colors
- Small container for beads
- String, 3 different colors, ~1 m (3 ft) each
- Feathers, multi-colored, 3 to 5
- Recording Sheet (see page 3; a full page sheet can be downloaded at <http://www.raft.net/raft-idea?isid=681>)



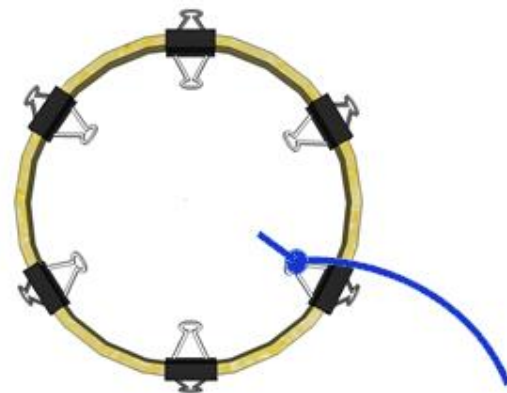
To do and notice

- 1** Mark 3 to 8 points anywhere along rim of the hoop. Ask students to number each point in order.

- 2** Attach a binder clip next to each mark. Fold down the inner binder clip loops so they point to the center of the hoop.

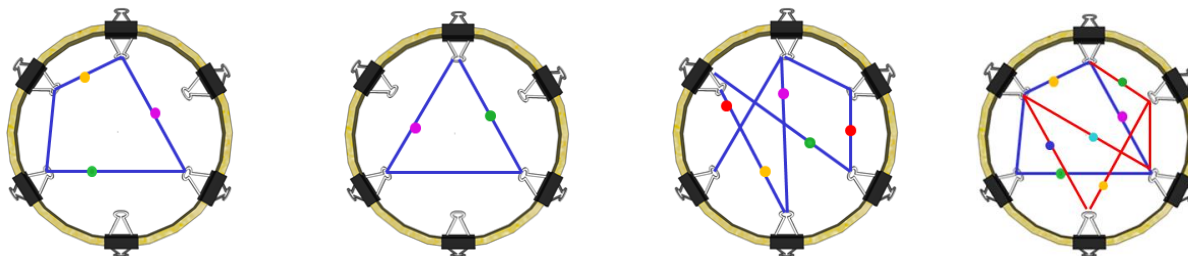


- 3** Slip the end of one string through the loop of the first clip and tie a knot (help students if needed). Pass the other end of the string through a loop on each binder clip. At any time, add beads to the string (see hoop 2 on page 1).



- 4** Continue adding new strings and beads, if desired. (See hoop 3 on page 1). When finished, tie a knot around the last loop and trim string.

Optional: Skip points around the hoop (see examples below). Start new strings at different locations to create a variety of patterns.



- 5** Tuck feathers through some of the beads. Tie a loop to the top of the dream catcher to hang it. Optional: Decorate the rim with more strings, feathers, and beads (see hoop 4 on page 1).
- 6** How many and what type of shapes do you see? Record and draw a picture of your findings on the Dream Catcher Recording Sheet.

The content behind the activity

This activity weaves beautiful Native American Indian tradition with mathematics!

The first dream catchers were crafted by the Ojibwe (Chippewa) tribe. Legend tells of a “spider woman” named Asibikaashi whose magical web had the power to trap the Sun. Dream catchers were traditionally hung above sleeping babies to catch bad dreams and let only good dreams pass through to the child. Later, the bad dreams would disappear when the first rays of sunlight struck the web.

When the native Ojibwe nation dispersed to the four corners of North America, Asibikaashi found it hard to share her webs with everyone who wanted one. So, mothers, sisters, and grandmothers started creating their own webs using flexible hoops made from willow branches.

Traditional native dream catchers have 8 holes along the outer rim to represent a spider’s 8 legs. Today, many different Native American Indian tribes make dream catchers in a wide variety of styles.

Dream catchers provide an excellent opportunity for discovering mathematics. Students can hunt for simple geometric shapes within the webbing, classify similar shapes, locate symmetrical shapes, and note how often each shape appears.



Dream Catcher Recording Sheet

How many shapes do you see?

Draw and name each shape here:



Pleasant Dreams.....



Curriculum Standards:

Measure Lengths
(Common Core Math Standards: Grade 1, Measurement & Data, 1)

Simple Patterns
(Common Core Math Standards: Grade 1, Measurement & Data, 4.1)

Shapes and attributes
(Common Core Math Standards: Geometry, Grade 1, 1, 2, & 3; Grade 2, 1 & 3; Grade 3, 1 & 2)

Patterns
(Common Core Math Standards: Operations & Algebraic Thinking, Grade 4, 5; Grade 5, 3)

Two-dimensional figures
(Common Core Math Standards: Grade 5, Geometry, 3, 4, & 5)

Problem Solving and Reasoning
(Common Core Math Standards: Mathematical Practices Grades 1-5)

Creative art, materials, and making (National Visual Arts Standards: Creating: Grades 1-5, 1.1; Grades 1-5, 2.1)

Art, society, and culture
(National Visual Arts Standards: Connecting: Grades 1-5, 11.1)

Traditions & culture
(National Curriculum for Social Studies: Theme 1, Culture)

Learn more

- Explore relationships between the shapes and other properties of the hoop circle; for example: does changing the stringing pattern to affect the number, size, or variety of shapes?
- Explore the properties of lines and angles in the dream catcher webbing.
- Compare and / or measure the area of similar shapes in the dream catcher webbing.

Related activities: See RAFT Idea Sheets:

Advanced Mathematical Dream Catchers -

[http://www.raft.net/ideas/Advanced Mathematical Dream Catchers.pdf](http://www.raft.net/ideas/Advanced%20Mathematical%20Dream%20Catchers.pdf)

I Can Find a Shape Like That -

[http://www.raft.net/ideas/I can Find a Shape like That.pdf](http://www.raft.net/ideas/I%20can%20Find%20a%20Shape%20like%20That.pdf)

Pattern Blocks -

[http://www.raft.net/ideas/Pattern Blocks.pdf](http://www.raft.net/ideas/Pattern%20Blocks.pdf)

Patterning with Polygons -

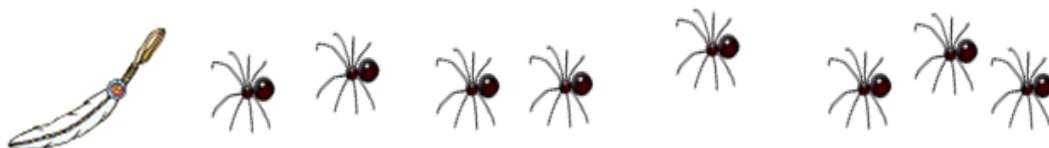
[http://www.raft.net/ideas/Patterning with Polygons.pdf](http://www.raft.net/ideas/Patterning%20with%20Polygons.pdf)

Scalloped Circle String Art –

[http://www.raft.net/ideas/Scalloped Circle String Art.pdf](http://www.raft.net/ideas/Scalloped%20Circle%20String%20Art.pdf)

What Shapes Can It Become -

[http://www.raft.net/ideas/What Shapes Can It Become.pdf](http://www.raft.net/ideas/What%20Shapes%20Can%20It%20Become.pdf)



Resources

Visit www.raft.net/raft-idea?isid=681 for “how-to” video demos & more ideas!

See these websites for more information on the following topics:

- **Legend of the Native American Indian Dream Catcher -**
<http://www.firstpeople.us/FP-HTML-Legends/TheLegendOfTheDreamcatcher-Chippewa.html>
- **Mathematical Dream Catcher Mandalas -**
<http://clem.msced.edu/~talman/Mandalas.html>
- *Designs from Mathematical Patterns*, Bezuska, Kenney, and Silvey, Dale Seymour Publications, copyright 1990.