

Algebra/Geometry Institute Summer 2010

Faculty Name: Sara Norman

School: Presbyterian Day School

Grade Level: 4th



1 Teaching objective(s)

Students will explore Mandalas, symmetrically designed polygons that are man-made and that occur in nature. Students will also create their own mandalas that include polygons (triangles, squares, ect), symmetry and color scheme. Students will also use tangrams to assist in making a mandala.

III. Identify and apply geometric principles to polygons and angles as well as two- and three- dimensional figures:

A. Identify, describe, compare and classify geometric figures. (Standards based on the Mississippi Mathematics Framework)

2 Instructional Activities

The teacher will introduce what a Mandala is. The teacher will show pictures of Mandalas and also show students examples on the computer.

Mandala, which loosely translates to "circle" or "magic circle", symbolizes balance and unity. Mandalas are found throughout the natural and man-made world, from Tibet to parts of North America. To introduce the origins and significance of mandalas, have students visit the following sites: The Mandala Project, [www. Mandalaproject.org](http://www.Mandalaproject.org) Here, students can see examples of mandalas. (See attachment 1)

Students will be able to use their knowledge of polygons and understanding of basic mandala structure to create their own mandala. After students have looked at class pictures of mandalas and pictures from the internet, students will begin the activity.

Before distributing materials for creating mandalas, distribute tangrams to groups. Students may work together or separately to create a mandala using tangrams. Allow students to experiment with the tangrams to see if they can create a symmetrical shape. After students have created a shape, materials for creating a mandala may be distributed.

Students may work in groups of four, however, each student is to create their own mandala. First teacher will distribute materials. (paper, compass, rulers, colored pencils, and crayons) Here are the steps that students are to follow. Teacher will write the

following directions on board, steps 2-5. Teacher will leave directions on the board during activity so that students may refer to them.

1. Distribute large white paper.
2. Using a compass, each student will draw an 8" circle on the paper.
3. Divide the circle in half, and then in fourths with a light pencil line.
4. Each student should draw a design using their ruler and compass in one of the four areas of the circle.
5. Once the design is completed in the first area, students should repeat the same design in the other three areas of the circle.

Briefly discuss symmetry with students, and then have them color the design using not more than four colors.

Once students have finished mandalas, allow them to share their designs with the class. Once students have finished designs, distribute glue sticks and construction paper. Allow students to glue design on a piece of colored construction paper.

3 Materials and Resources

- Rulers and compasses
- 8" x 11" drawing paper
- Pencils and colored pencils
- Crayons
- Multi-colored construction paper
- Glue sticks
- Computer or computer lab if available
- Tangrams

4 Assessment

The assessment of this activity will be the completion of students' mandalas. Students will also be asked to write a half-page to 1 page reflection on the activity. Ask students what did they learn from this activity? Can you think of other examples of symmetry seen in our daily lives? What shapes were used in the creation of your mandala? Were there common shapes found within the mandalas made by the whole class? If so, list examples. Students will also write what shapes were created in their mandala.

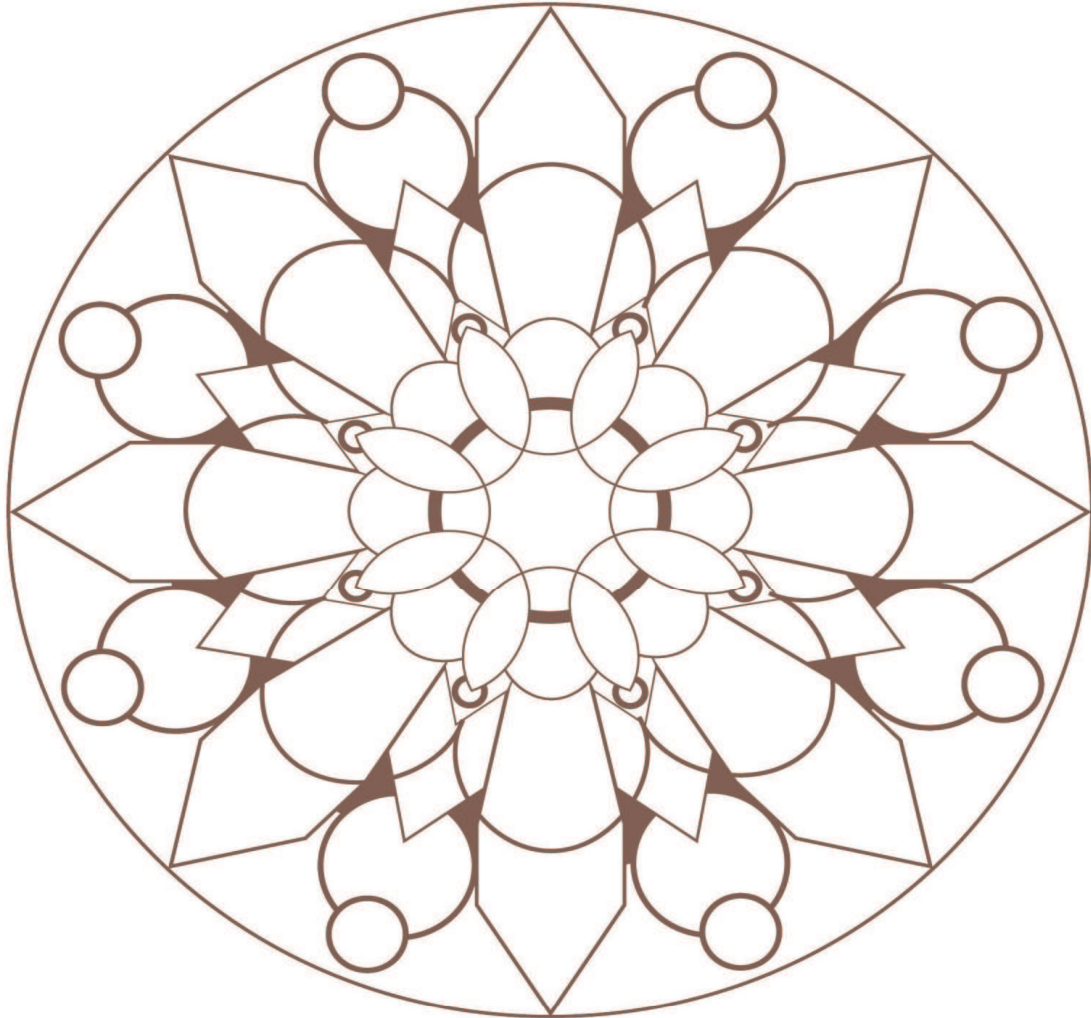
Sources:

<http://artsedge.kennedy-center.org/content/2123/>

The Mandala Project

<http://www.mandalaproject.org/index.html>

ATTACHMENT 1



You must be the change
you wish to see in the world.

Mahatma Gandhi



Mandala #2

The Mandala Project is a non-profit organization
dedicated to promoting peace through art and education.
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