

Math: Creating Tessellations



Overview: Tessellations are two-dimensional art forms that incorporates mathematics in the creation of repeating and interlocking shapes. This project can open creativity in one-of-a-kind artworks that utilize geometry.

Activity: By combining art and math, participants create unique artworks.

Materials:



1. Heavy stock paper like watercolor paper or cardstock
2. A sharpened pencil to trace with
3. Scissors
4. Tape
5. Markers or crayons

Procedures (Beginner):



1. Start with a piece of paper and a pencil. We recommend starting with half of a regular 8.5" x 11" white sheet of paper.
2. Divide the paper up into equal width rows (or columns); about 3-4 rows for a small sheet will work very well.
3. In one row, draw a simple shape that spans the entire height of the row (see image above), such as a square, triangle, a lopsided rectangle (parallelogram), or other shape of your choice. Draw that shape again immediately next to your first shape. Do they fit together perfectly? What if you draw a third shape immediately next to the second shape? Do they still fit together perfectly?
4. If your shapes are fitting together perfectly, keep drawing them in each row until your entire sheet is filled up.
5. Color in your tessellation and display!



Step it up: Ready for a harder challenge? Skip Step 2 and just try drawing a shape on a piece of paper. Now try drawing that shape again immediately next to the first shape. Do they fit together? Try creating more complex shapes, like fish, flowers, or even dinosaurs!

(directions from <http://mathengaged.org/resources/activities/art-projects/tessellations/>)



Procedures (Advanced):



1. Gather your materials and identify a workspace.
2. Take a square piece of paper and write the letters 'P', 'A', 'R', and 'T' in each corner.
3. Take a pencil and draw a funky line horizontally across the paper, separating the 'P' 'A' side from the 'R' 'T' side.
4. Draw another funky line vertically down the paper, separating the two sections into a total of four sections.
5. Cut along your lines, yielding four separate shapes, each with a single letter.
6. Re-arrange the shapes such that the letters meet in the middle and they spell the word "TRAP".
7. Tape the four pieces together to create a single tile.
8. Trace your tessellation creation onto a sheet of paper.
9. Once your shape is traced, slide your tessellation to the immediate left, right, top, or bottom of your tracing, and trace again. Repeat until the entire sheet is filled up with your amazing tessellation creation! (directions from <http://mathengaged.org/resources/activities/art-projects/tessellations/>)
10. Clean up and recycle/reuse applicable materials.



Key Terms:

1. A **Tessellation** is when a flat surface, like a floor or a piece of paper, is covered with repeating geometric shapes. The shapes must fit together so that there are no gaps.
2. **Geometry** is a branch of mathematics that deals with the measurement, properties, and relationships of points, lines, angles, surfaces, and solids.

