

Tessellation Explorations

Several explorations can be based on this applet. Possible math goals of each game are indicated in parenthesis.

Exploration 1

(explore the geometry in tessellations and write conjectures about which polygons will or will not tessellate a plane): Have the students explore which regular polygons tessellate and why. Start them by examining tessellations of regular polygons including number of sides and interior angle measurements by using a [data table](#). Encourage students to determine a pattern among the polygons that they tessellate. Ask the students to predict which regular polygons will and will not tessellate and why. Follow-up by having the students write a concise definition for a regular polygon tessellation. Have them expand this definition to describe a tessellation made from non-regular polygons.

Exploration 2

(recognize symmetry in tessellations): After the students have determined which regular polygons tessellate, lead a [discussion](#) about the types of symmetry present in tessellations. Have the students build tessellations and identify the types of symmetry present. Give them a table to record the basic shape used to tile and the types of symmetry present in the basic unit and in the tessellated pattern.

Exploration 3

(develop communication skills and practice geometry terminology): Allow students time to practice their knowledge about tessellations. Have teams of students work together. Instruct one student on the team to create a tessellation. Have that student describe the tessellation to other students and see if the other students can recreate the tessellation without looking. The students should formalize their terminology and describe the tessellation in terms of angle measure, polygon shape, symmetry, area and perimeter.

Exploration 4

(examine the role of mathematics in society and nature): Have students identify tessellations that they have encountered in their daily lives. Ask them to use the [tessellation activity](#) to build tessellations that they have seen. Follow-up with a [discussion](#) about tessellations in the world.

Exploration 5

(develop spatial sense by transforming a figure): Ask students to stretch the regular polygons into the letters of the alphabet or the letters of their name and tessellate the pattern. Have them record which polygon is best used to shape each letter. Also have them record what type of symmetries are present in each tessellation. Suggest that the students change the colors in the tessellation to see what effect that has on their perception of the pattern. Have the students record their observations in a journal.