



# DESIGNING TESSELLATIONS

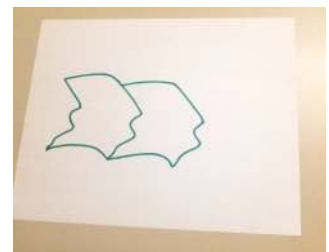
**What's a tessellation?** A tessellation is a pattern of repeating shapes that fit closely together with no gaps or overlapping.

**THE GOAL:** Create a piece of art using a tessellation pattern.

- WHAT YOU NEED:**
- Index card
  - Scissors
  - Tape
  - Sheet of paper
  - Pen or pencil
  - Crayons, colored, pencils, or markers (optional)

## TRY THIS:

1. Cut the index card in half to form a square. (This is a good size to start with, but you can cut your index card as big or small as you want depending on how big you want your design to be.)
2. Cut a shape out of one edge of the card.
3. Take the shape you cut out and slide it to the opposite side of the card without flipping or turning it.
4. Line the edge of the shape up with the edge of the index card and tape them together.
5. If you want, repeat the previous steps with the other 2 sides of your index card.
6. You now have a "tile" that you can trace to create patterns. Place your tile in the center of a sheet of paper and carefully trace around it.
7. Pick up your tile and place it next to the shape you just traced. Line the edges up as though you are putting together the pieces of a puzzle. Make sure there are no gaps or overlapping. Trace your tile again.
8. Continue this process until the pattern covers your entire paper.





# TESSELLATIONS CONT.

## MORE TO EXPLORE

### READ ALL ABOUT IT!

- **I See a Pattern Here** by Bruce Goldstone
- **Toads and Tessellations** by Sharon Morrisette
- **The Magic of MC Escher** by JL Locher

- Decorate your tessellation to create an interesting design.
- Make more tessellations. Try making your patterns more complex, or design shapes that resemble something.
- **M.C. Escher** was an artist who created famous images of people, animals, and objects in the form of tessellations. Look up some of his works and search for other examples of tessellations being used in art. Create a tessellation inspired by one of the images you find.
- Look for examples of tessellations around you. They can be man-made or part of the natural world. See how many you can find. Patterns are everywhere!

## WHAT CAN TESSELLATIONS BE USED FOR?

Tessellations can be used when cutting materials to reduce waste. For instance, manufacturers cut tessellated shapes from sheet metal to reduce the amount of scrap metal that gets thrown away. To see how this works, look at the two pictures of cookie dough cut-outs below. One shows cookies cut in a tessellated pattern and one shows cookies cut randomly. Which of the cookie cutter shapes do you think wastes less cookie dough? Why?



## STANDARDS

This activity aligns with the following Oklahoma Academic Standards for Math:

- K.GM.1: Geometry & Measurement
- 1.A.1 & 2.A.1: Algebraic Reasoning & Algebra
- GM.1: Geometry & Measurement
- 3.A.1: Algebraic Reasoning & Algebra
- 6.GM.4: Geometry & Measurement