CEMC at Home

Grade 7/8 - Friday, March 27, 2020

Tessellations

A tessellation (or tiling) is an arrangement of one or more shapes in a repeated pattern without overlaps or gaps. You have probably seen tessellations before without even realizing it! For example, brick walls are tessellations of rectangles, some flooring designs are tessellations of squares, and the honeycombs in a beehive are tessellations of hexagons.

Activity 1: Let's create our own original tessellations!

You Will Need:

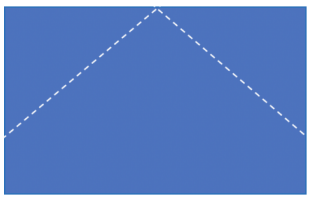
- 1 piece of paper (letter size or bigger)
- 1 piece of card stock about the size of a playing card (or regular paper cut to this size)
- A ruler
- Scissors
- Tape
- Coloured markers or pens

Try This:

1. Start with your rectangle cut to the size of a playing card.

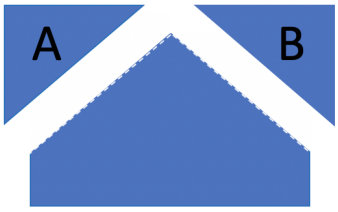
2. Make alterations to the top edge of your shape.

   Interesting alterations make for interesting tessellations! But you might want to make sure that the alteration you choose on your first try is simple enough that you can easily work with your shape.



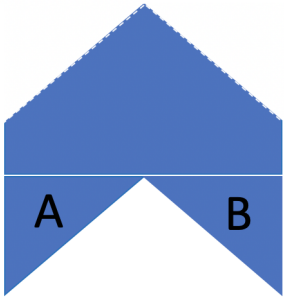
3. Translate the alterations to the bottom edge of your shape and tape in place.

   Make sure to translate the pieces vertically as shown. Any shifting in the horizontal direction may result in a shape that won't work for you in steps 5 and 6.



4. Trace your new shape on the piece of paper.

5. Repeatedly translate your shape vertically and horizontally on the paper, always fitting it snugly into or against the previously drawn shape, tracing as you go.



6. Colour in your shapes and create a beautiful piece of art!

Activity 2: Let's investigate polygons and tessellations!

We have seen that squares and hexagons both form nice tessellations. These shapes are both examples of what are called *regular polygons*. (A polygon is a closed figure with straight sides. A polygon is regular if all sides are equal in length and all angles are equal in measure.) It is likely that the shapes you formed in Activity 1 were not regular polygons. Can you think of any other regular polygons that can be used to form a tessellation? Are there regular polygons that cannot be used to form a tessellation?

Need help getting started with Activity 2?

Try and cut out a regular polygon and use it as your shape like you did in Activity 1.

If you would like to try something new, then use the following investigation: Explore This!

Here you can use technology to help you explore whether equilateral triangles, squares, pentagons or hexagons can be used to form a tessellation. Can you figure out what features make a polygon good for making a tessellation?

More Info:

If you are interested in learning more about tessellations check out this lesson in the CEMC Courseware. You can find a discussion of Activity 2 there!