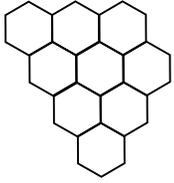


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Science & Math *Patterns All Around Us*

Today we will be looking at the processes of nature, and how humans have used and continue to use its beauty in artwork.

A **process** in nature is any time something changes, and can occur in living or nonliving things. Examples of processes in nature are a plant growing, the wind blowing sand along a beach, and a river carving into rock over time. Stars forming, snowflakes crystallizing, sprouts growing, and lichen spreading are also processes--you can see images of these on the right.

Processes in nature tend to produce things that look the same over and over again because nature prefers **efficiency** and success. When certain formations help organisms to successfully survive, or processes to successfully continue, those formations will last. For living things, this is a part of **evolution**--the process of changing over time to make survival easier.

A **pattern** is when a shape or design is repeated over and over again. In the photographs on the right, you can see how patterns of all shapes and sizes are found in nature. What patterns in nature can you find around you? Take a quick walk outside to see what you can see! They could be the veins of a leaf, or the ridges in tree bark.



Sprout from an Ash Tree
(Bourgeon de frene)
1930-1931, Laure Albin-Guillot
half-tone photographure

For example, sprouts from an ash tree all look the same--like the ones you see in the photograph to the left by Laure Albin-Guillot. This is because the way they are shaped helps them to survive and grow. If one of them was shaped differently, it may not grow as easily as the more successfully-shaped sprouts. (However, accidents do happen in nature, and they can be very interesting!)

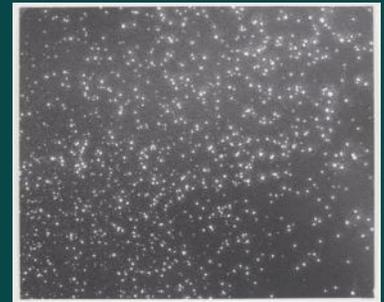
Vocabulary

Process- In nature, a process is when there is a change in a living organism or nonliving object.

Efficiency- Using the least amount of material or energy to accomplish a task.

Evolution- Changes that occur over time in a living organism to make survival easier.

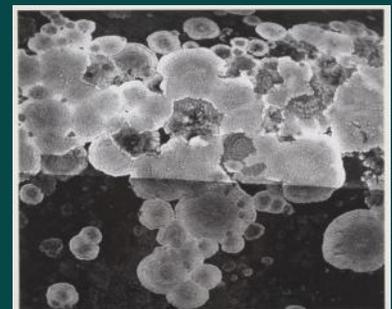
Pattern- When something repeats over and over.



Untitled (Night Sky II)
1997, Adam Fuss
photogram



Snow Crystal, between 1890-
1930, Wilson Bentley,
gelatin silver print



Untitled (lichen covered surface)
1970, Brett Weston,
gelatin silver print

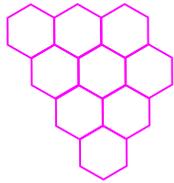
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Math & Patterns | Pattern Match



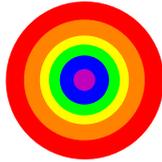
We can use math to discuss patterns in nature! A few mathematical patterns we can find in nature are the **regular tessellation** of a bee's honeycomb, the **concentric** rings inside a tree's trunk, or the **symmetry** of a snowflake.

Match the artwork to the type of pattern it has in it!



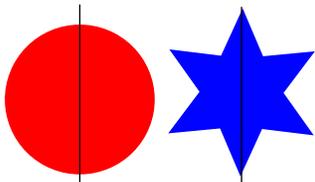
Regular Tessellation

When a regular polygon (shape) can "tile" or fit next to itself with no space left over.



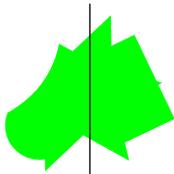
Concentric Circles

One circle inside another circle, inside another circle...again and again.



Symmetrical

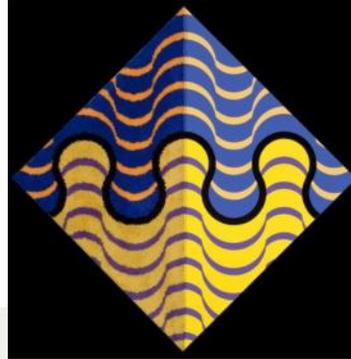
The same on one side as another when divided in half



Asymmetric

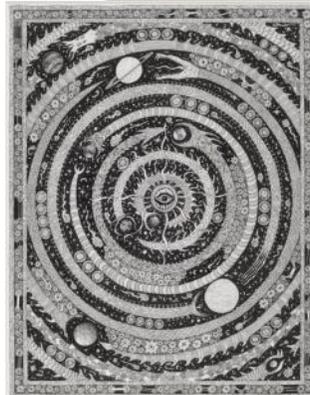
Not the same on one side as the other - not symmetrical.

Untitled, Jim Isermann, 1990, enamel paint, Orion yarn, wood (2 panels)



Thawing Snow III, Shigeaki Tomura, 2002, etching on Chine colle

Stencil Flowers over Diamond Grid, Japanese, 19th c., brown paper



Musica Universalis, James Dye, 2013, india ink on bristol board, Gift of the artist

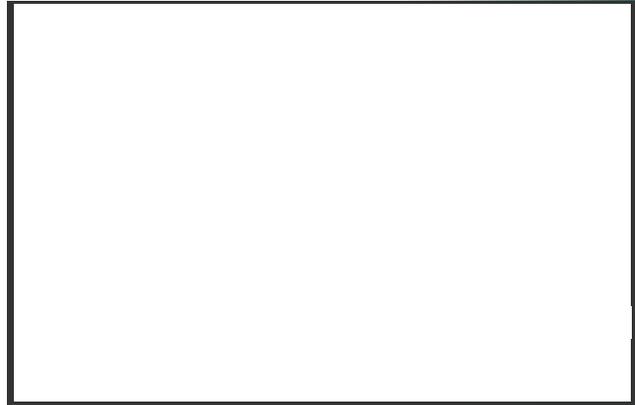
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Patterns in Art and at Home

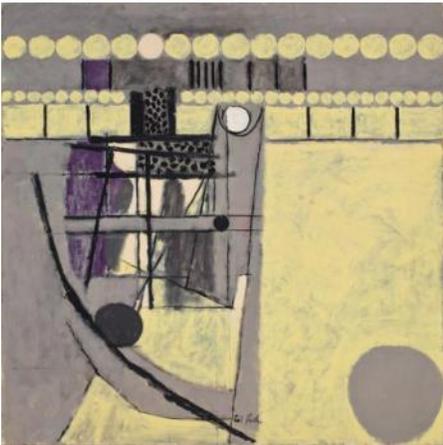


Humans love to recreate patterns! Look around your home. Common places we see man-made patterns are; in our clothes, blankets, curtains, and rugs. An artist created those patterns!

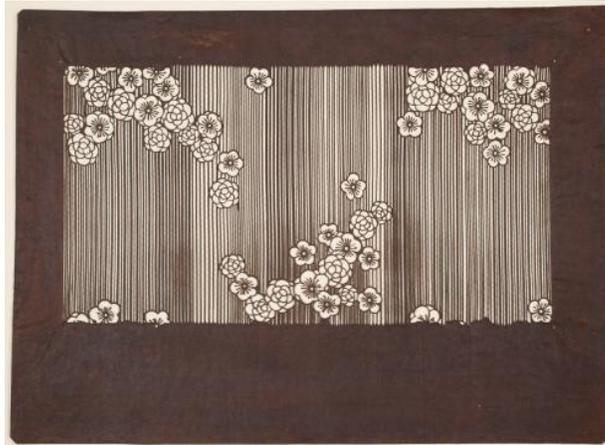
Are any of the patterns in your home inspired by nature? Sketch two of the patterns you find in the boxes below!



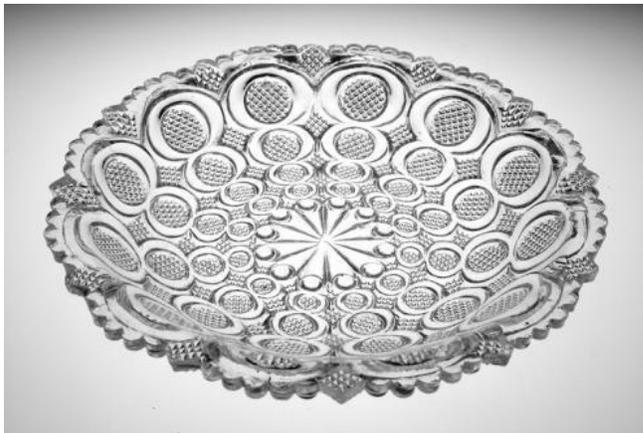
Let's look at how the artists used patterns in the artwork below. Circle the patterns in the art piece. Are any of these inspired by nature? Do these pieces use more than one pattern?



Stripes and Dots, Karl Knath, 1950-1965,
oil on canvas

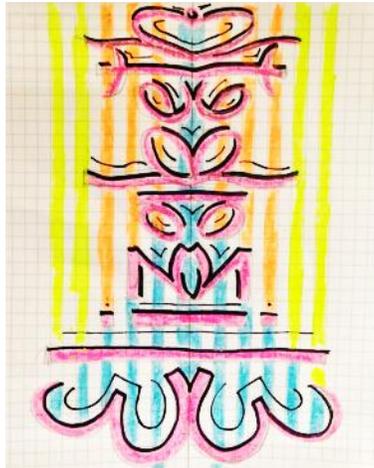


Stencil with Design of Stripes and Plum Blossoms, Japanese, late 19th c. - early 20th c., stencil cut in brown paper with thread mesh



Small Bowl with Thousand Eye Pattern
American, about 1840, pressed clear glass

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Create : Symmetrical Name Art

Let's use symmetry as our inspiration for art today!

1. Turn this page horizontally to the side and write your name in pencil on top of the darker line in the center of the grid.
2. I used the name "Elizabeth" in the example to the left.
3. Using the grid as a guide, draw out the mirrored (opposite) symmetrical image of your name on the other side of the line.
4. Then, color it and have fun adding patterns!

A large grid for student work, oriented horizontally. It consists of a central vertical line and two large rectangular areas on either side, each with a grid of small squares. This grid is intended for students to write their names and create symmetrical art.

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Just for Fun: Coloring Page

Here is a coloring page of [Zapotec Urn](#) from the Worcester Art Museum's collection! It is made of ceramic and has traces of pigment on it, meaning that it likely had color applied at one time. How will you color it?

