



EXPLORING COMPUTATIONAL THINKING WITH PATTERN RECOGNITION

Patterns are all around us. Some patterns are simple to describe—cars taking turns one by one at a stop sign—and others are more complex—the sequence of ads and posts in a social media feed. Once we start looking for patterns in the world around us, we can analyze and use these patterns to help make sense of and solve problems.

Consider Tessellations. A tessellation is an arrangement of shapes that cover a surface in a repeating pattern with no gaps. You'll often see tessellations in tile, whether in works of art, or on a bathroom floor.

But how do tessellations work? Why do some shapes fit together naturally in repetitive patterns? Let's learn more about tessellations by finding patterns.



Scan to visit the
Tessellation Creator.

GET READY: EXPLORE THE TESSELLATION CREATOR

Tessellation Creator* is an open-ended web app with regular polygons with three to 12 sides. Regular polygons are close-sided shapes that have the same side lengths and angle measures. Begin by opening the [Tessellation Creator](#).

- Refer to the instructions to learn how to use the app.
- Drag polygons onto the screen.
- Can you make a tessellation using 1 polygon? More than 1 polygon?
- Which polygon characteristics do you think determine whether a polygon tessellates or not?

ACTIVITY CARD 2





TRY IT: RECOGNIZE PATTERNS

1. Investigate which regular polygons tessellate or fill an area without gaps. Copy and extend the following table to look for patterns in shapes with three through 12 sides.

| | Number of sides and angles | Measure of each interior angle | Sum of interior angles | Does it tessellate? |
|----------|----------------------------|--------------------------------|------------------------|---------------------|
| Triangle | | | | |
| Square | | | | |
| Pentagon | | | | |

2. Look closely at your results. What do the regular polygons that tessellate have in common? Can you find any examples of this tessellating pattern in your home or community?
3. Use what you discover to plan a tessellation that uses 2 regular polygons in a repeating pattern?
4. Share what you create with others.

GO FURTHER



Explore the work of
MC Escher.

Try one of the following challenges to apply what you've learned about pattern recognition.

| Make a prediction | Investigate irregular tessellations | Explore the work of MC Escher |
|--|---|--|
| Predict whether you can make a tessellation with regular triangles and dodecagons (12 sides)? Explain why or why not? Then use Tessellation Creator* to explore. | Use what you've learned about tessellating regular tessellations to make tessellations with irregular polygons. Hint: Start with a regular hexagon and modify it into another shape that you think will tessellate. | Analyze some of the work that MC Escher did with different types of symmetry and tessellations. How might you incorporate some of his ideas into your own tessellations? |

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