Lesson 15: Symmetry

If a rigid transformation exists that takes a figure onto itself, the figure is said to have **symmetry**.

When a single reflection takes a figure onto itself, the figure has **reflection symmetry** and the line of reflection is called a **line of symmetry** of the figure.

Whenever a single rotation strictly between 0 and 360 degrees takes a figure onto itself, the figure has **rotation symmetry**.

15.2: Self Reflection

Determine all the **lines of symmetry** for the shape your teacher assigns you. Create a visual display about your shape. Include these parts in your display:

*   the name of your shape
*   **the definition of your shape**
*   drawings of each line of symmetry
*   a description in words of each line of symmetry
*   one non-example in a different color (a description and drawing of a reflection *not* over a line of symmetry)

15.3: Diabolic Diagonals

Kiran thinks both diagonals of a kite are lines of symmetry. Tyler thinks only 1 diagonal is a line of symmetry. Who is correct? Explain how you know.

Lesson 16: More Symmetry
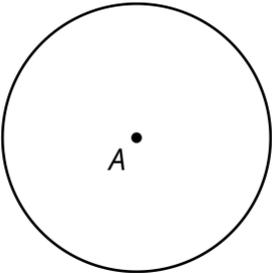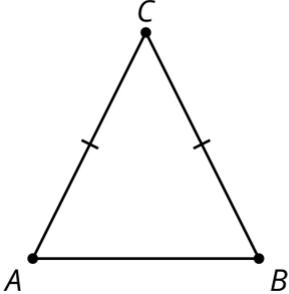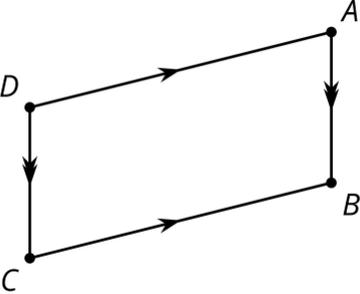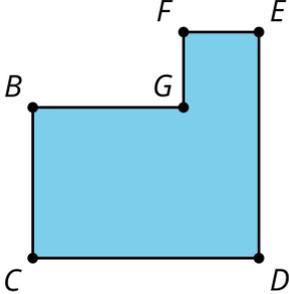
A shape has **rotation symmetry** if there is a rotation between 0 and 360 degrees that takes the shape to itself. A regular hexagon has many angles that work to create rotation symmetry.

16.1: Which One Doesn't Belong: Symmetry

Which one doesn't belong?

16.2: Self Rotation

Determine all **the angles of rotation** that create symmetry for the shape your teacher assigns you. Create a visual display about your shape. Include these parts in your display:

1. the name of your shape
2. the definition of your shape
3. drawings of each rotation that creates symmetry
4. a description in words of each rotation that creates symmetry, including the center, angle, and direction of rotation
5. one non-example (a description and drawing of a rotation that does *not* result in symmetry)

16.3: Parallelogram Symmetry

Clare says, "Last class I thought the parallelogram would have reflection symmetry. I tried using a diagonal as the line of symmetry but it didn't work. So now I'm doubting that it has rotation symmetry."

Lin says, "I thought that too at first, but now I think that a parallelogram *does* have rotation symmetry. Here, look at this."

How could Lin describe to Clare the symmetry she sees?