



Cutting Symmetric Shapes

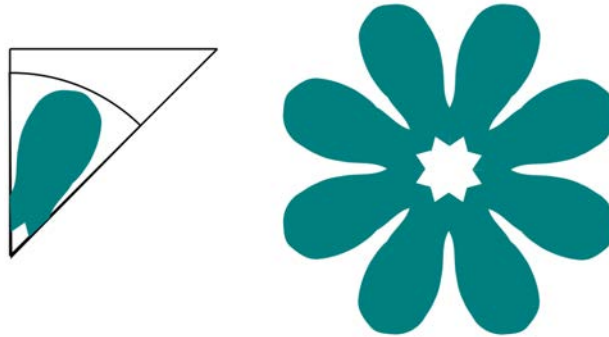
Math Symmetries

Materials: Paper, child-safe scissors

Players: 1 - whole class

Set up: Kirigami is the art of creating designs by folding a piece of paper and then cutting the paper while it is folded. There may be more than one fold, and the folds can happen in different directions.

Folding the paper once and cutting it creates a design where one side is the mirror image, or reflection, of the other. The example below has been folded three times through a central point, and then the white part cut off.



– DISCUSSION AND TIPS –

Discuss mirror symmetries. Look for things in your classroom that are symmetric about a line. Faces and bodies are easy examples, and you will find many more once your students start looking for them.

A more advanced topic is rotational symmetries about a point. The example above can be rotated by a half turn, a quarter turn, or even an eighth turn about its center and still end up with the same shape.

– VARIATIONS –

- Experiment with cutting out faces, lamps, or geometric shapes.
- Use two intersecting folds to create designs with mirror images in two directions. This makes it easy to create designs such as flowers.
- Try various folds and cuts. Create snowflake designs by starting with the same two folds as in the last example. Then use two more folds that split the folded paper into thirds.
- Make a game of this by working backwards – draw a symmetrical shape on a piece of paper and challenge each other to cut a folded piece of paper to create that shape.

