

The Shape of Things

Level E

Laurie and Kristina wanted to share a cake equally. The cake was in the shape of a regular hexagon. Kristina said, “There are two ways to cut the cake to make equal-sized pieces. Either cut from one vertex to the opposite vertex, or cut from the midpoint of one side to the midpoint of the opposite side. Those are the only two ways to make one straight cut and have two equal-sized pieces.” Laurie said, “No, there are other ways besides your two ways to make one straight cut and share the cake equally.” Who is right?

Prove your findings. If Kristina is correct, prove why the two ways work and why there are only those two ways. If Laurie is right, state the method(s) for cutting the cake equally and prove your conjecture.

Explore other regular polygon-shaped cakes. Does the method(s) used to cut a regular hexagon cake work for cutting cakes of different regular shapes? State some conjectures and justify your findings.

