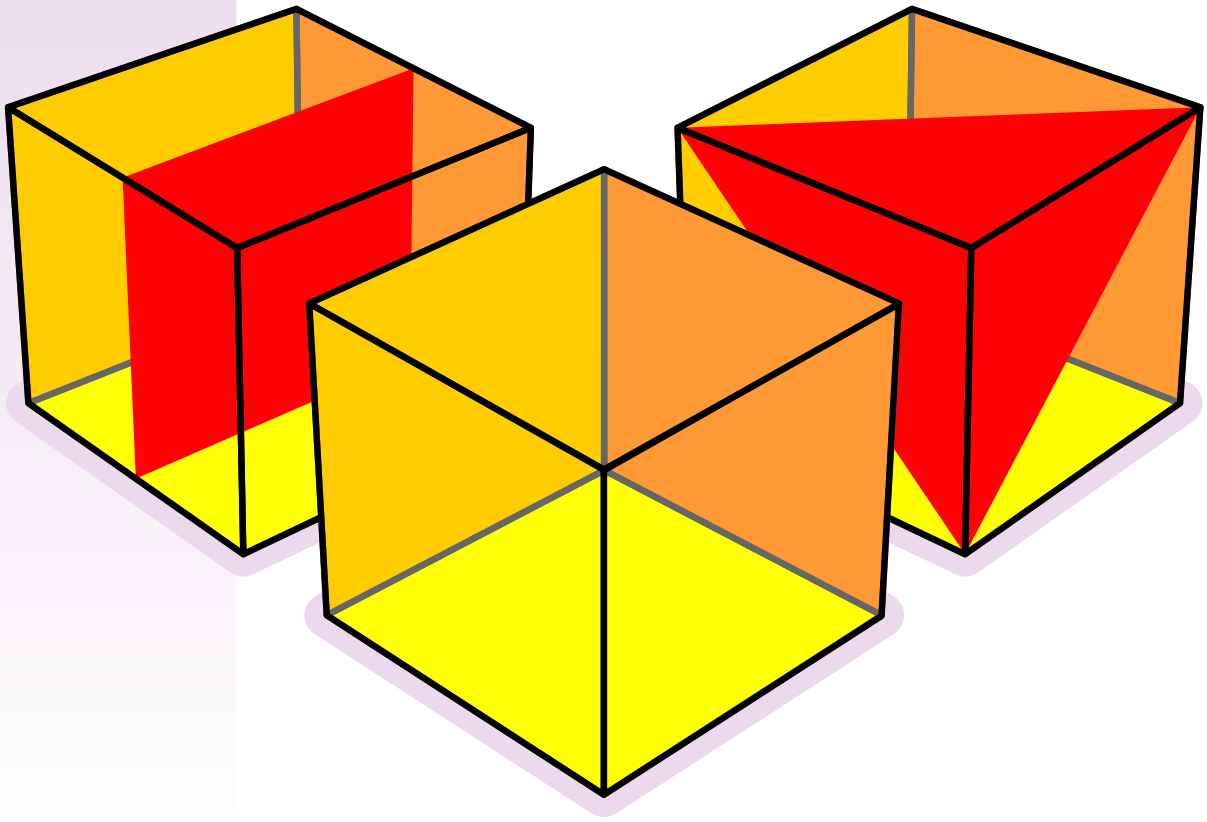
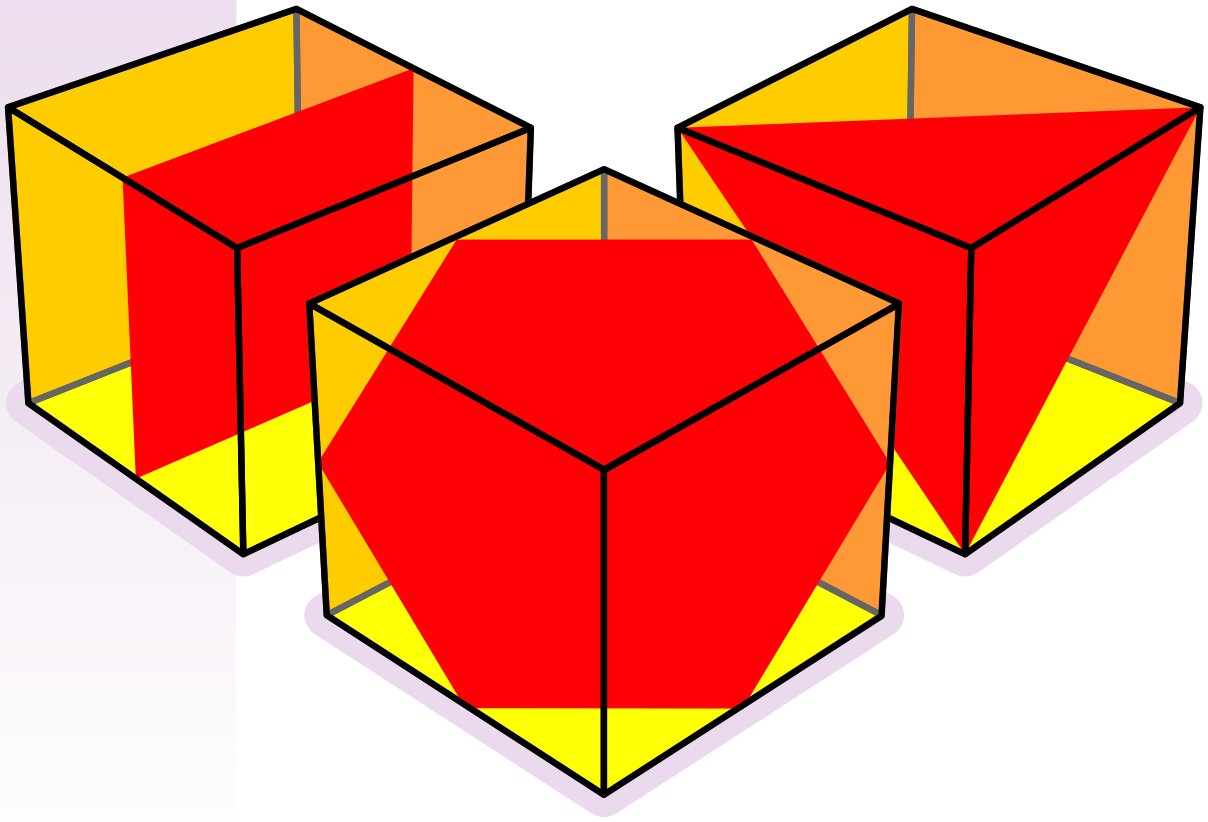


Hexagon Inside the Cube

after Martin Gardner

A plane which passes through the cube's center produces a cross section in form of a square (the leftmost cube in the illustration). A plane which passes through the three corners of the cube only produces a cross section in form of a regular triangle (the rightmost cube in the illustration).

The objective is to find the way how the plane should pass through the cube in order to produce a cross section that is a regular hexagon. If the cube's side is one unit, what is the side of the hexagon?



Hexagon Inside the Cube (solution)

A plane which passes through the midpoints of six sides of the cube as shown in the center of the illustration, produces a cross section that is a regular hexagon. Since the side of the cube is one unit, the side of the hexagon is square root of 1/2.