

2002 Sun Microsystems and TopCoder Collegiate Challenge – Problem Analysis

Cubes:

There are many ways to approach this problem. The most straight-forward is to virtually construct each cube by folding along edges. If both cutouts for a cube, compare the faces to determine if the cubes are equivalent. One way to construct each cube would be to roll a blank cube over the cutout, remembering which faces fell on each label. Because edges can be folded in either direction, it is necessary to do the procedure twice, flipping the cutout the second time.

Another is to notice that two cubes are equivalent if each face is opposite the the same other face for each cube, due to the flexibility in folding. To determine which face is opposite another, look for squares that are separated by two units vertically or horizontally which are connected by a bridge of other squares in the row or column in-between.