Help

G1 (1/1 point)

There are four positions on a ring, by following the clockwise direction $0^\circ, 90^\circ, 180^\circ, 270^\circ$. There are 2 kinds of beads available: read beads and blue beads. If each position could be sealed with just one bead, red or blue, how many different possible solutions are there?____(The ring could be rotated and flipped)

6

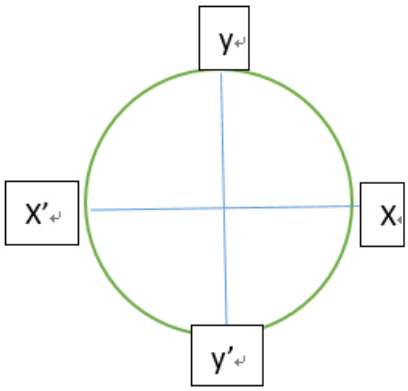
6

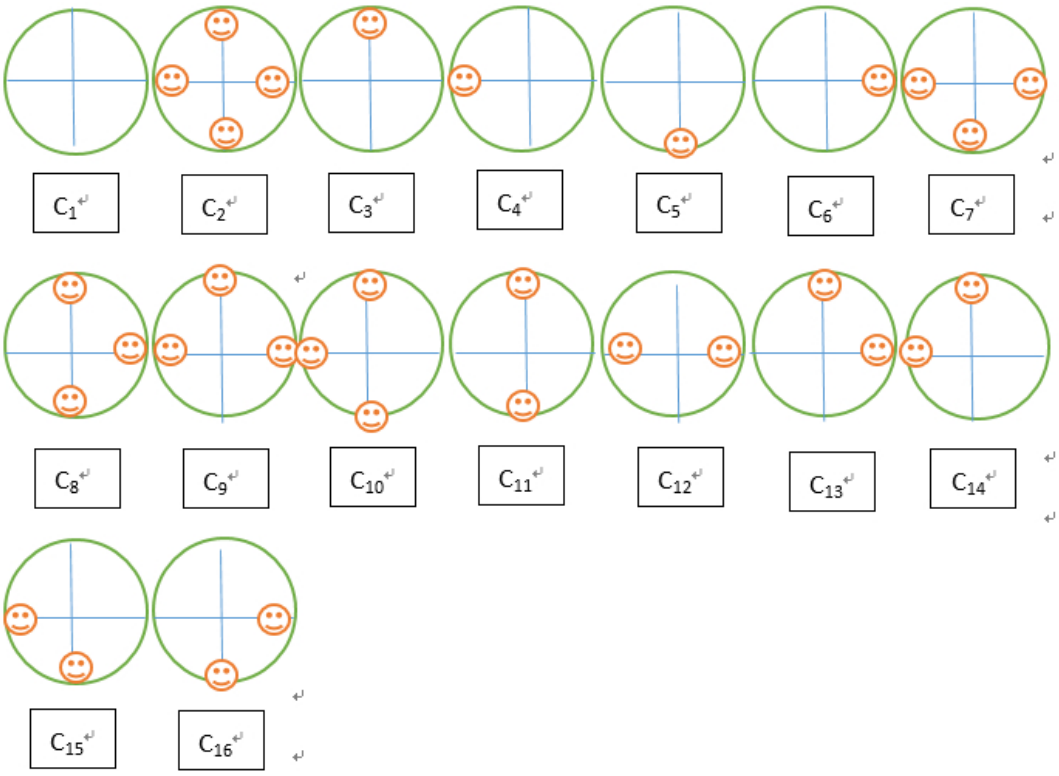
Answer: 6

EXPLANATION

In total, there are 16 selectable solutions as follow:

【Note: Smiley face means the point is filled with red bead, whereas those without a smiley face means it is filled with blue bead】





Rotation 0° as fixed permutation

p1=(c1)(c2)(c3)(c4)(c5)(c6)(c7)(c8)(c9)(c10)(c11)(c12)(c13)(c14)(c15)(c16)

Rotate 90°

p1=(c1)(c2)(c3 c4 c5 c6)(c7 c8 c9 c10)(c11 c12)(c13 c14 c15 c16)

Rotate 180°

p1=(c1)(c2)(c3 c5)(c4 c6)(c7 c9)(c8 c10)(c11)(c12)(c13 c15)(c14 c16)

rotate 270° o

p1=(c1)(c2)(c3 c6 c5 c4)(c7 c10 c9 c8)(c11 c12)(c13 c16 c15 c14)

flip along x'x axis, rotate 180°

p1=(c1)(c2)(c3 c5)(c4)(c6)(c7 c9)(c8)(c10)(c11)(c12)(c13 c16)(c14)(c15)

flip along y'y axis rotate 180°

p1=(c1)(c2)(c3)(c4 c6)(c5)(c7)(c8 c10)(c9)(c11)(c12)(c13 c14)(c15 c16)

flip along upper right diagonal line rotate 180°

p1=(c1)(c2)(c3 c6)(c4 c5)(c7 c10)(c8 c9)(c11 c12)(c13)(c15)(c14 c16)

flip along lower left diagonal line rotate 180°

p1=(c1)(c2)(c3 c4)(c5 c6)(c7 c8)(c9 c10)(c11 c12)(c13 c15)(c14)(c16)

According Burnside formula, different equivalence class is:

$$l = \frac{1}{8} \times (16 + 2 + 4 + 2 + 8 + 8 + 4 + 4) = 6$$

Check | Save | Hide Answer | *You have used 1 of 3 submissions*

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