

The Orb



a.k.a. *Orb-It, l'ORBS*

Patented by C. Wiggs and C. Taylor 1985, made by Parker Brothers.
(plastic, 3.5 inches)

When solved, the north pole ring has 8 yellow, the upper equator 20 green, the lower equator 20 red, and the south pole 8 blue beads. The puzzle can twist in 45 degree increments. The 45 (also -45, 135, and -135) degree rotations give one continuous loop along which all beads can rotate; fun, but the beads are hard to move this way, and it is not needed to solve the puzzle. A 90 (and -90) degree rotation creates two cycles of 28 beads that connect halves of the pole and equator rings. The 180 degree rotation joins opposite halves of the pole and equator rings.



Based on the observation that incorrect beads always occur in multiples of 2, a simple solution, which is presented on *Jaap's Page*, works in three steps:

1. Use 90 deg. twists to get yellow/blue to poles, green/red to equator.
2. Use 180 degree twists to get north yellow, south blue.
3. Use 180 degree twists to get upper equator green, lower equator red.

Steps 2 and 3 are easy; place one incorrect bead in each ring on opposite sides of the twist line, and then twist, rotate, twist, and repeat as needed. For step 1, a 90 degree twist followed by a rotation by one bead moves two beads from the poles to the equator and vice-versa. So first select an incorrect bead on each ring; if there are incorrect beads on only one pole or one equator ring, first use the ideas of Steps 2 and 3 to get at least one incorrect bead on each ring. Next, place the north pole incorrect bead next to the line on the left hemisphere, the upper equator incorrect bead next to the line on the right hemisphere, the lower equator incorrect bead next to the line in the rear on the right hemisphere, and the south pole incorrect bead next to the line in the rear on the left hemisphere. Then twist 90 degrees, rotate the vertical cycle counter clockwise one bead, and twist back. Repeat as needed.

Further reading:

Jaap's Page, from: <http://www.geocities.com/jaapsch/puzzles/orb.htm>

Wiggs Patent, from: www.uspto.gov - patent no. 4,553,754