Infinity Bead
a hollow see-through beaded bead

an original technique by
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Materials
A large (30mm) Infinity Dodecahedron uses
Size 6/0 seed beads colors A [30]
Size 8/0 seed beads colors A [120], B [60], C* [60]
10mm to 14mm rattle bead (optional)
6.5 feet Nymo nylon beading thread, size D
Beading needle, size 10

A large Infinity Cube uses
Size 6/0 seed beads colors A [30]
Size 8/0 seed beads colors A [120], B [60], C* [60]
4.5 feet Nymo nylon beading thread, size D
Beading needle, size 10

*The Puzzle Kit has the C beads divided into five different colors. It has enough beads to make a large dodecahedron and cube as in these photos.

Dodecahedron: Five Coloring
You can color the 20 vertices of a dodecahedron with 5 colors so that every hole (face) shows all 5 colors. This coloring gives $12/5 = 4$ vertices of each color. These 4 vertices are equally spaced around the dodecahedron, and if you imagine lines connecting them, you would have a regular tetrahedron in each color.

Cube: Four Coloring
You can color the 8 vertices of a cube with 4 colors so that every hole (face) shows all 4 colors. This coloring gives $8/4 = 2$ vertices of each color. These 2 vertices will be at opposite ends of the cube.

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The Infinity Dodecahedron
Start with two sizes of seed beads (large and small in color A).

1. Thread your needle. * Pick up
   • 1 large bead (Bead 1),
   • 2 small beads (color A).
Repeat from * 4 more times (5 times total) to add a total of 15 beads.

2. Sew through all 15 beads again, in the same direction, to make a ring, and slide the ring down leaving a 8 inch tail that you will later weave into the bead work. Tie a square knot with the working end and the loose end of the thread, but as you tighten the knot, be careful to leave a little bit of slack in the ring to keep it flexible. Sew through Bead 1.

For the rest of the project, keep the tension tight enough to pick up slack, but loose enough to keep the bead work flexible.

3. To make the second ring, * pick up
   • 2 small beads,
   • 1 large bead (Bead 6).
Repeat from * 3 more times. Then pick up
   • 2 small beads.
Sew through Bead 1 from the side with the tail to complete Ring 2.

4. Continue sewing around Ring 2 until you exit the first large bead (Bead 6). Ring 3 will take two stitches to complete. *Pick up
   • 2 small beads,
   • 1 large bead (Bead 10).
Repeat from * 2 more times (3 times total). Then pick up
   • 2 small beads.
You should have 11 beads as in Figure 4. Sew through Bead 2 towards Bead 6. Pull any slack in the thread.

5. To complete Ring 3, pick up
   • 2 small beads.
Sew through Bead 6 to make a ring, Weave through two small seed beads and Bead 10. Pull any slack in the thread. See Figure 5 and Photo 5. Notice how the three rings connect only at the larger beads. All 12 rings on the Infinity Bead will have 5 large beads and 10 small beads and two adjacent rings will connect only at the larger beads.
6. Flip the bead work over, and repeat Steps 4 and 5 until you have 8 rings.

7. Position your needle by sewing around Ring 8 through 2 small beads, Bead 26, 2 small beads, and Bead 27. Ring 9 will take four stitches to complete. Pick up
   • 2 small beads,
   Sew through bead 21. Pick up
   • 2 small beads.
   Sew through Bead 15. Pick up
   • 2 small beads.
   Sew through Bead 8.

8. Pick up
   • 2 small beads,
   • 1 large bead (Bead 28),
   • 2 small beads.
   Sew through Bead 27. Do not pull the thread tight.

9. Position your needle by sewing though the beads you added in Steps 9 and 10 (and the large beads), stopping just after you sew through Bead 28. See Figure 11 and Photo 11.

10. As you pull the thread tight, the bead work will begin to curl into a cup.
11. Position the bead work so that it is a cup (rather than a mountain) and the single ring with Bead 4 is pointing towards you like in the photos and figure. Ring 10 will take four stitches to complete. Pick up
  • 2 small beads.
Sew away from you through Bead 26 in the adjacent ring. Pick up
  • 2 small beads,
  • 1 large bead (Bead 29),
  • 2 small beads.
Sew away from you through Bead 5. Do not pull the thread tight.

12. To complete Ring 10, pick up
  • 2 small beads.
Sew through bead 9. Pick up
  • 2 small beads.
Sew through Bead 28. To position your needle, sew through 2 small beads, Bead 26, 2 small beads, and Bead 25.

13. Pull the thread tight and see how the bead work curls into a cup. Orient your cup of beads so that the rim faces towards you and the bead you are exiting (Bead 25) is on the top right. All of the beads in Figures 13 are on the cup rim.

14. Ring 11 will take four stitches to complete. Pick up
  • 2 small beads.
Sew counter clockwise through Bead 23. Pick up
  • 2 small beads,
  • 1 large bead (Bead 30),
  • 2 small beads.
Sew counter clockwise, across the cup, through Bead 4. Pick up
  • 2 small beads.
Sew counter clockwise through Bead 29. Pick up
  • 2 small beads.
Sew counter clockwise through Bead 25. Pull the thread tight. The beadwork now resembles a squishy ball of beads, hollow with one large hole where we weave the final ring, Ring 12.
15. Position your needle by sewing through 2 small beads in Ring 11, Bead 23, 2 small beads, and Bead 24.

Optional: Drop a rattle bead or other precious object into the cup. The holes will get a little smaller as you add more beads. As long as the rattle bead is at least close to not falling out, it should stay trapped later.

16. The final ring, Ring 12, will take five stitches to complete. Pick up
   • 2 small beads.
   Sew through Bead 18. Pick up
   • 2 small beads.
   Sew through Bead 12. Pick up
   • 2 small beads.
   Sew through Bead 3. Pick up
   • 2 small beads.
   Sew through Bead 30. Pick up
   • 2 small beads.
   Sew through Bead 24. Pull the thread tight. Continue sewing counter clockwise half way around Ring 12 to tighten it.

17. Check your work. Around your beadwork, you should see 5-pointed stars. Notice how each 5-pointed star is composed of 1 pentagon and 5 triangles. You should have 12 pentagons and 20 triangles total.

The Outside Layer

18. So far, you have added the large (Lg) beads and the small color A beads. In the next steps, you will be adding small beads in colors B and C by sewing first through the Lg beads, and later through the color B beads until all 20 triangles look like Figure 18.
19. Exit any large bead (call it Bead 1) and orient your beadwork so that the thread is pointing away from you (up) as it exits Bead 1. Pick up
• 1 small color B bead,
• 1 small color C bead,
• 1 small color B bead.
Sew through one of the large beads in the same triangle as Bead 1. You have 2 choices about which large bead to sew through, either Bead 2 or 2*.

Pick up 3 small beads (BCB) as above, and sew through one large bead in the same triangle as Bead 2. Again, you have two choices, either Bead 3 or 3*. Figure 19 shows the thread passing through Bead 3. Photo 19A shows these first 2 stitches (Bead 1 is at 5:00).

Continue picking up 3 small beads (BCB) and sew through one of the large beads in the same triangle. Meander over the surface of your bead work, through Beads 4, 5, 6, … planning ahead so that you do not sew towards a triangle where you have already added beads (BCB). For example, Figure 19 show that when exiting Bead 7, you could sew through Bead 8 or Bead 8*, but Bead 8 is a better choice.

When you are forced to enter a triangle that already has outer layer beads (as in Photo 19C), go to Step 20. At this point, your bead work won’t hold its shape. From this point on, use fairly tight tension as you weave.

Aside: You can use Infinity Weave to make any convex polyhedron in which every vertex has valence three, such as the truncated rhombic dodecahedron shown in the three photos below.
20. Once you are forced to enter a triangle with outer layer beads (BCB) added, there are 2 possibilities for how this can happen. Both are shown in Figure 20: either entering Bead 1 or Bead 9. What is most likely, is you will sew through a bead like Bead 9, where there is no outer layer bead added directly after Bead 9. In this case, pick up
• 1 small color B bead,
• 1 small color C bead.
You have two choices for which direction to sew, either towards Bead 5 or 6. Figure 20 shows sewing towards Bead 5. In either case, you will need to sew through 3 beads: 1 small color C bead, 1 large bead, 1 small color C bead. See also the upper middle triangle in Photo 20.

If there is a small outer layer bead directly after the large bead, as with Bead 1 in Figure 22, sew through the large bead and the small bead directly after it. Pick up
• 1 small color C bead,
• 1 small color B bead.
Then, you only have 1 choice for which direction to sew: into the large bead that you have not yet passed through, as Bead 2* in Figure 20.

Repeat Step 20 several times. Eventually you will enter the beads in a triangle where only one color C bead needs to be added, as in Photo 20. Go to Step 21.

21. From Bead 2*, sew through the small color B bead right after it, and pick up
• 1 small color C bead.
Sew through the small color B bead and Bead 2. The outer layer of beads should lie neatly over the inner layer. You are finished when all triangles look like Figure 18. Repeat Steps 19 to 21 as many times as needed to complete each triangle, tightening as you sew.

22. If any your Infinity Bead is squishy and needs tightening, weave through the outer layer of beads (Lg, B, C) tightening as you go. Complete the beaded bead by tying two half hitch knots in the same spot. Then weave the thread through a few more beads, and cut all of the thread ends close to the beads. Finish off the second end in this same way.