Making Granny's Double Torus
Supplement to *Eight Heptagons: The Double Torus Revisited*
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These are crochet and assembly instructions for *Granny's Double Torus*, a double torus composed of seven granny heptagons sewn together so that each heptagon is connected to all the others. The crochet pattern below uses American crochet terminology as follows.

ch = chain
st = stitch
sl st = slip stitch
dc = double crochet

Each heptagon has one right angle (at the first corner you crochet) and six 120° angles. If you crochet it properly, it will not lie flat.

Every round begins in the middle of an edge. In the interest of full disclosure, I actually did ch 2 in place of the first dc instead of ch 3 as written here, but I do that for all my crochet even though the convention is to start with ch 3.

You can work in whatever gauge you prefer, and make as many rounds as you like for smaller or larger granny motifs.

Pattern

Foundation ring: ch 5, sl st to close round.

For the first round, all dc are into the center of the foundation ring.
Round 1: ch 3 (counts as first dc), dc, ch 2; * dc 3, ch 1; repeat from * five more times; dc, sl st to close round.

Round 2: ch 3 (counts as first dc), dc into first dc of previous round; (dc 2, ch 2, dc 2) into ch 2 space; dc in each st for next 2 dc, ch 1; * (dc 2, ch 1, dc 2) into next ch space, ch1; repeat from * five more times; sl st to close round.

Round 3: ch 3 (counts as first dc), dc into first 3 dc of previous round; (dc 2, ch 2, dc 2) into ch 2 space; dc in each st for next 4 dc, dc into next ch space, ch 1; * (dc 2, ch 1, dc 2) into next ch space, ch 1, dc 3 into next ch space, ch 1; repeat from * four more times; (dc 2, ch 1, dc 2) into next ch space, ch 1, dc into next ch space, sl st to close round.

Round 4: ch 3 (counts as first dc), dc into first 5 dc of previous round; (dc 2, ch 2, dc 2) into ch 2 space; dc in each st for next 6 dc, ch1, dc 3 into next ch space, ch 1; * (dc 2, ch 1, dc 2) into next ch space, ch 1, ** dc 3 into next ch space, ch 1; repeat from ** once more; repeat from * four more times; (dc 2, ch 1, dc 2) into next ch space, ch 1, dc 3 into next ch space, ch 1, sl st to close round.
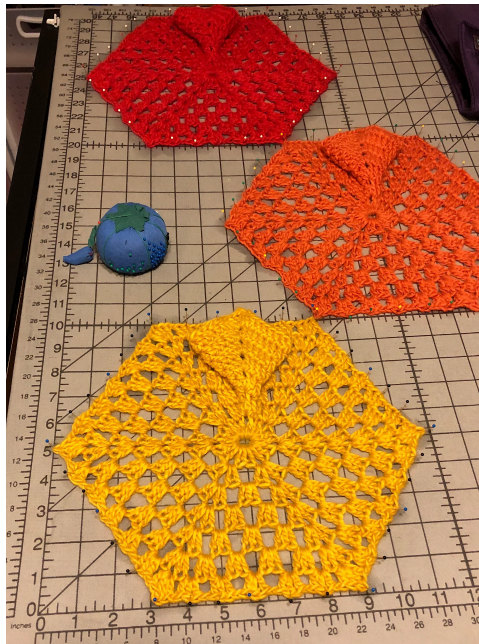
Round 5: ch 3 (counts as first dc), dc into first 7 dc of previous round; (dc 2, ch 2, dc 2) into ch 2 space; dc in each st for next 8 dc, dc into next ch space, ch 1, dc 3 into next ch space, ch 1; * (dc 2, ch 1, dc 2) into next ch space, ch 1,** dc 3 into next ch space, ch 1; repeat from ** twice more; repeat from * four more times; (dc 2, ch 1, dc 2) into next ch space, ch 1, dc 3 into next ch space, ch 1, dc into next ch space, sl st to close round.

Round 6: ch 3 (counts as first dc), dc into first 9 dc of previous round; (dc 2, ch 2, dc 2) into ch 2 space; dc in each st for next 10 dc, ch1, dc 3 into next ch space, ch 1, dc 3 into next ch space, ch 1, * (dc 2, ch 1, dc 2) into next ch space, ch 1, ** dc 3 into next ch space, ch 1; repeat from ** three more times; repeat from * four more times; (dc 2, ch 1, dc 2) into next ch space, ch 1, dc 3 into next ch space, ch 1, dc 3 into next ch space, ch 1, sl st to close round.

Round 7: ch 3 (counts as first dc), dc into first 11 dc of previous round; (dc 2, ch 2, dc 2) into ch 2 space; dc in each st for next 12 dc, dc into next ch space, ch 1, dc 3 into next ch space, ch 1, dc 3 into next ch space, ch 1; * (dc 2, ch 1, dc 2) into next ch space, ch 1,** dc 3 into next ch space, ch 1; repeat from ** four more times; repeat from * four more times; (dc 2, ch 1, dc 2) into next ch space, ch 1, dc 3 into next ch space, ch 1, dc 3 into next ch space, ch 1, dc into next ch space, sl st to close round. Fasten off and cut yarn.

Blocking

I recommend wet blocking the motifs before assembly. Pin them as shown in the picture below to get the 120° angles.

Since the 90° corner is surrounded by more solid crochet, it is not as critical to pin it to shape. However, if you want to gild the lily and avoid undue creasing by the right angle, you can take the motifs when they are still a little damp, turn them over, and pin out the right angle as shown below.

Assembly

Here is a schematic to show how the different heptagons are attached. In practice, it is tricky to get everything sewn together as required. In the pictures that follow, you can see how to achieve this step by step. The white heptagon is marked in light grey.

Stitch all the edges together with mattress stitch; insert the needle into each edge stitch as shown below. If possible, try to catch only the center of the outermost loop in each stitch. It is better to stitch the edges together with the right sides of the crochet facing up, but in a few cases it will be easier to stitch from the wrong sides. Always use the color of one of the edges you are sewing together so that you can weave in the ends inconspicuously. Weave the ends in as you go so that you can weave all but the last few into the wrong side.

In order to prevent twisting the faces in the wrong way, it is important to use the fact that when it is complete, the double torus will have only the right sides of the crochet showing. Be careful to always sew pieces together so that the sides that are facing up are either both the right sides or both the wrong sides. For reference, the green heptagon below is right side up, and the blue heptagon is wrong side up.

Start by sewing the right angle corners of the red, orange, yellow, and white motifs together as in the schematic.
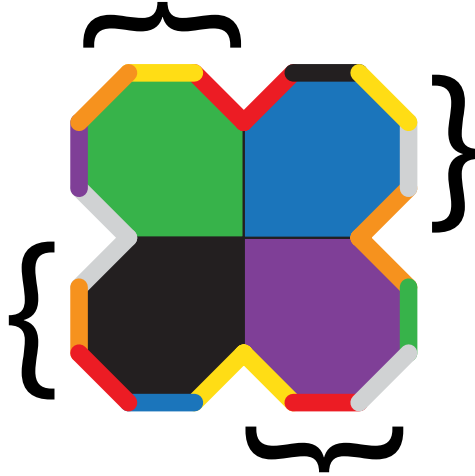

Turn this block so the wrong side is facing up. Fold the orange and white pieces over to sew them together, being careful to connect the edges indicated by the schematic.

Fold over the red and yellow and sew the corresponding edges together.

For the next couple of steps, you will be focusing on the following parts of the assembly schematic to attach the remaining four heptagons in the right locations. Check carefully that you have the right angle of each new face in the correct position relative to the edges you attach.

Sew in the blue and black heptagons. You will be attaching three edges of each to the assembled block.

Now sew in the green and purple heptagons.

Turn the piece inside out to put the original four-color corner into the middle layer.

This places the unsewn edges in a position (above right) that allows you to pull together a five-edge seam on either side as shown below. The top edge of the seam is blue, orange, and three edges of green; the bottom edge is three edges of purple, white, and black. The seam should begin and end at right-angle vertices.

Invert the crochet so that the red/orange/yellow/white corner is on the outside again with the right side showing.

With that corner on the bottom, you can fold and twist the two open ends to bring the right angle vertices together with the right sides up. Sew the adjacent edges together.

Now there are three edges left to sew together. By turning the top layer over, you can expose these edges and finish the assembly. In the photo below, the top edges are red, blue, and blue and the bottom edges are black, black, and yellow.

Congratulations! You have made the double torus. Granny is proud of you!