

Knitting Pattern

This part of the structure represents a metal atom surrounded by six oxygen atoms. The oxygen atoms form an octahedron shape around the metal. This can get confusing when there are a lot of these in one diagram so they can be drawn as a solid-sided shape to make the structure clearer (Figure 1).

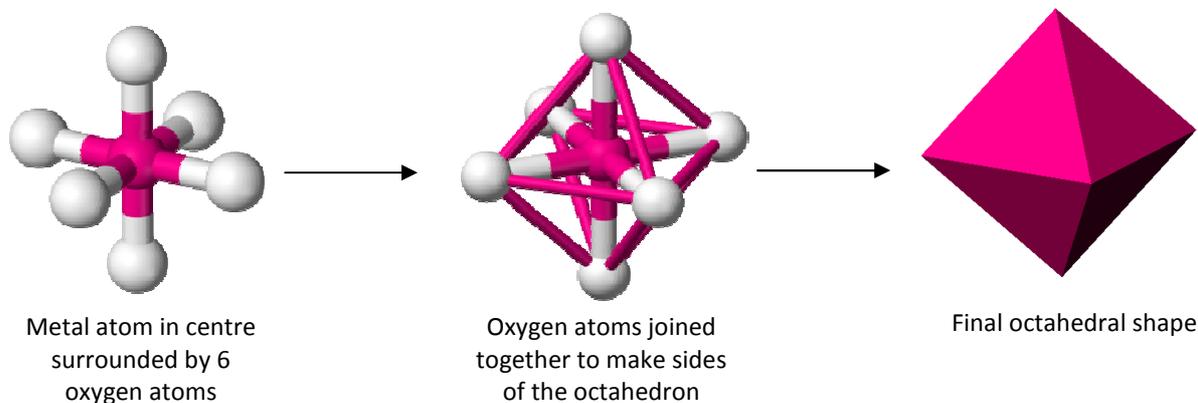


Figure 1 The origin of the octahedral shape

This pattern produces one octahedron in the solid-sided style.

You will need:

- Light worsted/double knit weight yarn in a blue shade from the spectrum below:



- 4.5mm knitting needles (UK and US size 7)
- Toy stuffing
- Darning needle for sewing pieces together
- Sewing needle and small amount of sewing thread in similar colour as yarn
- Small amount of cardboard to support the sides of the shape – from an old box is perfect – you will need 8 triangles slightly smaller than the final triangle pieces

Abbreviations:

k = knit

p = purl

m1 = make one stitch

(x) = number of stitches in the row

Stitch Gauge:

10 stitches = 3.5 cm (just under 3 stitches per cm)

2 rows = 1cm

If your work is coming up larger try reducing the weight of the yarn or using smaller needles. If it is smaller, use thicker yarn or larger needles

Make 8 triangles using this pattern:

Each triangle should end up being around 7-8cm long along each of the edges.

Cast on 2 (2)

Row 1: k2 (2)

Row 2: p2 (2)

Row 3: k1 m1 m1 k1 (4)

Row 4: p4 (4)

Row 5: k1 m1 k2 m1 k1 (6)

Row 6: p6 (6)
 Row 7: k1 m1 k4 m1 k1 (8)
 Row 8: p8 (8)
 Row 9: k1 m1 k6 m1 k1 (10)
 Row 10: p10
 Row 11: k1 m1 k8 m1 k1 (12)
 Row 12: p12
 Row 13: k1 m1 k10 m1 k1 (14)
 Row 14: p14
 Row 15: k1 m1 k12 m1 k1 (16)
 Row 16: p16
 Row 17: k1 m1 k14 m1 k1 (18)
 Row 18: p18
 Row 19: k1 m1 k16 m1 k1 (20)
 Row 20: p20
 Cast off purl-wise leaving a tail of yarn to sew pieces together with.

Construction:

1. Cut small triangles of cardboard to fit into the inside of each of the knitted triangles. This will prevent the shape from bowing out when it is stuffed.
2. Tack a cardboard triangle to the inside of each of the knitted triangles using the sewing thread (Figure 2). It is only necessary to tack the triangle at each corner as it just holds the card in place while you sew the shape together and stuff it.

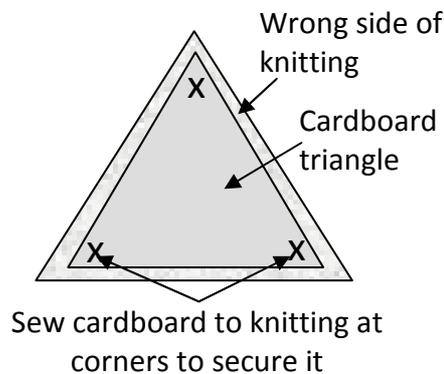


Figure 2 Attaching a cardboard support to the inside of a knitted triangle

3. Sew 4 triangles together along the edges (see Figure 3) to create the top half of the shape.

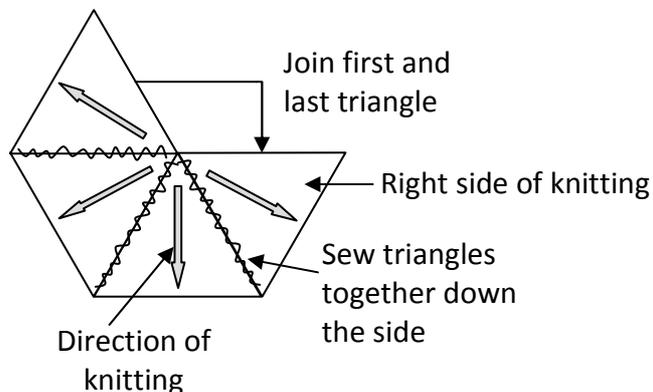


Figure 3 Sewing together 4 triangles to form one half of the octahedron shape. Sew sides together so that the stitches are on the outside of the shape – this will give it a nicely defined edge.

4. Repeat with the remaining 4 triangles to create the bottom half of the shape. When sewing the knitted triangles together, create defined edges by sewing the pieces wrong side together with the joining stitches on the outside of the piece.
5. Sew the top and bottom parts of the octahedron together around the middle. Leave a gap to allow stuffing of the shape.
6. Stuff it firmly with toy filling making sure that the cardboard triangles are in place on the inside of the faces of the shape to give flat faces when the shape is stuffed. The piece should end up about 10cm across and 10cm tall.
7. When the shape is stuffed, sew up the gap and weave in the ends of the yarn to finish.

It should look something like this:



↑
Around 10cm tall
and wide.

In order to keep its
shape it needs to be
stuffed quite firmly.
The card will help it
hold its shape
↓

For more instructions, help and photos, visit www.surrey.ac.uk/chemistry/perovskite or find us on facebook at www.facebook.com/ThePerovskiteProject.