

Honeycomb Structure Algorithm

A grid of hexagons is a common structure—used by bees and wasps to make their hives, and as the “filler” inside every 3D printed—because it can distribute and withstand forces equally from any point on all sides. 3D printers are robots that create structures based on algorithms. Scientists believe that bees, too, use natural algorithms built into their tiny brains to build their hives. After all, no one has ever seen a bee with a blueprint!

Try following the loops of this algorithm to draw a honeycomb on a separate piece of paper.

1. Place ruler flat on page.
2. Holding your pencil, place it tip down on the page next to the ruler.
3. **WHILE:** pencil and ruler are on page
 - I. Draw 5cm straight line along ruler.
 - II. **FOR** 5 repeats
 - i. Turn ruler clockwise 120 degrees
 - ii. Draw 5cm straight line along ruler.
 - III. **FOR** 5 repeats
 - i. Turn ruler counter clockwise 120 degrees
 - ii. Draw 5cm straight line along ruler.

Challenge: can you modify this algorithm to more efficiently fill the whole page? Write your new algorithm here, then try it on a separate piece of paper.