# RAM MATHS CIRCLE - BANGALORE

## Session 3 and 4

**Agastya Gurukulam** **September 6th, 2026**

## Pentominoes

Pentominoes are shapes obtained by joining five squares. The squares must be joined along the edges entirely. Here is one example of a pentomino.



The edges should not be joined partially and the squares should not be joined only at the corners. The following two ways of joining are not allowed.



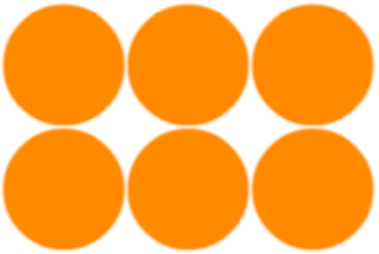
**Challenge 1:** Find all the possible pentominoes. We will consider two pentominoes to be identical if one is a rotation or reflection of the other.

**Challenge 2:** Make a rectangle using all the pentominoes.

**Challenge 3:** Make three different rectangles (other than the solution to the previous question) using all the pentominoes. That is, make rectangles of different length and Breadth.

It is possible to cover a plane using a single shape repeatedly. For example, we can tile a plane using only squares, or rectangles. But we cannot tile a plane using only circles.





**Challenge 4:** Show that each pentomino can tile the plane.

RAM MATHS CIRCLE