Consider all rectangles with all corners on gridpoints on an $n \times m$ grid.

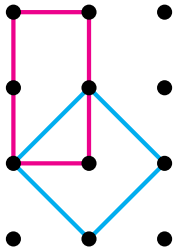

Figure 1: An example of two rectangles with all corners on gridpoints of a 3×4 grid.

Question. How many such rectangles exist?

Related.

1. How many squares exist? Rhombuses? Parallelograms? Kites? Quadrilaterals?
2. How many right triangles?
3. What if this is done on an $n \times m \times k$ grid?
4. What if the rectangles must be diagonal?
5. What if this is done on a triangular lattice?
6. How many tetrahedra are in an n-sided tetrahedra?

References.

Problem 1.

`https://oeis.org/A000332`

`http://people.missouristate.edu/lesreid/POW03_01.html`