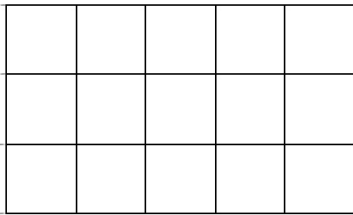


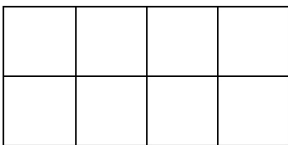


## LATTICE POINTS

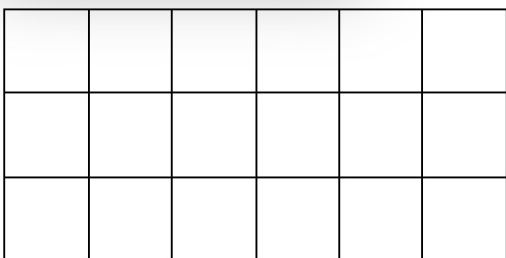
5 by 3



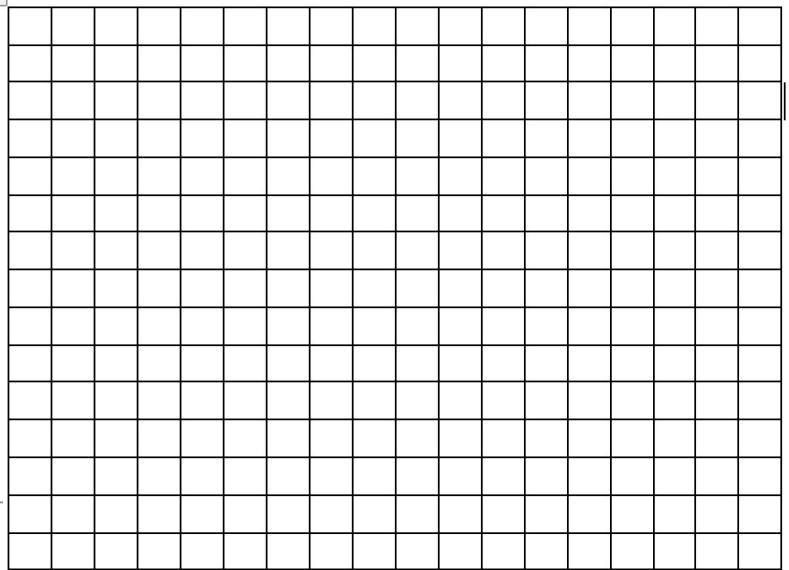
4 by 2



6 by 3



Lattice points are the intersections of the grid lines. 18 by 15



**FOR YOUNGER LEARNERS** - Draw in diagonal lines corner to corner on these 4 grids. How many lattice points do your lines go through?

Draw another grid. Draw in the diagonal.  
How many lattice points do your lines go through?

Draw more grids. Before you draw the diagonals, can you predict how many lattice points they will go through? How do you know?

**FOR OLDER LEARNERS** - A point whose  $x$ - and  $y$ -coordinates are both whole numbers is called a lattice point.

How many lattice points are there in the first quadrant (where both  $x$  and  $y$  coordinates are positive) that lie on the line  $3x + 4y = 59$ ?

Find these points by different methods. How many methods can you find?

## HELP

Carefully plot the graph of  $3x + 4y = 59$ .

One possible method is to find and join the intercepts with the  $x$ -axis and  $y$ -axis.

Notice that, when  $x = 0$ ,  $y = 59/4 = 14\frac{3}{4}$  and when  $y = 0$ ,  $x = 19\frac{2}{3}$ .

These are not lattice points but they can be plotted and joined to give the straight line graph.

Then the lattice points can be read from the graph and checked numerically.

When you have found the lattice points by this method try to find an alternative method.

## NEXT

Find at least two methods (there are 4 different methods).

Say which you think is the best method and why.

Use that method to find the lattice points in the first quadrant for  $2x + 5y = 52$ ?

Write a list of instructions for another learner to follow to use that same method for **other** examples.

