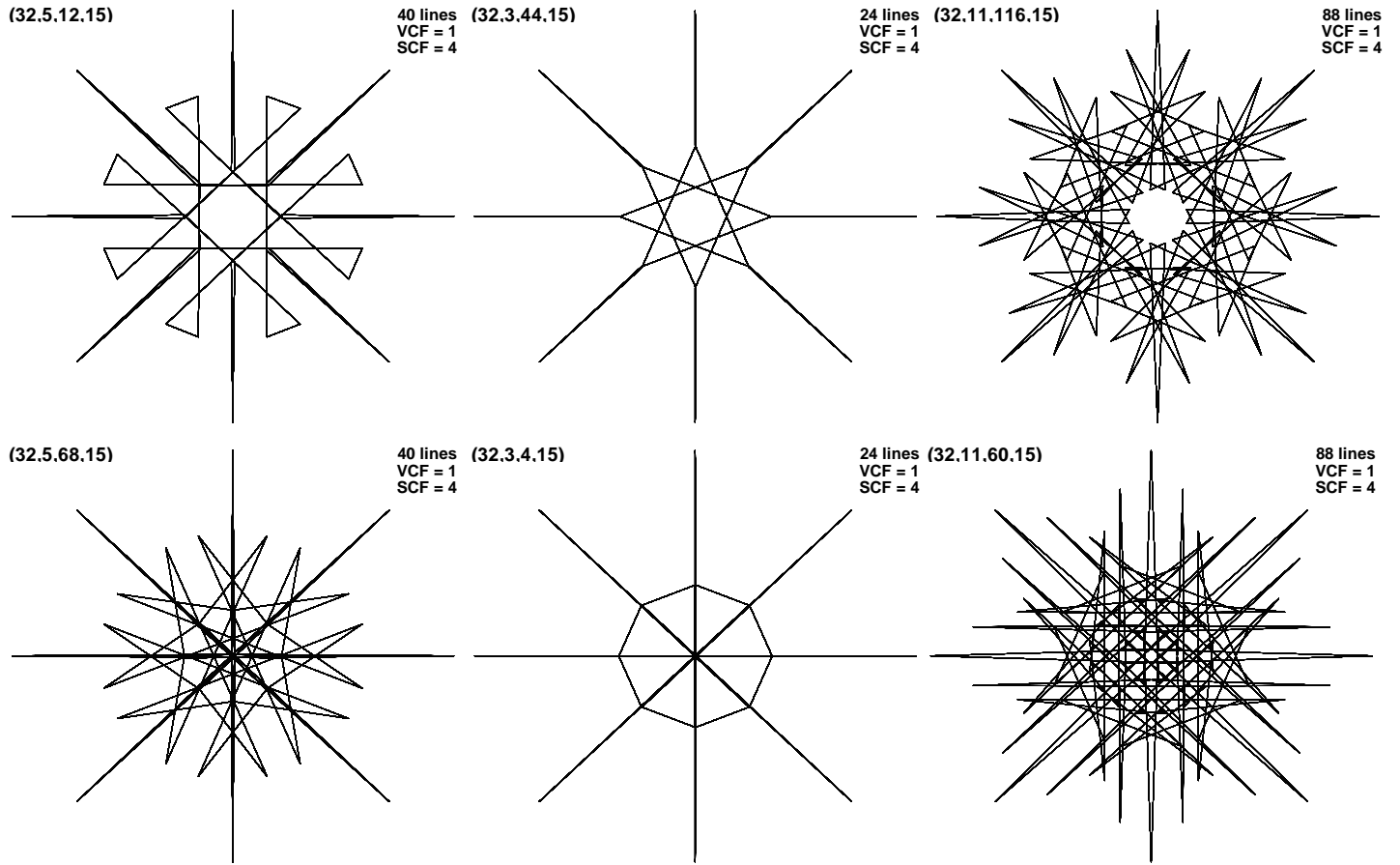


Points of a Compass

By varying n , the $S = 5$ rules from the [previous section](#) produce images that look like the face of a compass. These are shown in the left column, the other four images have the same 8 way rotational symmetry. All images in the 2x3 array have $n = 32$, $J = 15$ and SCF = 4. S varies by column and donut hole varies by row, with open at top and closed at bottom.



Everyone can, of course, have their preferred version (and it might not be one of these six), but the simplicity of the upper left is worth mentioning because it conforms to often used terminology for points of a compass. Using 8ths for directions is very common (like *north-east*), but you will often hear terms such as “*north north-east*” and that is midway between north (vertex 0) and the next needle at vertex 4 (north-east) so these eight 16ths are the paddles between the eight needles. One final thing to note is that the upper right looks a lot like a spinning needle star, [E11.8.1](#), but it is not because the first cycle, [E5.2](#), ends at the SE vertex 12, the third major point from the top.

The last three images maintain 8 degrees of rotational symmetry as n varies by varying SCF given $S = 7$ and $J = n/2 - 1$. Each has 56 lines. The first and third are NOT sharpest central needles but they do have pleasing sub-images at the 16ths.

