

## Intertwined 6,2-Stars Challenge Questions

Below is the vertex frame for the sequence of intertwined 6,2-stars  $(36,41,1,J(11,19,23,13))$ . There are quite clearly lots of equilateral triangles and 6,2-stars in the image, the question is how many?

**Define:** A *regular 6,2-star* is one in which all 12 sides are the same size.

Note that a regular 6,2-star surrounds a regular hexagon with sides the same size as the sides of the star.

For example, the middle of the image (where there are three sets of parallel lines intersecting around the center) has a total of 8 equilateral triangles (six small, and two a bit larger using those six as endpoints) and one regular 6,2-star with a point midway between vertices 0 and 5 with hexagon at the center.

This suggests three questions:

1. How many equilateral triangles of any size are in the image?
2. How many regular 6,2-stars of any size are there in the image?
3. How many regular hexagons of any size are there in the image?

Finally, why do your answers to questions 2 and 3 differ?

