

## CQ: The Extended Zig-Zag VF and One More Counting Exercise

This provides an extension if you have already tackled the counting exercise with 23 jumps. The 24 jump version, with the 24<sup>th</sup> jump of 24 provides horizontal and vertical diameters. As an image sequence, it is not as smooth as the 23 jump version because the resulting full density image is now a factor of 3 as well as 2 and  $S$ . Even if  $S$  is increased from 23 to 24, so that full density images have 2304 lines, there are only  $768 = 2304 \cdot (2-1)/2 \cdot (3-1)/3$  full density images in that [image sequence](#) (rather than 1012 full density 2116-line images in the original). Each of the 48 waves, now has only 16 images per wave (rather than 22 for the original image sequence).

Despite these limitations, this VF provides a nice extension of the counting exercise provided by the original version.

As before, the question is simple: *How many squares of various sizes are in the image below?* Many of the hints provide in the earlier question apply here so they are not repeated here.

