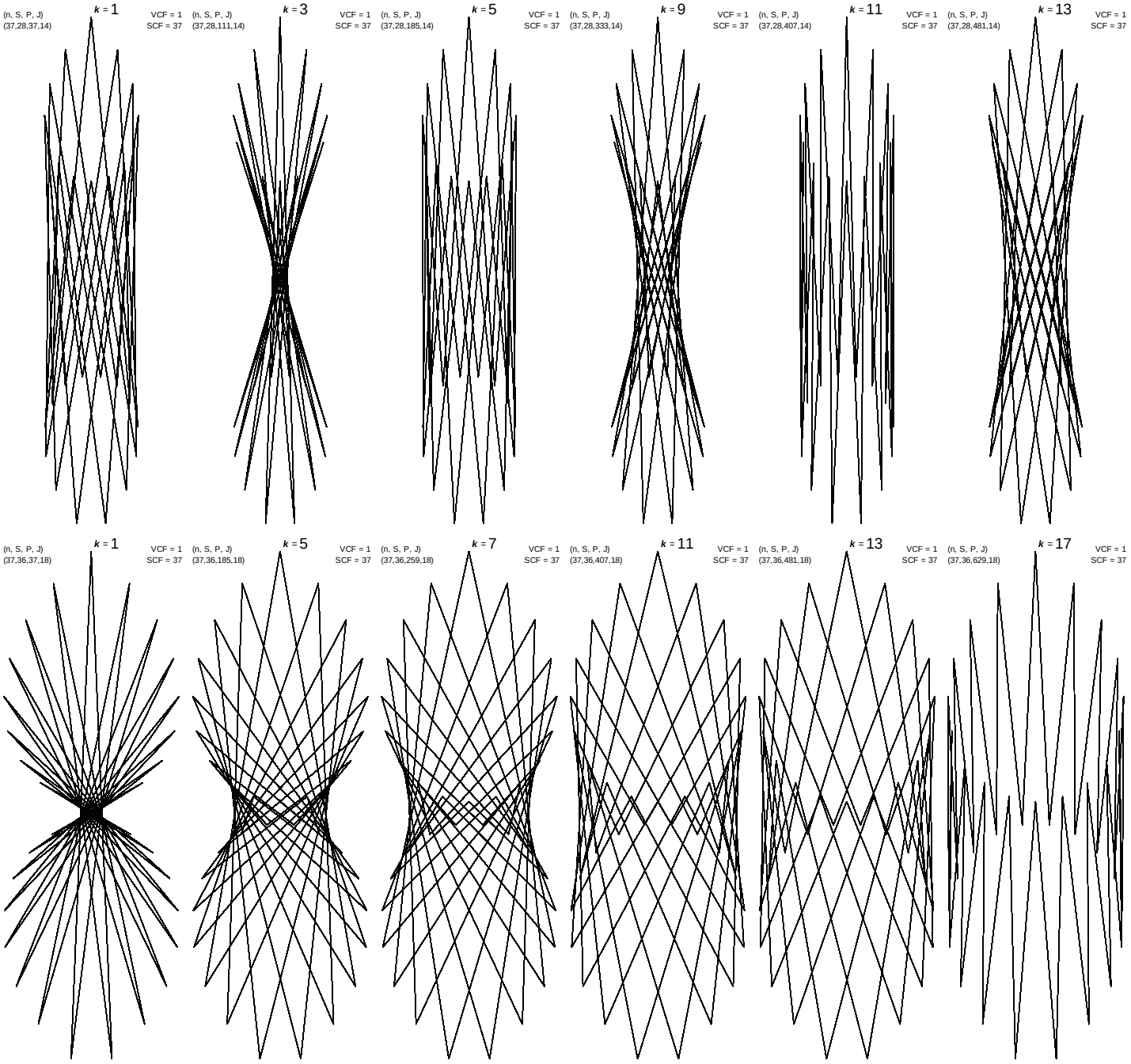
Finger Traps



Finger traps are most basically quivering polygons with two sides (rather than 3 or more). As discussed in the variations on *QTs* and single cycle explainers, one obtains a family of similar images by requiring ***P*** to be a multiple of ***n*** and ***S*** is a multiple of ***J***. Here ***S*** = 2***J*** and ***P*** = ***kn***, 1 ≤ ***k*** < ***S***/2 with ***J*** coprime to ***n*** (VCF = 1) and ***J*** < ***n***/2. We also want GCD(***n***,***S***) = 1. The images will have ***S*** lines if GCD(***S***,***k***) = 1. There are two point ovals, 0 MOD 2 (even starting points, top oval) and 1 MOD 2 (odd, bottom oval) similar to what was seen in the variations explainer. Even values of ***k*** produce small images since used vertices are in the even oval and ***J*** < ***n***/2. The images above show two sets of ***n*** = 37 finger traps, ***J*** = 14 and ***J*** = 18.

Top row images have 28 lines; bottom images have 36 lines. ***J*** = 18 is the largest ***J*** given ***n*** = 37 (19 > ***n***/2 in which case the even oval includes the center of the underlying polygon). For fixed ***n***, the ovals get larger as ***J*** increases. Just like discussed in the variations explainer, some ***k*** produce images resembling bow-ties (like ***k*** = 3 for ***J*** = 14 or ***k*** = 1 for ***J*** = 18).

The finger trap's woven cross-hatching is most visible in the upper right (***k*** = 13, ***J*** = 14) image. By contrast, the lower right (***k*** = 17, ***J*** = 18) image is like shark's teeth with a closed mouth but change to ***n*** = 35 and the shark is open-mouthed!