

# Organization of *Playing with Polygons* Files

---

## Introduction

1. Polygons Basics (based on EWEP, 2021, *Connecting Geometric Patterns to Numeric Patterns using the Polygons and Stars Excel File*, **Spreadsheets in Education** targeted K-2)
  - 1.1  $n$  Number of vertices Polygons
  - 1.2  $J$  vertex Jumps Stars

## PART I. Aestheometry (Electronic String Art) on Polygons and Stars

2. Introduction to Aestheometry on Polygons (single vertex jump) and Stars (multiple vertex jumps)
  - 2.1  $S$  Subdivisions between vertices Curved Tip Stars
  - 2.2  $P$  subdivisions between  $P$ oints General Aestheometry
3. Center-pointed flowers
4. Two Jump Patterns
  - 4.1  $J_1, J_2$  alternating jump patterns General
  - 4.2 Special case for  $4k+2$  polygons
  - 4.3 Jumps via equation rather than up and down arrows
5. Four-color model with 1 to 3 jumps on dodecagon (an extension of E&E **Bridges 2020** article)
  - 5.1 Single vertex jump pattern
  - 5.2 Double repeated jump pattern
  - 5.3 Triple repeated jump pattern
6. Spirals (based on *Using Archimedean Spirals to Explore Fractions*, submitted to **Bridges**, targeted 3-5)

## PART II. Using Polygonal Vertices to Frame Parallel Lines

7. Sharpest odd isosceles triangles (based on E&C, *Alternative Visions of Perfect Squares*, targeted 3-5)
    - 7.1 Sharpest triangles
    - 7.2 Square
  8. Sharpest right triangles on even polygons
  9. Sharpest isosceles triangles on even polygons
  10. Creating triangles on polygonal vertices
-