Desmos Activities for Statistical Analysis
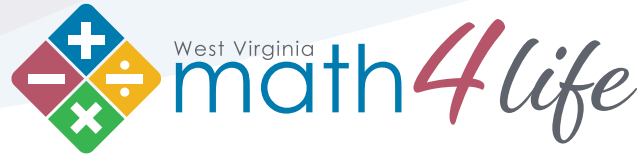
Shared by Steve Phelps (@MathTechCoach) on Twitter

» *https://www.desmos.com/calculator/xnkpcq66bn*
Pick two numbers between 0 and 1. How likely is it that the following conditions are met? Commit to an answer (intuition), then reveal the results of the simulation (does it agree with your intuition?), then calculate the probabilities.

» *https://www.desmos.com/calculator/3zzyhjql7n*
Three points are randomly selected in a unit square. What is the area of the typical circle drawn through the three points? Commit to a guess (intuition) then explore the simulation. Does the simulation agree with your intuition?

» *https://www.desmos.com/calculator/eobkhjazd0*
Two chords are drawn randomly in a circle. How likely is it that the two chords intersect? What does your intuition tell you? Does the simulation agree with your intuition?

» *https://www.desmos.com/calculator/c2appnqoeo*
Point P is placed randomly in an equilateral triangle. Perpendiculars are dropped from point P to the sides of the triangle. How likely is it that these three segments will form a triangle? Where should point P be located to be certain that the segments will form a triangle? Make a guess (intuition) then run the simulation and see if it confirms your intuition!

» *https://www.desmos.com/calculator/01temmalgc*
Place three random points in a unit square. These three points define a unique quadratic $f(x) = ax^2 + bx + c$. How likely is it that the vertex of this parabola is also in the unit square? Make a guess. What does your intuition tell you? Does the simulation agree with your intuition?

» *https://www.desmos.com/calculator/ua3levadsl*
In a square with vertices at (0,0) and (1,0), place a random point and construct a segment from (0,0) to that point. Place another random point and construct a segment from (1,0) to that point. How likely is it that the two resulting segments intersect? Commit to an answer. What does your intuition tell you? Does it agree with the simulation?

» *https://www.desmos.com/calculator/ivful5iis2*
Place a random point in the unit square. Fold one of the vertices of the square to the random point, forming a crease. What is the longest possible crease formed by this method? What is the shortest possible crease? What is length of the typical crease? Do you think the distribution of crease lengths will be skewed or symmetric?

» *https://www.desmos.com/calculator/pelnzrezsk*
Two segments are randomly placed in a unit circle. What is the probability the two segments intersect? Commit to a guess (Intuition). Does the simulation agree with your intuition?

» *https://www.desmos.com/calculator/onrlggeink*
Place three random points in a unit square. These three points define a unique quadratic $f(x) = ax^2 + bx + c$. How likely is it that the FOCUS of this parabola is also in the unit square? Make a guess. What does your intuition tell you? Does the simulation agree with your intuition?

» *https://www.desmos.com/calculator/axefebxz00*
In an equilateral triangle of side length 1, place a random point. Fold a vertex to that point, forming a crease. What is the length of the typical crease formed in this manner? Think about this and commit to an average crease length. Do you think the distribution of crease lengths will be symmetric or skewed? If skewed, which direction?