**Game of Chaos** - We play rolling a die and plotting points by hand but soon realize its not not efficient or accurate. I used this to introduce programming on the TI. Websites showing result:

<http://www.greatmathsteachingideas.com/2012/08/17/the-chaos-game-a-very-surprising-result/>

<http://www.geoastro.de/ChaosSpiel/ChaosEnglish.html>

**Variations / Extensions**:

a. add color

b. use different shape such has hexagon:

<http://math.bu.edu/DYSYS/chaos-game/node7.html>

**Concepts and procedures**

**Completing the square**

<https://directorymathsed.net/montenegro/deBruyn.pdf>

a. It would be nice if the program would actually draw the square like the diagrams in the link. There are some youtube videos that might be better at explaining than link.

b. Extension: coefficient on square term, odd "b" value

**Solving Quadratics with Quad Formula**: Program the formula and identify the number of real solutions, and type of solutions: real solution with 1 or 2 rational or irrational roots or imaginary solutions.

**Factoring Program**:

**Extension:** Be able to identify if quadratic will factor

**Synthetic Division** - very algorithmic process long divides uses coefficients on polynomials.

<http://www.mesacc.edu/~scotz47781/mat120/notes/divide_poly/synthetic/synthetic_division.html>

**Riemann Sum Area under a curve**

<https://mathinsight.org/calculating_area_under_curve_riemann_sums>

a. right, left or midpoints

b. vary the number of rectangles

c. vary endpoints

**Operations on Matrices** - multiplication is typically difficult for students to remember