Linear and Quadratic Functions:

- graphing quadratics using a table
- discover shifting rules from the graph and table
- graphing quadratics using shifting rules
- discovery activity to realize that shifting rules work for other functions also (ie: square root, absolute value, x-cubed, etc.)
- function analysis shifting a point using the rules
- interpreting a graph and how it was shifted
- linear regression and word problems associated with them
- 2x3 linear system in y=mx+b form and then solve the same question using the elimination method, then compare answers
- 3x4 linear system of equations using the elimination method
- axis of symmetry, graphically, formula, and how they apply to word problems
- discover how to find the min/max from the axis of symmetry
- discover how axis of symmetry relates to vertex, while both in standard form or in vertex form
- discover reflections in both the x or y axis' algebraically and graphically
- directrix, vertex, focus questions to graph and come up with the equation
- solving algebraic equations with radicals
- determine equation of a parabola in vertex form given a point and a vertex
- determine equation of a parabola given a point and two roots
- factoring (gcf, dots, double bubble, trinomial)
- put a parabola in vertex form by Completing The Square
- find the roots by CTS

Imaginary Numbers:

- imaginary numbers (adding, subtracting, multiplying)
- finding imaginary roots algebraically
- finding the roots of a parabola and discovering what it means in a word problem
- using the Quadratic formula to find the real or imaginary roots --> then discovering what it means graphically with regards to word problems
- meaning of discriminant

System of Equations:

• solve linear-quadratic system algebraically and graphically

Polynomials:

- graphing polynomials
- understanding how end behavior impacts the graph of a polynomial
- synthetic division
- activity applying graphing polynomials, synthetic division, and end behavior and piecing them all together
- factor polynomials (gcf, grouping, advanced trinomial, advanced dots, etc.)

Rational Exponents, Radical Functions, and Lagarithmic Functions:

- solving algebraic equations with exponents greater than 2, and fractional exponents
- rationalizing denominator and it's purpose with advanced math (calc 2 integrals)
- solving single radicals algebraically
- simple interest, compound interest, continuous interest. find/given different variables. do an activity on how this applies to life, which makes/loses more money
- converting logs/ln to exponential form
- simple interest with logs
- exponential modeling
- horizontal asymptotes, vertical asymptotes, domain, range