A. Lesson Objectives

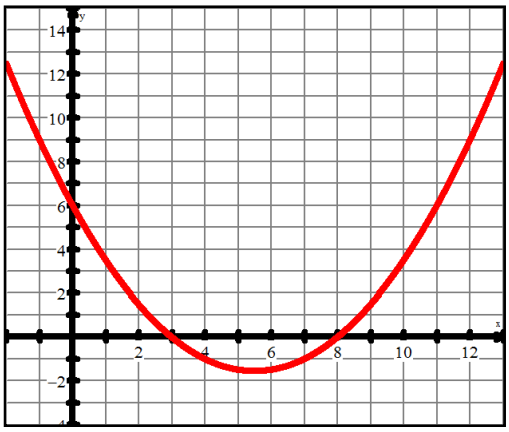
a. Review & practice the algebraic skills of expanding and factoring
b. Understand the graphic & function connection of the algebra
c. Use the skills of factoring and expanding in application problems

B. Factored to Standard Form – Expanding

a. Practice the Algebra

Expand:	Evaluate f(2)	y-intercept	Max or Min value??
$f(n)=(2n+1)(n+3)$			
$h(t)=-3(t+5)(3-2t)$			
$f(x)=2(x+4)(x-4)$			
$R(n)=(2n+5)^2$			

b. Connect to the Graph ➔ Determine the equation of the parabola graphed. Write its equation in standard form



c. Apply to Problems ➔ Mr. S. can sell 500 apples per week when he charges 50 cents per apple. Through market research, his wife (being smarter than Mr. S of course) knows that for every price increase of 2 cents per apple, he will sell 10 less apples.

i. Determine an equation that can you used to model Mr. S.'s expected revenues.

ii. What price should he charge to maximize his revenues?

iii. What is his maximum revenue?

C. Standard to Factored Form – Factoring

a. Practice the Algebra ➔ Determine the zeroes of the following parabolas.

$f(x) = 3x^2 + 24x + 45$

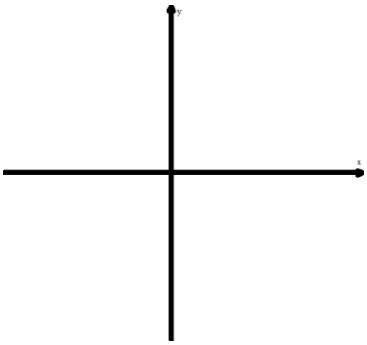
$f(x) = x^2 - 25$

$f(x) = 2x^2 - x - 6$

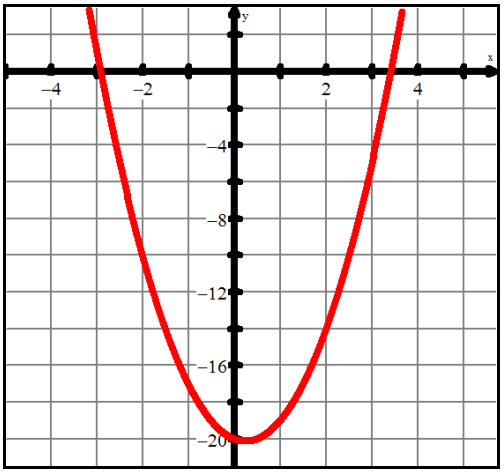
$f(x) = 9x^2 - 6x + 1$

b. Connect to the Graphs

Given the quadratic function $f(x) = -x^2 + 3x + 18$, determine the zeroes, y-intercept & vertex & sketch the parabola



Given the quadratic function $f(x) = 2x^2 - x - 20$ (pictured below), use the TI-84 somehow…… and write the equation of $f(x) = 2x^2 - x - 20$ in factored form. **(T)**



c. Apply to Problems ➔ The profits of a company in its first 15 months of operations are modelled by the quadratic function $P(m) = -0.25m^2 + 3m - 5$ where m is the number of months (and m = 1 represents January) and P(m) is measured in billions of pesos. (CALC INACTIVE)

i. Determine when the company "breaks even".
ii. Determine in which month the company maximizes its profits.
iii. What are the company's maximum profits?
iv. Solve and interpret P(m) < 0 given that the domain is $D: \{m \in Z \mid 0 \le m \le 15\}$