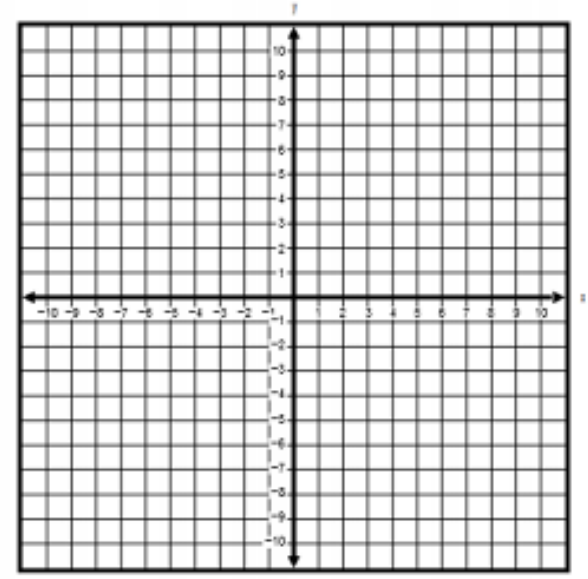
December Extended Constructed Response (ECR) Name:

To prepare for a test, three students have been asked to present a review lesson to their class on sketching the graph of a parabola in the xy-coordinate plane. They decide to use the quadratic function $f(x) = 4x^2 + 8x - 5$ in their presentation. Each student will use algebra to explain how to find one of three key features of the graph.

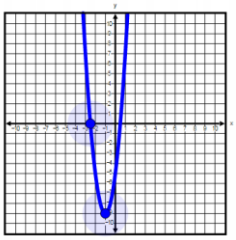
* Angella rewrites the equation in factored form
* Bejamin rewrites the equation by completing the square
* Carla evaluates f(0)

Part A: Sketch the graph of the function on the xy-coordinate grid shown.
(show key features of your graph, key features include intercepts, Maximum/Minumum…)



Part B: Describe how each student's work contributes to finding the key features of the graph.

Algebra 2 December ECR
Score Rubric

Part A	
Score	Description
2	2 essential elements of the response: * Showing intercepts (x and y intercepts) * Showing maximum or minimum Sample of student response: 
1	Student response includes 1 of 2 elements
0	Student response is incorrect or irrelevant

Part B	
Score	Description
3	Student response includes the following 3 elements. • **Reasoning component** = 3 point ○ The equation is correctly rewritten in factored form and the key feature is correctly explained. ○ The equation is correctly rewritten by completing the square and the key feature is correctly explained. ○ $f(0)$ is correctly evaluated and the key feature is correctly explained. Sample Student Response: Student reasons that Angela has factored the expression in order to find the x-intercepts of the function. $f(x) = 4x^2 + 8x - 5$ $f(x) = (2x - 1)(2x + 5)$ If the function is set equal to 0, then $0 = (2x - 1)(2x + 5)$ $2x - 1 = 0$ and $2x + 5 = 0$ $x = \frac{1}{2}$ and $x = -\frac{5}{2}$ Therefore the x-intercepts are $\left(\frac{1}{2}, 0\right)$ and $\left(-\frac{5}{2}, 0\right)$. Student reasons that Benjamin completes the square on the function in order to find the vertex. $f(x) = 4x^2 + 8x - 5$ $f(x) = 4(x^2 + 2x) - 5$ $f(x) = 4(x^2 + 2x + 1) - 5 - 4$ $f(x) = 4(x + 1)^2 - 9$ Therefore the vertex is $(-1, -9)$. Student reasons that Carla evaluates $f(0)$ to find the y-intercept at $(0, -5)$. Note: The response does not need to find the value of the key feature in order to identify the key feature.
2	Student response includes 2 of 3 elements
1	Student response includes 1 of 3 elements
0	Student response is incorrect or irrelevant

Genesis Convert Table

Task Point	Genesis Score
0	55
1	59
2	69
3	79
4	89
5	100