Names: Ashley Li

ALGEBRA 1: QUADRATICS & CATAPULTS
SUMMATIVE PERFORMANCE TASK

CATAPULT FUNCTION: Height vs. Time
Standard Form/Factored Form/Vertex Form:
*Define variables and explain each part of your function **mathematically** and in the **context of the problem**.*

Standard form: $h(t) = -3.9t^2 + 3.8t + 0.2$ $\{0 \le t \le 1.02\}$

Factored form: $h(t) = -3.9(t+0.05)(t-1.02)$ $\{0 \le t \le 1.02\}$

Vertex form: $h(t) = -3.9(t-0.49)^2 + 1.13$ $\{0 \le t \le 1.02\}$

Standard form:
- a represents the concavity of the parabola, and in this context, the acceleration due to gravity
- b represents the initial speed of the ball, it influences where the vertex is in the context
- c represents the y-intercept, so the ball starts at 0.2

Factored form:
- m represents one of the x-intercepts, (when the ball starts flying) ; it means that the ball starts at 0 seconds
- n represents one of the x-intercepts, it means when the ball hits the ground
- this function is best to determine the x-intercepts of the parabola

Vertex form:
- h represents the horizontal shift of the parabola, in this context, it is the time when the ball reaches the maximum height
- K represents the vertical shift of the parabola, in this context, it is the maximum height of the ball
- this function is best to determine the vertex of the parabola

GRAPH: Height vs. Time
Show all key features on your graph of your Skittles flight as a Height vs. Time.