# CAR Unit Template

## Unit Title: Algebra 1 – Quadratic Modeling – Unit 3 - Module B

**Grade level:**

**Timeframe:**

## Essential Questions

## Standards

### Standards (Taught and Assessed):

**F.IF.B.4.** For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities,

and sketch graphs showing key features given a verbal description of the relationship. Key features include: intercepts; intervals where the

function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.

**F.IF.B.5.** Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. *For example, if the*

*function h(n) gives the number of person-hours it takes to assemble n engines in a factory, then the positive integers would be an appropriate*

*domain for the function*

**F.IF.B.6** Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate

the rate of change from a graph.

**A.REI.B.4** Solve quadratic equations in one variable.

a. Use the method of completing the square to transform any quadratic equation in x into an equation of the form (*x* − *p*)² = *q* that has the same solutions. Derive the quadratic formula from this form.

b. Solve quadratic equations by inspection (e.g., for *x* ² = 49), taking square roots, completing the square, the quadratic formula and factoring,

as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as *a* ± *bi* for

real numbers *a* and *b*.

**A.CED.A.1** Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic

functions, and simple rational and exponential functions.

**Key**: Major Cluster Supporting Cluster Additional Cluster

### Highlighted Career Ready Practices and 21st Century Themes/Skills

### Social-Emotional Learning Competencies

## Instructional Plan

Pre-Assessment and Reflection

| **Pre-Assessment** | **Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections** |
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Student Learning Objectives (SLO), Strategies, Formative Assessment, Activities and Resources (add rows as needed)

| **SLO – WALT**  **We are learning to/that** | **Student Strategies** | **Formative Assessment** | **Activities and Resources** | **Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections** |
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| **F.IF.B.4. - WALT** for functions that model a quadratic relationship, interpret key features of graphs and tables in the context of the problem |  |  |  |  |
| **F.IF.B.4. - WALT** sketch graphs of quadratic functions, showing key features given a verbal description of the relationship |  |  |  |  |
| **F.IF.B.5. - WALT** relate the domain of a quadratic function to its graph and to the quantitative relationship it describes in the context of the problem\*\* |  |  |  |  |
| **F.IF.B.6. - WALT** calculate the average rate of change of a quadratic function, represented as a table of values, over a specified interval and interpret it in the context of the problem |  |  |  |  |
| **F.IF.B.6 - WALT** estimate the average rate of change of a quadratic function, represented by a graph, over a specified interval and interpret it in the context of the problem |  |  |  |  |
| **F.IF.B.6. - WALT** calculate the average rate of change of a quadratic function, defined by an expression, over a specified interval and interpret it in the context of the problem |  |  |  |  |
| **A.REI.B.4. - WALT** solve quadratic equations by completing the square |  |  |  |  |
| **A.REI.B.4. - WALT** use completing the square to rewrite a quadratic equation in the form (*x* − *p*)² = *q* |  |  |  |  |
| **A.REI.B.4. - WALT** use the form (*x* − *p*)² = *q* to derive the quadratic formula |  |  |  |  |
| **A.REI.B.4. - WALT** solve quadratic equations by using the quadratic formula |  |  |  |  |
| **A.REI.B.4. - WALT** recognize, using the discriminant, when the quadratic formula gives complex solutions and write them as *a* ± *bi* |  |  |  |  |
| **A.CED.A.1. - WALT** create quadratic equations in one variable to model a problem or situation |  |  |  |  |
| **A.CED.A.1. - WALT** use quadratic equations in one variable to solve problems |  |  |  |  |

Benchmark Assessment 1

| **Benchmark Assessment** | **Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections** |
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Benchmark Assessment 2

| **Benchmark Assessment** | **Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections** |
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Summative Assessments (add rows as needed)

| **Summative Assessment** | **Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections** |
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Interdisciplinary Connections

| **Interdisciplinary Connections** | **Modifications (ELL, Special Education, Gifted, At-risk of Failure, 504) and Reflections** |
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