**Mathematician: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Block: \_\_\_\_\_\_\_\_\_**

**PreCalculus 11: Unit 1 – Quadratic Functions (Ch 3)**

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| **Learning Outcome** | **How well do I know this?****No idea I can teach this!** |
| Review: I can explain polynomials concepts, e.g., monomials, binomials, trinomials, polynomial, degree of a monomial/polynomials, like terms. |  |
| Review: I can simplify polynomials (e.g., collect like terms). |  |
| Review: I can distinguish between functions and relations. |  |
| Review: I can use function notation. |  |
| I can explain the effect of ***a*** in $y=ax^{2 }.$ |  |
| I can explain the effect of ***q*** in $$y=x^{2 }+q.$$ |  |
| I can explain the effect of ***p*** in $$y=(x-p)^{2 }.$$ |  |
| I can determine the coordinates of the **vertex** for a quadratic function in **vertex form**, $y=(x-p)^{2 }+q$. |  |
| I can use the **method of differences** to graph $y=ax^{2 }.$ |  |
| I can sketch the graph of $y=(x-p)^{2 }+q$ using transformations and identify its:* + vertex
	+ domain and range
	+ direction of opening
	+ axis of symmetry
	+ *x-* and *y-* intercepts
 |  |
| I can **model and solve problems** using quadratic functions (e.g., bridge-over-a-river problem, suspension bridge problem, throwing-a-ball problem).  |  |
| I can convert from vertex form, $y=(x-p)^{2 }+q$, to **standard form**, $y=ax^{2 }+bx+c$ by **completing the square**. |  |
| I can use the vertex to determine the **min or max value** of a quadratic function. |  |
| I can model and solve **optimization problems** (e.g., barn-and-fence area problem, revenue problem). |  |

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| **Date** | **Day** | **Topic** | **Assmt page** | **Question #s** |
|  | 1 | Polynomial Review | Worksheet |  |
|  | 2 | Functions & Function Notation, The Basic Quadratic Function (3.1) | Worksheet |  |
|  | 3 | Demos Activity: Exploring Quadratic Functions | Worksheet  | MEET in B213 !(COMPUTER LAB) |
|  | 4 | Graphing $y=ax^{2 } \left(3.1\right)$ | Worksheet |  |
|  | 5 | Quiz (Basic Quadratic and Parameter a);Graphing$ y=x^{2 }+q,$$y=(x-p)^{2 }$ (3.1) | Worksheet |  |
|  | 6 | Combining Transformation (3.1) | Worksheet |  |
|  | 7 | Modeling Problems (3.1) | 159 | 13, 16, 17, 18 |
|  | 8 | Quiz (Combining Transformations);Completing the Square (3.3) | 192-197 | 1-5 odd, 6bc, 7ce, 8ac, 12 |
|  | 9 | Optimization Problems (3.3)Quadratic Functions in Standard Form (3.2) | 194-197 | 15,18,19,22,23 |
|  | 10 | Review Chapter 3 | 201-203Opt: 198-200 | Practice Test 1-151-17 |
|  | 11 | Unit Test Ch 3 |  |  |