Name	School	Grade	Course/Subject	Number of Students	Interval of Instruction
			Functions & Modeling (Modeling)		Sept. 2018– April 2019

Standards, Rationale, and Assessment Method

Modeling with Functions

Rationale:
Students will apply the mathematics they know to solve problems arising in everyday life, society and the workplace. They are able to identify important quantities in a practical situation and map their relationships using mathematical tools. They can analyze those relationships mathematically to draw conclusions. They routinely interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose. Students also will notice if calculations are repeated, and look both for general methods and for shortcuts. They maintain oversight of the process, while attending to the details. They continually evaluate the reasonableness of their intermediate results.

Standards:

A.CED.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.

A.CED.2:   Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.

A.CED.3:   Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context.

F.IF.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.

F.IF.5:   Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes.

F.IF.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.

F.IF.7:   Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.*

F.BF.1:   Write a function that describes a relationship between two quantities

Focused Mathematical Practice Standards:

- ✓ *MP1: Make sense of problems and persevere in solving them*

- ✓ *MP4: Model with mathematics*

Assessment Method: An end of year common Summative Assessment will be used to measure students' growth. Summative Assessment incorporates carefully selected practice-forward tasks that reflect higher levels of cognitive complexity.

Starting Points and Preparedness Groupings
Student tiers will be determined using the following data:
2017-18 PARCC
2017-18 Spring NWEA

Preparedness Group	Baseline Score (Percentile)
Tier 1	< 0.35
Tier 2	0.35 – 0.55
Tier 3	0.55 – 0.75
Tier 4	> 0.75

Student Growth Objective

Growth Goal : By April 2019, 80% of students in each preparedness group will meet or exceed their assigned target command level for full attainment of the objective as shown in the scoring plan {Tier 1⇨ Level 2; Tier 2 ⇨ Level 3; Tier 3 ⇨ Level 4; Tier 4 ⇨ Level 4 or 5; } as measured by the 2017-2018 Mathematics Summative Assessment.

Preparedness Group (e.g. 1,2,3)	Number of Students in Each Group	Target Command Level Summative
Tier 1		2
Tier 2		3
Tier 3		4
Tier 4		4 or 5[1]

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[1] It is expected that students in Tier 4 <u>maintain</u> a level of strong command or grow to distinguished command.

Scoring Plan
Objective 1: Based on End-of-Year Summative Assessment (Modeling Questions)

Preparedness Group	Student Target Command Level	Teacher SGO Score Based on Percent of Students Achieving Target Score			
		Exceptional (4) **>80%**	Full (3) **79-80%**	Partial (2) **50-78%**	Insufficient (1) **<50%**
Tier 1	2				
Tier 2	3				
Tier 3	4				
Tier 4	4 or 5				

Approval of Student Growth Objective
Administrator approves scoring plan and assessment used to measure student learning.

Teacher _____   Signature_____   Date Submitted_____

Evaluator _____   Signature _____   Date Approved _____

Results of Student Growth Objective Based on End-of-Year Summative Assessment
Summarize results using weighted average as appropriate. Delete and add columns and rows as needed.

Preparedness Group	Students at Target Score	Teacher SGO Score	Weight (based on students per group)	Weighted Score	**Teacher SGO Score**
Tier 1					
Tier 2					
Tier 3					
Tier 4					

Notes
Describe any changes made to SGO after initial approval, e.g. because of changes in student population, other unforeseen circumstances, etc.

Review SGO at Annual Conference
Describe successes and challenges, lessons learned from SGO about teaching and student learning, and steps to improve SGOs for next year.

Teacher _____   Signature _____   Date _____

Evaluator _____   Signature _____   Date _____