

## Student Growth Objective Form

(DISTRICT-DEVELOPED SAMPLE SGO for AP-Calculus BC - MATHEMATICS; 1 of 1)

Name	School	Grade	Course/Subject	Number of Students	Interval of Instruction
Hooman Behzadpour	Orange High School	11-12	AP Calculus BC		Sept. 2018– April 2019

### Standards, Rationale, and Assessment Method

The 2018 – 2019 student growth objectives continue to place emphasis on the critical mathematics content (or the *Big Rocks*) for each grade. Focus on the Big Rocks of each grade opens up time and space to bring the Standards for Mathematical Practice to life in mathematics instruction; placing an emphasis on sense-making, reasoning, arguing and critiquing, modeling, etc. The growth objectives also seek to identify gaps in student understandings such to “fill” the gaps with targeted instructional supports.

Focus is critical to ensure that students learn the most important content completely, rather than succumb to an overly broad survey of content. When students are taught with understanding, there will be less need to reteach concepts from year to year. Instead, content is revisited as connections are made to new content-- first with concepts and then with procedures. This is accomplished through a focused curricular approach. When fewer topics are addressed in a given grade or course, those topics can be taught coherently and with rigor.

The following College Board AP Calculus standards have been selected because they are major focus standards for the first year college calculus content cross nation. In addition, all eight mathematical practice standards are aligned to each standard listed on this SGO to support students develop their critical thinking skills as a preparation for students’ college math courses.

#### Standards:

- Use Riemann and Trapezoidal sums to approximate the area under a curve Demonstrate an understanding of limits and limit properties
- Find the derivative of elementary and composite functions
- Demonstrate an understanding of the formal definition of a derivative of a function
- Use limits to find asymptotes
- Evaluate the average and instantaneous rates of change and find the velocity and acceleration
- Use techniques of integration to find simple integrals
- Use integration techniques to find distance and velocity from acceleration
- Apply the definite integral concepts such as area
- Use Riemann and Trapezoidal sums to approximate the area under a curve
- Analyze and differentiate planar curves, including those given in parametric, polar, and vector form.
- Find numerical solutions to differential equations.
- Apply integrals in a variety of applications to model physical, biological, and economic situations.
- Find whether sequences or converging or diverging.
- Find and evaluate Taylor and Maclaurin series.

**Focused Mathematical Practice Standards:**

- ✓ MP1: Make sense of problems and persevere in solving them
- ✓ MP2: Reason abstractly and quantitatively
- ✓ MP3: Construct viable arguments and critique the reasoning of others
- ✓ MP4: Model with mathematics
- ✓ MP7: Look for and make use of structure
- ✓ MP8: Look for and express regularity in repeated reasoning

**Assessment Method:** An end of year College Board 2018 Mock AP-BC Assessment will be used to measure students' growth.

**Starting Points and Preparedness Groupings**

Student tiers will be determined using the following data:

2017-18 PARCC

2017-18 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 <sup>1</sup>

**Scoring Plan**

Objective 1: Based on End-of-Year Summative Assessment

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	4-5				

**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					

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

**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 \_\_\_\_\_