Student Learning Outcomes
Baltimore County Public Schools

Name: Emily Trumble School: Eastern Technical High School Grade Level: 9

Statement of Outcome:*(Identify critical skill(s). Please specify whether this is a mastery or progress outcome.)*

Progress Outcome: Students will be able to show progress of the ability to recognize and apply properties of quadrilaterals in order to solve for unknowns and missing sides and angles.

Rationale:*(Why did you choose this outcome? Why is this an appropriate area of focus? How does your outcome align to the common core?)*

This outcome aligns to the common core standards CCSS.HSG.CO.C.11 (Prove theorems about parallelograms. Theorems include: opposite sides are congruent, opposite angles are congruent, the diagonals of a parallelogram bisect each other, and conversely rectangles are parallelograms with congruent diagonals.), CCSS.GPE.B.05 (Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems e.g. find the equation of a line parallel or perpendicular to a given line that passes through a given point.), and CCSS.HSG.SRT.B.05 (Use congruent and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.).

This topic is an appropriate area of focus because properties of parallelograms applies what students know about two parallel lines and a transversal, which they have learned in the past (middle school) and earlier this year as well as triangle congruence which was the previous unit. These properties will also come up in the future, so it is a building block to other advanced math topics and therefore is important to understand.

Students:*(Which class/subject/content are you identifying? Are all students included in this outcome? If not, why?)*

The students in this SLO are 9th grade geometry students, Mods 1B and 3B. There are 30 students in Mod 1B and 25 students in Mod 3B. One student in Mod 1B did not take the pre-assessment, so that student is not included in this outcome. There is one student with behavior issues in the past that is being considered for a 504 plan, but there is nothing in place yet. These students are hardworking and they love to have fun in the classroom. In Mod 1B, there are 12 male students and 18 female students; in Mod 3B there are 15 male students and 10 female students.

Interval of Instruction:

April 4th 2018-April 16th 2018 (A day B day Block schedule)

Target(s) & Evidence:*(Where do you expect this population of students to be at the end of the interval of instruction? What evidence are you going to use to measure student learning? At least one source of evidence is required, but multiple sources may be used. If a common assessment exists, it must be used as the primary source of evidence.) *Targets may be tiered to reflect differentiation among students.*

*Type of Tier Chosen, if applicable:

☐ **Basic Growth Target**

After instruction 80% of student scores will grow at least 2.5 points on the post assessment when compared to the pre assessment.

Rationale for Target: *(How was this target chosen? How did you determine that it is a rigorous target? What pre-test or baseline information, if any, informed your decision?)*

This target was chosen after the pre assessment. Students did rather well on the pre assessment, although they likely did not know why they did what they did. Therefore, a growth of 2.5 points is difficult because during the post assessment students know how to apply what they've learned while they could have guessed the correct answer during the pre assessment.

Administration & Scoring/OVERVIEW OF PROJECT: *(How will assessments be administered? How will assessments be scored?)*

The pre assessment will be administered at the beginning of the class period before the start of the first lesson. They will be scored based on their knowledge of how to apply properties of quadrilaterals and how to solve for unknowns. The post assessment will be given the class period after the last lesson. This will also be scored on how to apply and recognize properties of different quadrilaterals. The assessment is out of 12 points.

My mentor teacher has taught this curriculum before, so I adapted powerpoints for my own lessons. Using the course maps on BCPSOne, I planned the amount of time needed for each lesson, how to check for understanding, and found resources to discover or extend student knowledge. Most lessons were discovery based where students would work in groups to match or use manipulatives to discover properties and conditions of parallelograms, special parallelograms (rectangles, rhombi, and squares), kites, and trapezoids. In each lesson I also included time for review of theorems and questions about proofs and definitions. Then an important time of each lesson is the application of properties, so I used white boards and games to make those applications fun and exciting for students. I also extended their learning by connecting most lessons to coordinate geometry. In this outcome, I wished for students to truly understand how to recognize and apply properties of different quadrilaterals when they come across them, now and in the future as well.

Reflection: *(Teacher explains evidence of student learning. How many targets were met? To what degree were targets met? Teacher should prepare to share evidence of learning. Additional data reports may be included or attached to reflect results.)*

1. My SLO target was student scores will grow at least 2.5 points on the post assessment when compared to the pre assessment. After examining the Posttests and Pretests, it is determined that 45 out of 54 student met this target, meaning 83% of students grew 2.5 points or more from their pre assessment to their post assessment. This is more than the target indicated, meaning that more students than anticipated were able to apply and recognize properties of parallelograms, kites, and trapezoids and use algebra to solve for unknowns. Specifically, 17 students were able to grow in their application of the

property that parallelograms have congruent opposite angles; 23 students were able to grow in recognizing that rectangles have congruent diagonals that bisect each other; 13 students were able to further recognize the trapezoid midsegment theorem; 29 more students were able to grow in their understanding that a square is a type of parallelogram as well as both a rhombus and a rectangle; 8 students grew in their understanding of congruent consecutive sides of a kite; and 3 more students were able to recognize that the only information one needs to prove a parallelogram is a rhombus is *only* that the diagonals are perpendicular.

12 points earned for this SLO

2. **Did your students perform as you anticipated? If so, what fostered their success? If not, what may have contributed to the lack of growth?**

   Yes my students did perform as expected. I used a lot of team and group work where students worked together to figure out properties, conditions, and how to solve and I believe that gave students confidence and knowledge. The only lack of growth I saw on the post assessment was the recognition that in order to prove *a quadrilateral that one already knows is a parallelogram*, is a rhombus, one only needs that the diagonals are perpendicular (property of a rhombus). The other answer choices were either conditions of a rectangle or properties of parallelograms. Therefore lack of growth could be because students did not read the directions properly, or they were confused about the difference between properties of rhombi and properties of rectangles. The next lowest growth was problem 5, and this was because many students did well on this question on the pre assessment.

3. **Will you choose the same SLO next year? Please explain why? Why not?**

   I would choose this SLO next year, but with a few adaptations. I felt that some of the problems were easy to guess how to do during the pre assessment, therefore in the future I would add application of

previous knowledge by using system of equations in problem 1, further substitution in problem 2, more difficult applications in problem 3, and more difficult recognition in problem 5. Specifically, I would use two different variables in both pairs of opposite angles of the parallelogram in problem 1, so students must figure out both variables and the measure of an angle using a system of equations. Then for problem 2 in the future I would have students find the value of the variable by knowing that diagonals of a rectangle are congruent and bisect each other, and then apply that knowledge further by finding the length of a diagonal. For the trapezoid midsegment theorem, instead of finding the midsegment I would give the length of it in the problem and have students find the length of one of the bases. Problem 5 was incredibly easy to guess in the pre assessment, which contributed to a lack of growth, so in the future I would have students find the measure of one of the non-congruent angles so they need to apply their knowledge of the quadrilateral angle sum property. These adaptations will more efficiently gauge what students are capable of applying and recognizing as well as pulling prior knowledge in order to prepare them for more advanced math courses and the SAT.

4. **What have you learned from this experience? How would you approach this process differently next year?**

From this SLO experience, I have learned not to underestimate my students. At the beginning of the SLO process when I made the pre assessment, I thought if I made it too difficult I would frustrate learners and they would become unmotivated to learn. However in reality students guessed how to solve problems and guessed correctly. Thus although students did not know why their answer was correct, but got it right anyhow. This stunted their growth because again although they did not know why they got it right, in terms of simple correct answers there was no room to improve. That is how I would approach the process differently. A pre assessment should gauge how much a student knows at the given time and still leave room for improvement. The improvements I suggested above would require students to take what they have learned about properties of parallelograms after they have

learned it and apply it to a different situation which any good assessment should do. A professional goal in the future would be to further challenge learners to take their mistakes and improve instead of becoming frustrated like I assumed my students would. In addition, another professional goal I would like to make would be to make the content more meaningful to my students. The extension pieces of my lessons were mostly about coordinate geometry, but that is not as meaningful to students. In the future I would like to find more real life examples of parallelograms, kites, and trapezoids in situations that would be relevant to my students. That way the content is more meaningful and engaging as well.

SLO Calculator

SLO TARGET: 80% of student scores will grow at least 2.5 points on the post assessment when compared to the pre assessment.

100%	95%	90%	85%	80%	75%	70%	65%	60%	55%	50%	Points Earned/Student Performance
90-100	86-95	81-90	77-85	72-80	68-75	63-70	59-65	54-60	50-55	45-50	25 points 90-100% of target met
80-89	76-85	72-80	68-76	64-71	60-67	56-62	52-58	48-53	44-49	40-44	20 points 80-89% of target met
70-79	67-75	63-71	60-67	56-63	53-59	49-55	46-51	42-47	39-43	36-39	15 points 70-79% of target met
60-69	57-66	54-62	51-59	48-55	45-52	42-48	39-45	36-41	33-38	30-35	10 points 60-69% of target met
< 60	< 57	< 54	< 51	< 48	< 45	< 42	< 39	< 36	< 33	< 30	5 points Less than 60% of target met
No data provided						0					

Determining the number of points earned for each SLO is based on the percentage of the SLO target that is met. The above chart establishes the number of points earned for each SLO based on the percent of students who meet the target.

Example: (SLO Target set in increments of 10 or 5 similar to the chart above):

1. Identify the SLO Target in blue. (Principal or teacher establishes a SLO where 80% of students are to meet a target in mathematics.)
2. Review SLO evidence. After examining evidence, it is determined that 83% of students met the mathematics target.
3. Find the box under the blue SLO Target of 80% in which 83% falls. Follow that row to the gray Points Earned column on the right to determine how many points have been earned for this SLO. **SLO**

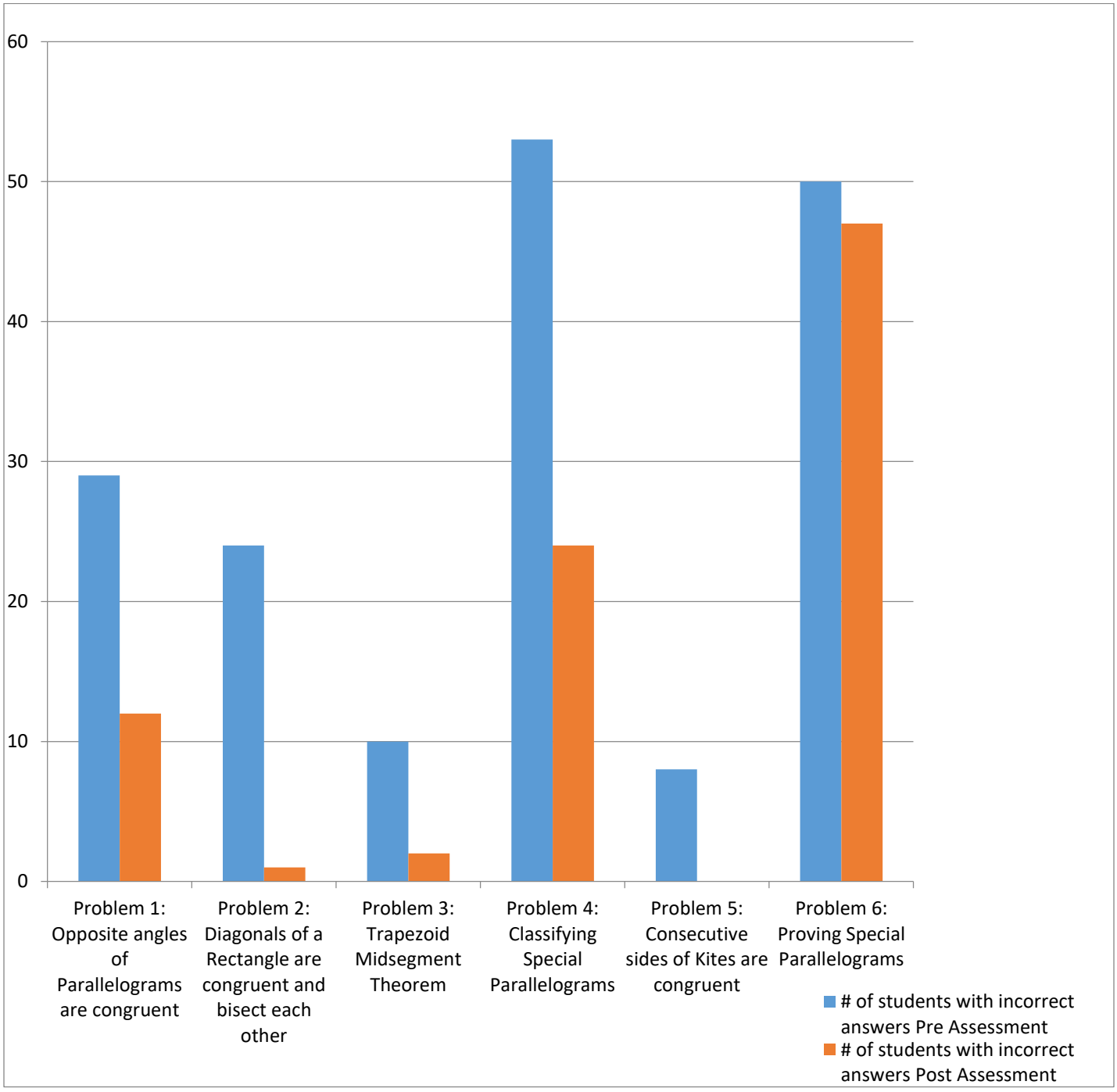
points = 15 points.

SLO Approval Rubric

Statement of Outcome	Rationale	Students	Interval of Instruction	Target(s) & Evidence	Rationale for Target
What is the expectation for student improvement ? What content will the SLO target?	*Why did you choose this outcome? Why is this an appropriate area of focus?*	*Which students will this outcome address? How many? From which class(es)?*	*What is the duration of the course that the SLO will cover? Include beginning and end dates.*	*Considering all available data and content requirements, what growth target(s) can students be expected to reach? Targets may be tiered to reflect differentiation among students. What assessment(s) will be used to measure student growth for this SLO?*	*What is your rationale for setting the target(s) for student growth within the interval of instruction?*
☐ Describes a broad goal for student learning and expected student improvement ☐ Reflects high expectations for student improvement and aims for	☐ Specifies how the SLO will address applicable standards (ex: Common Core standards, Maryland State Standar	☐ Identifies the subject/content and number of students covered by the SLO ☐ Describes the student population and considers any	☐ Must be completed by the last duty day of February ☐ Specifies start and stop dates	☐ All targeted students in class have a growth target ☐ Uses baseline or pre-test data to determine appropriate growth ☐ Sets developmentally appropriate targets ☐ Creates tiered targets,	☐ Explains why the target is appropriate for the population ☐ Addresses observed student needs ☐ Uses data to identify student needs and determine appropriate growth targets ☐ Sets rigorous expectations for students and teacher(s)

mastery or progress towards mastery of content or critical skill development □ Is identified as a progress or mastery goal	ds or National Standards)	contextual factors that may impact student growth If students are excluded, explains which students, why they are excluded and if they are covered in another SLO		when appropriate, so that all students may demonstrate growth □ Sets rigorous, yet attainable, targets □ Identifies assessments that have been reviewed by content experts to effectively measure course content and reliably measures student learning as intended. □ Selects measures with sufficient "stretch" so that all students may demonstrate learning, or identifies supplemental assessments to cover all ability levels in the course. □ Provides a plan for combining assessments if multiple assessments are used □ Authentic	

				assessments have been reviewed	



Graph Table

Problem # and description	Mod 1B Pre Assessment	Mod 1B Post Assessment	Mod 3B Pre Assessment	Mod 3B Post Assessment
1: Opposite angles of Parallelograms are congruent	16	6	13	6
2: Diagonals of a Rectangle are congruent and bisect each other	12	0	12	1
3: Trapezoid Midsegment Theorem	4	0	6	2
4: Classifying Special Parallelograms	28	13	25	11
5: Consecutive sides of Kites are congruent	4	0	4	0
6: Proving Special Parallelograms	27	25	23	22

Table of Averages

Class	Number of students in outcome	Pre assessment average	Post assessment average	Average number of points gained	Number of students who grew 2.5 points or more
Mod 1B	29	$\frac{5.77}{12} = 48\%$	$\frac{10.3}{12} = 86\%$	4 points	24 out of 29
Mod 3B	25	$\frac{5.78}{12} = 48\%$	$\frac{9.68}{12} = 81\%$	4 points	21 out of 25