TASK 1: PLANNING COMMENTARY

Respond to the prompts below (**no more than 9 single-spaced pages, including prompts**) by typing your responses within the brackets. Do not delete or alter the prompts. Pages exceeding the maximum will not be scored.

1. Central Focus

a. Describe the central focus and purpose of the content you will teach in the learning segment.

[The central focus encompasses many different components of mathematics. The central focus states that, "Students will be able to recall background knowledge, develop new formulas to solve for area, and apply the new area formulas of parallelograms, triangles, and shapes that can be decomposed into triangles and rectangles, to solve basic computational problems, as well as applications to real-life." In determining what the central focus would be for this learning segment, I looked into the fourth grade standards to understand what my class would have already learned about the area of shapes. In the fourth grade Minnesota standards, it states that the students would be able to solve for area of squares and rectangles by multiplying the width by the length of a geometric shape. With this in mind, I knew that I would be able to draw on students' background knowledge for the learning segment. Then, looking into the Minnesota fifth grade standards, specifically in standard 5.3.2, it states that "students are to be able to develop and use formulas to solve for the area of a triangle, parallelogram, and figures that can be decomposed." With these Minnesota state standards in mind, I composed the central focus for the learning segment. The materials, textbook pages, and method of instruction would all be dependent on what the standards required.]

b. Given the central focus, describe how the standards and learning objectives within your learning segment address

- conceptual understanding,
- procedural fluency, **AND**
- mathematical reasoning or problem-solving skills.

[Throughout Lessons 1, 2, and 3, the central focus will be achieved through the lesson Learning Targets (LT). For Lesson Plan 1, the LT was that the students "will be able to recall and apply background knowledge of area of rectangles in order to determine the formula for area of parallelograms." Once the students recall what the formula for the area of a rectangle is, I will target their mathematical reasoning skills to develop the formula for a parallelogram. I will demonstrate to the students that a parallelogram is the same thing as a rectangle, just with a corner cut off and moved to the opposite side (Lesson 1 Input 1-6). Without telling the students what the area of the new shape would be (the area of the parallelogram would be the same as the area of the rectangle), I am testing their ability to draw conclusions on their own and use mathematical reasoning. In Lesson Plan 1, students may not at first understand the difference between "length x width" and "base x height." I have planned to explain to the students the purpose for why it needs to be called base and height, rather than length and width. By giving them this explanation, their conceptual understanding will grow because they will be able to correctly apply the terms used to represent these area concepts. For Lesson Plan 2, the LT is that "students will be able to compare the shape of a triangle to a parallelogram and draw the conclusion that the formula is ½ the formula of a parallelogram. I want students to be able to develop the formula on their own, and only with my guidance. Using Instructional Material 2.1 - SmartBoard Page 2, students will recognize that a parallelogram is made up of two triangles. On SmartBoard Page 3, it is my hope that students will be able to reason that a triangle is "one-

half" of a parallelogram. Knowing the formula for the area of a parallelogram, students may be able to develop the formula for a triangle on their own. This would demonstrate to me that they used mathematical reasoning to develop that formula. It also requires conceptual understanding because the students need to actually be able to compare the shape of the parallelogram to the shape of a triangle. By doing this, they will be able to derive the formula for area of a triangle. In Lesson 3, the LT is that "students will be able to visualize the regular shapes that are within an irregular shape and be able to draw the conclusion that if they add up the areas of all the regular shapes, they will have the total area of the irregular shape." For this Lesson 3, mathematical reasoning is needed by the students to understand that irregular shapes can be decomposed into regular shapes. First, I want to draw on student's background knowledge of the area of triangles, rectangles, and parallelograms. By doing this, these concepts will be fresh in students' minds. This will attribute to them being able to determine how to solve for the area of irregular shapes. Instructional Material 3.2 – SmartBoard Page 4 and 5, is my primary method I will use to get students to determine the area. By showing SmartBoard Page 4 and 5, I will be testing students' abilities to make the mathematical reasoning that there is a relationship between the two pages/shapes. Once they recognize the relationship, students should be able to "draw the conclusion" (LT) on how to solve for the area. Finding the area of irregular shapes requires the students to apply every formula that they have learned into this once concept. If the students meet the objectives and are able to solve for the area of irregular shapes correctly, that will demonstrate to me that they are able to see how all of the concepts in the learning target are connected and related. During and after each lesson plan, students are giving some type of informal or formal assessment. The primary informal assessment for the students will be practice on the individual whiteboards. This practice on the whiteboards during class will help the students built their procedural fluency. All of my practice problems are listed in my Instructional Materials. Some of the practice problems are just the shape with a length/width or height/base. Other problems, such as Instructional Material 1.2 – SmartBoard Page 10 expand students' problem-solving skills with a word problem. This word problem, and others like it in the formal assessments, is to help the students understand the last part of the Central Focus – "to solve basic computational problems, and applications to real-life."]

c. Explain how your plans build on each other to help students make connections between
   - concepts,
   - computations/procedures, **AND**
   - mathematical reasoning or problem-solving strategies

   to build understanding of mathematics.

[My learning segment will begin with the students needing to recall how to find the area of squares and rectangles. I need to first establish that they did meet the standard in fourth grade before I will be able to move forward with the learning segment. Following that, each of my lesson plan builds off one another. In addition, each lesson plan is a building block for the next day. First they will need to know the area of a rectangle in order to develop the area of a parallelogram. Then they need to know the area of a parallelogram in order to develop the formula for the area of a triangle. Lastly, they need to know the area of all three regular shapes in order to solve for the area of an irregular shape. I would not be able to teach these lessons in any other order than the order I wrote them in. The order in which the lessons plan are written is also based on the need for high-order thinking. To solve for the area of a rectangle and parallelogram does not require as high-order thinking as solving for the area of a triangle. Similarly, solving for the area of a triangle does not require as high-order thinking as solving for the area of an irregular shape. I am requiring that the students demonstrate their highest-order of thinking on the last day, after they have learned all of the concepts.]

2. Knowledge of Students to Inform Teaching

For each of the prompts below (2a–c), describe what you know about **your** students **with respect to the central focus** of the learning segment.

Consider the variety of learners in your class who may require different strategies/support (e.g., students with IEPs or 504 plans, English language learners, struggling readers, underperforming students or those with gaps in academic knowledge, and/or gifted students).

a. Prior academic learning and prerequisite skills related to the central focus—**Cite evidence of what students know, what they can do, and what they are still learning to do.**

[Some important information that I needed to know when planning my learning segment came from my supervising teacher. She informed me that the fifth graders can add and subtract fractions; however, they were not going to be learning how to multiply or divide them until sixth grade. This was important for me to know when planning my formal and summative assessments. I could not include questions that had fractions in them, because the students would not know how to multiply. There will be some questions that have a fraction as part of the problem. I will convert that fraction to a decimal when I assign the problem, and remind the students that they do not know how to multiply by fractions. This is also important to know for Lesson Plan 2. The formula for the area of a triangle is ½ base x height. Since the students will not know how to multiply by the ½, I will have to tell them that it is the same thing as dividing the (base x height) by 2. Another thing that my supervising teacher informed me of was that she has not taught anything with negative numbers. She says that is in the sixth grade standards, and so she is leaving that to the sixth grade math teacher. Similar to problems with fractions, I will avoid problems that have any negative numbers. This information is not as relevant for this learning segment as the information about multiplying fractions will be because there cannot be shapes that have negative side lengths, or a negative area. The students who have twenty-five minutes of Title each day will be coming to class already having learned the lesson once. The Title teacher always looks at my lesson plans ahead of time, so that she can pre-teach to those students.]

b. Personal, cultural, and community assets related to the central focus—**What do you know about your students' everyday experiences, cultural and language backgrounds and practices, and interests?**

[The class for whom I am teaching this learning segment and assessing is a very energetic class of 10 and 11 year olds. There is a wide variety of personalities, likes and dislikes, and other characteristics which make each student unique. They can be very talkative; however, they know how to be very respectful during lessons. There is only one student in the class who is of a different nationality. She is Hispanic, but is still fluent in English and Spanish. This school district is in a very rural part of the state. Many of the students in this class live in one of the three small towns that make up the school district. Other students live out in the country on farms. The reason for why the small school district plays a role in the student's education is that all of the students are friendly with one another. Many of the students have been going to this same school together since preschool. This creates for a comfortable learning environment for all the students. In this particular class, I have not witnessed a student being embarrassed for giving an incorrect answer. The learning environment is safe for them. This all contributes to the fun that we can have in math class, which may lead to students having a positive outlook on mathematics. There are two students in this class that are on IEPs; however, these two students do not have any math related IEP goals. Their goals are all based on reading or

speech needs. There are eight students in this class who qualify for Title 1 services. These students meet with the Title teacher for twenty-five minutes in the morning, three days a week. The Title teacher gives preview lessons to them based on my own lesson plans for the week, then during math class the Title teacher helps these eight specific students with the assignment for the day.]

c. Mathematical dispositions related to the central focus—**What do you know about the extent to which your students**

- **perceive mathematics as "sensible, useful, and worthwhile"**[1]
- **persist in applying mathematics to solve problems**
- **believe in their own ability to learn mathematics**

[The students in this class are split about 50/50 in their interest for mathematics. Simply by watching them in class, I can tell which students enjoy solving math problems and these same students would consider mathematics their favorite subject. These students are always raising their hand with answers to my questions, and are excited when I do call on them. They are motivated easily to contribute in class, and continue to be motivated when it comes to an assignment. However, there are also many students who do not enjoy math, and are not confident in their abilities to solve math problems. The students who are not confident are the same group of students who qualify for the Title program. In class, when I do see these students raising their hand with an answer I choose to call on them right away. I want to encourage their participation in class, and build their confidence level. These are also the students who I will check in with more during formal assessments, such as practice problems on their white boards. Often times, I believe that even these students do know how to solve most problems. Instead, they choose to raise their hand and ask for help anyway because they assume they will be wrong. There are some students in particular that my supervising teacher has told me to "check in with" every now and again. There is one student who is not a Title student, but has recently been having a difficult time with math. He typically takes a longer time to solve basic factual problems in math.]

3. Supporting Students' Mathematics Learning

Respond to prompts below (3a–c). To support your justifications, refer to the instructional materials and lesson plans you have included as part of Planning Task 1. **In addition, use principles from research and/or theory to support your justifications**.

a. Justify how your understanding of your students' prior academic learning; personal, cultural, and community assets; and mathematical dispositions (from prompts 2a–c above) guided your choice or adaptation of learning tasks and materials. Be explicit about the connections between the learning tasks and students' prior academic learning, their assets, their mathematical dispositions, and research/theory.

[Looking at the students' textbook prior to making the lesson plans, I noticed that it teaches the students to multiply the base and height by the fraction ½ to solve for the area of a triangle. I knew that the students would not be capable of doing this because they have not been taught how to multiply by fractions. I knew I would need to adjust that, and instead show the students that they can simply divide the base and height by 2. It will still be a good idea to mention to the students that dividing by 2 is the same thing as multiplying by ½ so that they can make that connection. The fifth graders that I am teaching for this learning segment are all 10 of 11 years

1 From the Common Core State Standards for Mathematics

old. After taking many psychology classes in school, I am aware of some of the different developmental stages that take place in children as they age, especially towards the adolescent ages. One of the main theorists that comes to my mind often when thinking of student development is Jean Piaget. Piaget had the idea that there were four stages of cognitive development in children (98 Elkind). My fifth graders are approaching that fourth stage, the Formal-Operation Period. In this period, students are able to think more abstractly, and move away from the concrete thinking. The process of solving formulas (such as the formula for area) requires students to use high-order thinking and formal operations. Knowing this as I planned their lessons helped guide me in what they would be capable of doing. Although my students are not fully adolescents yet, they are on the brink of entering this stage. Specifically Lesson 2 and 3, students need to think abstractly to draw the conclusion on how to determine the formulas for area. By trying to get them to determine the formulas on their own (with my guidance) in my lesson plans, I am helping them build up their own abstract thinking. I plan to use whiteboard practice as my primary method for formal assessment and checking student progress and understanding. I specifically chose to use whiteboard checks because it allows the students to work completely on their own, which also means I can see their own thought process. For the student whom my supervising teacher told me to "check in with", I allow him to have shortened assignments. He often times will work with her on assignments one-on-one, and so he hands in to me however much he gets done with her. I am perfectly fine with that, because he is still doing the work, it's just a matter that it takes him longer.]

b. Describe and justify why your instructional strategies and planned supports are appropriate for **the whole class, individuals, and/or groups of students with specific learning needs**.

> Consider the variety of learners in your class who may require different strategies/support (e.g., students with IEPs or 504 plans, English language learners, struggling readers, underperforming students or those with gaps in academic knowledge, and/or gifted students).

[The two students in this class that are on IEPs do not need any specific accommodations in the lesson plans because their IEP goals are reading specific only. For the word problems on my SmartBoard lessons, I will read the problems out loud for the students. Also, for any written assessments, I will read the directions to students, and make sure all students understand what the problems are asking them to do. Regarding the students who are in Title, when they come into my room for the lessons, they will have already learned the concept once; however, this does not mean that they have mastered the concept. They will still need just as much instruction as all the other students. From lessons in the past, I have noticed that they still need more help than the other non-Title students in the class. For this reason, I include many informal and formal assessments in my lessons to check on their progress and understanding. Considering all of my Title students, whiteboard checks does not provide any means by which students could get embarrassed by wrong answers. I, or other adults in the room, will be able to observe the student's work, and correct any errors one-on-one, rather than it being in front of the whole class.]

c. Describe common mathematical preconceptions, errors, or misunderstandings within your central focus and how you will address them.

[All three lesson plans come with some common misconceptions that I am prepared to address. In Lesson 1, I think that students will not understand the purpose for why parallelograms require the base and height measurements rather than the length and width. Another error that I am prepared to address is if/when students forget the appropriate label for area. I assume that many will forget to put units "squared" in their answer. I will continue to check on their

whiteboards to make sure it is with every answer they have. In the "Lesson Activities/Input 6" I explain the reason for why parallelograms measure with the base and height rather than the length and width. For Lesson 2, I predict that many students will forget to divide by 2 when solving for the area of a triangle. To avoid them making this mistake on their summative assessment, we will practice a lot on their whiteboards. They will become fluent in performing the procedure before they receive their summative assessment so once they get the assignment they should remember to divide by 2. In Lesson 3, students need to solve for the area of irregular shapes. The common error that I predict to come up often will happen after they divide the irregular shape into regular shapes. I assume many will forget that once they divide a side length into different portions for the regular shapes, they will not remember to subtract to find the new side length. I will show many examples of this on the board, and will remember to review it before the final assessment.]

4. Supporting Mathematics Development Through Language

As you respond to prompts 4a–d, consider the range of students' language assets and needs—what do students already know, what are they struggling with, and/or what is new to them?

a. **Language Function.** Using information about your students' language assets and needs, identify **one** language function essential for students to develop conceptual understanding, procedural fluency, mathematical reasoning, or problem-solving skills within your central focus. Listed below are some sample language functions. You may choose one of these or another language function more appropriate for your learning segment:

Categorize	Compare/contrast	Describe	Interpret	Justify

Please see additional examples and non-examples of language functions in the glossary.

[The primary language function for this group of students will be to **Draw Conclusions** based on the information I provide them with.]

b. Identify a key learning task from your plans that provides students with opportunities to practice using the language function identified above. Identify the lesson in which the learning task occurs. (Give lesson day/number.)

[Day 2, Lesson 2. Students have to draw conclusions in all three lesson plans; however, Lesson 2 has a clear task that requires students to draw conclusions. The key learning task in which students have the opportunity to draw conclusions is when they have to determine the formula for the area of a triangle. Students have to understand that a triangle is half of a parallelogram, and therefore draw the conclusion that the formula is ½ the formula of a parallelogram (½ base x height).

c. **Additional Language Demands.** Given the language function and learning task identified above, describe the following associated language demands (written or oral) students need to understand and/or use:

- Vocabulary and/or symbols
- **Plus** at least one of the following:
  - Syntax
  - Discourse

[For this same learning task that I identified above, the vocabulary that is key for student understanding is base and height. The height will look different in the triangle than it did in the parallelogram. The height will always be the measure from the base to the tallest point of the triangle. The base should not be confusing for the students because it is still just the bottom measurement. Base and Height are the vocabulary important for this learning task, but they are also included in symbols that students need to understand for this learning task. When writing base and height as the formula, I expect students to use the symbols *b* for base and *h* for height. Students will also be expected to know the discourse or structure of the formulas. For the learning task specified above, students will need to know the specific structure to the formula A= ½ bh. Students will also need to know how to say the formula, and be able to apply the formula to real problems.]

d. **Language Supports.** Refer to your lesson plans and instructional materials as needed in your response to the prompt.

- Identify and describe the planned instructional supports (during and/or prior to the learning task) to help students understand, develop, and use the identified language demands (vocabulary and/or symbols, function, discourse, syntax).

[In Lesson Plan 2, I will provide students with a few language supports to help them build their ability to draw a conclusion. First, students and I will review what the formula for the area of a parallelogram is. By doing this, the students will remember the two vocabulary terms base and height, as well as the symbols *b* and *h* that represent base and height. The next language support for the students to draw a conclusion will be to get the students to understand that a triangle is ½ of a parallelogram. When they recognize this, they will be able to use their own language to determine what the formula would be for the area. The language support that helps with vocabulary, symbols, and the discourse of drawing conclusions is the students' word wall entry. Any new vocabulary words that the students encounter in their mathematics lesson are put up onto the word wall. From this learning segment, the words and formulas for area of a rectangle, parallelogram, and a triangle will be put on the word wall. The students will enter the same information into their math folders as is written in Instructional Material 2.4.]

5. Monitoring Student Learning

In response to the prompts below, refer to the assessments you will submit as part of the materials for Planning Task 1.

a. Describe how your planned formal and informal assessments will provide direct evidence of students' conceptual understanding, computational/procedural fluency, **AND** mathematical reasoning or problem-solving skills **throughout** the learning segment.

[To witness students' conceptual understanding, the formal assessment method of questioning will give me a great insight to the process of students drawing conclusions about the formulas. Although questioning does not give me any concrete, quantitative data, it still allows me to witness the students' learning process. For each lesson, students will practice on their whiteboards/and or a worksheet that I provide for them. By doing this, they are building their procedural fluency. When students complete individual practice in class on whiteboards, I will make sure to provide many practice examples before I give them their summative assessment. In my Instructional Materials 1.2, 2.1, and 3.2, I have provided all of the practice problems that I have prepared ahead of time. If the students are not meeting the objective by the end of those prepared practice problems, I will create more on the spot so that they get that extra practice. I will be able to privately observe if the students are understanding the concept, or if they need extra practice. I do not want to give them an assignment, if their procedural fluency is still very low. That means that they would need an extra day to re-teach the lesson. For each lesson

plan, there is also an assignment. Lesson Plan 1's assignment (Formal Assessment 1.1) is a worksheet provided by the textbook. I have looked over the problems beforehand to ensure that the students will be capable of solving all the problems after completion of the lesson. I will provide students with the decimal number for the fractions in problems 5 and 9. This worksheet also gives students real-life problems to solve. It is important for students to understand that math is used in their everyday life. Lesson Plan 2's assignment comes out of the textbook (Formative Assessment 2.2) The students will be assigned specific problems that I have chosen beforehand. The problems that I have chosen ensure that students practice their procedural fluency, and also that they strengthen their mathematical reasoning by solving the different types of word problems. Lesson Plan 3's assignment (Formal Assessment 3.1) is an assignment that requires students to solve for the area of irregular shapes. I did not think that my students would be as capable to solve for word problems that include irregular shapes. Because of that, students simply are practicing their procedural fluency to solve for the area. They do still have to use different mathematical skills to decompose the irregular shapes into regular shapes that they know. The summative assessment (Formative Assessment 4.1) for this half of the chapter will be given the day after Lesson Plan 3 is taught. In this assessment, students will be demonstrating their ability to apply the formulas for area of a rectangle, parallelogram, triangle, and irregular shapes. Although the assessment does not require students to literally explain their process, I will be able to see their process in the work that they show. By examining their work, I will be able to have an understanding of the thought process that they use.]

b. Explain how the design or adaptation of your planned assessments allows students with specific needs to demonstrate their learning.

Consider the variety of learners in your class who may require different strategies/support (e.g., students with IEPs or 504 plans, English language learners, struggling readers, underperforming students or those with gaps in academic knowledge, and/or gifted students).

[I believe that student self-evaluations are good methods to use when assessing student understanding. One method that my school uses is called "Fist to Five." In this method, students hold up a fist (0) if they do not understand the concept at all. Students hold up a "five" on their hand if they feel like they have met the objective. They can hold up 1, 2, 3, or 4 fingers if they are somewhere in the middle. This method can be extremely effective for me to gauge where students (especially the eight students who are in Title) are rating themselves. The problem that I could see with this method would be that students would not be honest. Students' consciences will want them to be honest; however, if students know that they could be picked on for "not getting it" when everyone else in the class "gets it", they may lie and give themselves a higher score than what they are actually understanding at. When I use this informal assessment, I will have all of the students close their eyes. This way students cannot see what other students are rating themselves at. It takes away from the risk of being embarrassed, and allows me to receive more honest scores from all students. Similarly, for students who do not like the fear of embarrassment for getting wrong answers, whiteboard practice is a good assessment tool. I can check their work, without any other students needing to see what they get for an answer.]

Works Cited

Eklind, David. *Child Development and Education: A Piagetian Perspective*. Oxford University Press: New York. 1976.

Math Connects: Chapter 10 Resource Masters. McGraw-Hill: Columbus, OH. 2009. (Formal Assessment 1.1)

Math Connects: Concepts, Skills, and Problem Solving. McGraw-Hill: Columbus, OH. 2009. (Formal Assessment 2.2)