Planning Commentary

In Planning Task 1, you will write a commentary, responding to the prompts below. Your commentary should be ***no more than 9 single-spaced pages, including the prompts****.*

1. ***Central Focus***

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

      The focus will be on the students being able to distinguish between the different types of Functions and graph accordingly, and being able to solve each type of Function appropriately. Every Function has different steps for graphing and this unit will focus on the students learning and mastering those steps.

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

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

      The central focus and learning objectives address conceptual understanding by having the students work with the vocabulary, not just learn it. They students will be expected, and the lessons are designed, to use the unit vocabulary repeated throughout the unit.

      The central focus and learning objectives address procedural fluency by working with the students to become fluent in solving different types of functions.

      The central focus and learning objectives address mathematical reasoning and problems-solving skills by testing the students about how to solve a problem. It focuses on preparing them to see several different types of functions, properly identify, and then solve the given functions.

   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.*

      Each lesson introduces a new function by linking it back to previous functions that already know how to solve and graph. By this time during the course the students have worked with linear functions for a while and are on their way to mastering linear functions. My lessons build off that prior knowledge to help students feel more comfortable branching out into higher order functions. Their prior knowledge and prior experience with linear functions make solving and graphing quadratic and exponential functions easily to learn. The knowledge and procedures they learned to solve linear functions translates easily to quadratic and exponential functions. The lessons also help to create more problem-solving skills for quadratic and exponential functions from the student's prior knowledge and experience solving linear functions

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.***

Students know how to identify, solve, and graph a linear function. They can solve a linear function given the function or graph. They are learning to solve and graph quadratic and exponential functions.

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?***

Several of the students are of Latino descent and are bilingual. All of them have an extreme like of popular Top 40 music.

c. *Mathematical dispositions—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*

Most of my students do not see a use for mathematics outside of just taking the Algebra class because they are required to take it to graduate. Because they do not see a use for mathematics, if they do not understand a concept they do not persevere in finishing a problem, assignment, or test. I believe that they think they cannot learn mathematics. They have decided they are not math people and therefore cannot learn mathematics. They do not have confidence in themselves when learning new material.

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.

Using the fact that students are not confident learning new mathematical concepts, my lessons try to show the connections between the new material and older concepts that they are more confident about. I chose to have the students make a Graphing Notebook, and turn it in, for their notes instead of traditional notes, because I want to actually write down the information that way they are receiving the information multiple ways. It will also allow them to recognize the similarities between linear, quadratic, and exponential functions. I used groups for the Function Deciphering Activity because it is not about the student being able to sit and solve functions, which could be assessed with a test. It is about the student showing what they have learned while being in a relaxed and comfortable environment.

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).

I plan to use primarily Guided Practice/Direct Instruction and Class/Group Discussion for my main instructional strategies. I chose these because the students are not confident in their abilities as mathematicians, and they need some extra support. I plan to give them that support by the Guided Practice. I will also utilize Class/Group Discussion so that students do not feel isolated or put on the spot. These strategies were chosen to help the class function as a whole class while also giving support to the students who have specific learning or language needs.

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

Common mathematical preconceptions within my central focus is that quadratics and exponential functions are different from linear. They have differences from linear but they have more similarities. I will address this misconception with my students have asking them their thoughts and ideas about quadratic and exponential functions, and slowly show them all the similarities. My lessons are built around me using their prior knowledge of linear functions and using the similarities to make quadratic and exponential functions less scary.

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, and 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.*

Compare/Contrast	*Justify*	*Describe*	*Explain*	*Prove*

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

I chose Compare/Contrast because that it the backbone of my lessons. I want the students to notice the similarities between the different types of functions, but the differences are also important. The differences allow the students to identify the function.

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.)*

The Graphing Notebook that the students will create will utilize the chosen language function. Its role in the unit is to help the students make the Compare/Contrast connections between all of the different functions. The Graphing Notebook is used during Lesson 1 and Lesson 2.

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*
- *Mathematical precision[2] (e.g., using clear definitions, labeling axes, specifying units of measure, stating meaning of symbols), appropriate to your students' mathematical and language development*

Plus *at least one of the following:*

- *Discourse*
- *Syntax*

For the learning task and the language function, students will need to know specific important vocabulary. This includes: Linear Function, Quadratic Function, Exponential Function, equation, function, slope, standard form, and slope-intercept form. Using this important vocabulary they will better development how the different functions Compare/Contrast. This development

will help with their mathematical precision when using vocabulary terms. They will learn that they have to be precise when talking about functions became one small change can completely change a function. This precision with vocabulary will help them better at identification of functions. Students will also develop better mathematical syntax in this unit, using the learning task previous mentioned in part b of this section. As previous mention precision is necessary for mathematics. Whether we are discussing functions or their graphs. Precision is the key. In order to help the students gain and develop this precision, I must teach them the proper syntax to use. This way they can properly learn the universal language of mathematics.

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 (function, vocabulary and/or symbols, mathematical precision, discourse, or syntax).*

At the beginning of each lesson I have a Bellwork which will help engage student's prior knowledge and give them a chance to recall some of the important vocabulary that they know and are still learning. This routine gets the students thinking about the vocabulary whether it is a preview of what is to come later in the lesson, or review of the previous day's vocabulary, gives students the chance to become proficient, and later master, the unit vocabulary. During the learning task I plan to support the student's language development by giving them multiple examples using the vocabulary. I plan to give visual, verbal, and written examples all of the important vocabulary and syntax needed for the unit.

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, procedural fluency,* ***AND*** *mathematical reasoning and/or problem-solving skills* ***throughout*** *the learning segment.*

My informal assessments will provide direct evidence of student learning when I hear students using the academic unit vocabulary during normal, routine classroom conversations with their peers. These conversations will not be fueled my agenda but their own confidence in their growing knowledge. This will show me how prepared the students are to continue on in the unit.

My formal assessments of journal writing and the Function Deciphering activity, will provide me with evidence of student learning in multiple ways. The daily journal exit slips will quickly tell me if students are making the necessary conceptual connections between the different functions. It will also tell me if the students are gaining confidence in themselves as mathematicians and as

problem-solvers. The Function Deciphering activity will show me that students do have the conceptual knowledge of the different types of functions and procedural fluency of solving the functions in the correct manner.

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).

All of my assessments are designed to measure a student by their previous progress and the quality of their work output. This translate well for students will specific learning or language needs.

My informal assessments of listening to students and looking at homework assignments are looking for improvement in better use of the key unit vocabulary, better problem-solving skills, solving quadratic functions to the same level as the student solves linear functions, and better identification skills. I will always look for improvement within each student's body of work.

My formal assessments are about putting all of the skills together, which will be harder for students with specific learning and language needs. That is way there are so many different areas where students get points. They are tested on whether they can identify the function, write any important vocabulary for the function they identified, solving the function, and then graphing it. I also made the Function Deciphering activity social so that students would not be so isolated from one another.