

AGENDAS FOR THE WEEK: 9/21 – 9/25

One-sentence summary of the week's lessons/learning goals: Students will develop an understanding of function notation and use function operations to evaluate, add, subtract, and multiply functions by a constant.

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
(Include times for each part of your lesson)	Objective(s): SWBAT - Evaluate a function for a given input using function notation. - Explain the relationship between a function's input and output. - Connect function notation to prior knowledge of substitution and evaluating expressions. MAFS/NGSSS: MA.912.F.1.2: Given a function represented in function notation, evaluate the function for an input in its domain. For a real-world context, interpret the output.	Objective(s): SWBAT - Add two functions using function notation. - Combine like terms to simplify the resulting expression. - Explain how adding functions combines their outputs. MAFS/NGSSS: MA.7.AR.1.1: Apply properties of operations to add and subtract linear expressions with rational coefficients.	Objective(s): SWBAT - Subtract functions using function notation. - Distribute a negative when subtracting a function. - Combine like terms to simplify the resulting expression. MAFS/NGSSS: MA.7.AR.1.1: Apply properties of operations to add and subtract linear expressions with rational coefficients.	Objective(s): SWBAT - Multiply a function by a constant. - Distribute a constant to every term of a function. - Simplify the resulting expression. MAFS/NGSSS: MA.912.AR.1.3: Add, subtract, and multiply polynomial expressions with rational number coefficients.	Objective(s): SWBAT - Apply function notation to evaluate functions. - Add and subtract functions. - Multiply functions by a constant. - Explain their mathematical reasoning and show appropriate work. MAFS/NGSSS: MA.912.F.1.2 MA.7.AR.1.1 MA.912.AR.1.3
P	Engage (10 minutes) Bellringer: Error Analysis - Students will receive three previously missed quiz problems involving simplifying expressions and combining like terms. - Each problem will contain an intentional error.	Engage (~10 minutes) Bellringer: 3 review questions - Students will review Monday's content: Evaluating functions Identifying input and output - Teachers will briefly address any common errors from Monday's work.	Engage (10 minutes) Bellringer: - Review function notation and adding functions from Tuesday - Students complete 2–3 review problems independently - Teachers review common errors and	Engage (10 minutes) Bellringer: - Review: Evaluating a function. Adding functions. Subtracting functions. - Students complete 2–3 review problems independently - Teacher reviews common errors and	Engage (10 minutes) Bellringer: Short mixed review: Evaluate a function. Add two functions. Subtract two functions. Go over common errors and tips to help students

	- Students will: - Identify the mistake. - Correct the work. - Explain why the mistake is incorrect. - Teachers will emphasize that these errors were common on Friday's quiz and encourage students to identify what they should look for when solving similar problems.		connect prior learning to subtracting functions	connects previous function operations to the day's topic	understand the content
L A	Explore (10 minutes) Function Notation Pre-Assessment - Students will complete the "Before We Learn Something New..." pre-assessment. - Ms. Mayra will collect responses and use them to identify students' current levels of understanding before introducing function notation. - (Part One Project): Plan, Implement and Score a Pre-Assessment - Attached below Explain (15-20 minutes) - Notes on evaluating functions - Introduction to function notation	Explore (15 minutes) Function Match Whiteboard Activity - Each student receives a different function. - Around the room are six whiteboards displaying: $f(2)=$__ with three different possible outputs for $(f(2))$, and $f(3)=$__ with three different possible outputs for $(f(3))$. - Students evaluate their assigned function at $(x=2)$ and $(x=3)$, find the matching whiteboard, and write their function underneath the corresponding answer. - This reinforces the idea that the notation identifies an input and produces an output.	Explore (10 minutes) - Students work with an activity that will continue reinforcing function notation, adding them, and an introduction to subtracting functions - Students practice identifying the operation being performed and simplifying their results - Teachers circulate, monitor student work, and provide support as needed Explain (15-20 minutes) - Notes on subtracting functions - Introduce notation for subtracting functions - Discuss how subtraction applies to the entire second function	Explore (15 minutes) - Students work with the day's multiplying-function s assignment/activity to investigate how a constant affects a function - Students apply prior knowledge of the distributive property to the new function operation - Teachers circulate, monitor student understanding, and provide support as needed Explain (15-20 minutes) - Notes on multiplying functions by a constant - Introduce notation for multiplying a function by a constant	Explore (30 minutes) Jeopardy Review - Categories: - Evaluating Functions Adding Functions Subtracting Functions Multiplying by a Constant - Questions increase in difficulty. - Students work in teams and must show their work to receive points. Explain - Brief whole-class review of the most commonly missed Jeopardy questions. - Teacher addresses misconceptions noticed throughout the week.

	- Connect $f(x)$ notation to the familiar y notation - Review input and output of a function - Review substitution when evaluating a function Elaborate (35 minutes) - Students complete the function notation/evaluating functions worksheet. - Students will: Substitute given values into functions. Simplify to find the output. Practice interpreting $f(x)$ and $f(a)$. - Teachers will circulate and provide additional support based on the pre-assessment results, especially for students who confuse the input with the output.	Explain (20 minutes) - Notes on adding functions - Introduce notation for adding functions - Explain how to combine two functions - Review combining like terms when simplifying Elaborate (35 minutes) - Students complete the Adding Functions worksheet. - Emphasize: Write the functions $\rightarrow$ combine them $\rightarrow$ combine like terms $\rightarrow$ simplify.	- Connect subtracting functions to students' prior knowledge of subtracting and simplifying algebraic expressions - Work through 2 sample questions as a class before students are sent to work independently Elaborate (35 minutes) - Students continue working on the assigned practice for subtracting functions - The worksheet will have a variety of problems from easy to harder functions to elaborate - Students will have the answer key in front of the class to check their work - Teachers' focus is on students' work	- Connect multiplying functions to the distributive property - Review how to simplify the resulting expression - Work through 2 sample questions as a class before students are sent to work independently Elaborate (35 minutes) - Students will work on a worksheet with a variety of problems that reinforce the notes - The worksheet will have different functions from simpler to more complicated and will be multiplied by a constant	
N	Evaluate and Summary - Ms. Mayra reviews the completed pre-assessments to identify students' current levels of understanding, including partial understandings and misconceptions. - Student responses will be sorted into the identified levels of understanding and used to plan instructional supports	Evaluate and Summary - Teachers monitor student progress throughout the activity and practice, looking for evidence of understanding of function notation and adding functions. - Students use the posted answer key to check their work and identify problems they need to revisit. - Students are encouraged to first	Evaluate and Summary - Teachers monitor student progress throughout the activity and practice, focusing on students' understanding of subtracting functions and their ability to show their work. - Students use the posted answer key to check their answers and make corrections as needed.	Evaluate and Summary - Teachers monitor student progress throughout the activity and practice, focusing on students' understanding of multiplying functions by a constant. - Students use the posted answer key to check their work and identify and correct errors. - Students are encouraged to work	Evaluate and Summary Post-Assessment/Quiz Students complete the assessment covering: Function notation Evaluating functions Adding functions Subtracting functions Multiplying functions by a constant Include the parallel function notation question from the Monday pre-assessment so student growth can be compared.

	and modifications for the remainder of the week. - Selected student responses will be saved without identifying information for use in the preconceptions and misconceptions project.	work independently or collaborate with their group before asking the teacher for assistance. - Teachers prioritize students showing their work and mathematical reasoning rather than simply having the correct final answer. - Brief class discussion of common errors or areas of confusion observed during the lesson.	- Students are encouraged to collaborate with peers and ask teachers for support when they are unable to resolve an error independently. - Teachers use student work and observations to determine which concepts may need additional review.	independently or with their group, explain their reasoning, and seek help when needed. - Teachers focus on students' ability to show the steps used to solve each problem rather than solely on obtaining the correct answer.	
Resources:	- Combining Like Terms Quiz - Bellringer error-analysis problems - Function Notation Pre-Assessment - Evaluating Functions/Function Notation Notes - Evaluating Functions Worksheet - Posted Answer Key - Student paper/pencil	- Function Notation/Evaluating Functions Bellringer - Function Matching Activity - Adding Functions Notes - Adding Functions Worksheet - Posted Answer Key - Whiteboards and markers - Student paper/pencil	- Function Notation/Adding Functions Bellringer - Subtracting Functions Notes - Subtracting Functions Practice/Assignment - Posted Answer Key - Student paper/pencil	- Function Operations Bellringer - Multiplying Functions by a Constant Notes - Multiplying Functions by a Constant Practice/Assignment - Posted Answer Key - Student paper/pencil	- Function Operations Bellringer - Jeopardy Review - Whiteboards/markers or student workspace - Post-Assessment/Quiz - Student reflection - Answer key for teacher use

Questions to ask students during lesson:

- What do you already know that can help you solve this problem?
- What does the notation tell you to do?
- What is the input? What is the output?
- How did you decide what step to do first?
- Can you explain your work to your group?
- Where do you think your mistake happened?
- What did you notice when you checked your answer?
- Does your answer make sense? How do you know?

Misconceptions or identified areas where students will struggle:

Function Notation:

- Students may interpret $(f(x))$ as multiplication.
- Students may think the number inside the parentheses is automatically the answer.

- Students may confuse the input with the output.
- Students may struggle to connect function notation to the familiar (y)-notation.
- Students may become discouraged when first encountering unfamiliar notation.

Evaluating Functions:

- Students may substitute the input incorrectly.
- Students may forget to replace every (x) with the given input.
- Students may make errors when simplifying after substitution.

Adding Functions:

- Students may have difficulty combining like terms after adding the functions.
- Students may combine unlike terms.

Subtracting Functions:

- Students may forget that the subtraction applies to the entire second function.
- Students may incorrectly distribute a negative sign.
- Students may have difficulty combining like terms after subtraction.

Multiplying Functions by a Constant:

- Students may multiply only one term instead of the entire function.
- Students may forget to use the distributive property.
- Students may make errors when simplifying after distributing.

Pre-assessment Assignment:

<https://docs.google.com/document/d/1uGcBJVZVvV-gr3B8yg8ol1hOsEww05YmMlx3RSSWCxI/edit?usp=sharing>