Formal Pre-Assessment	Students will complete a pre-assessment during their morning routine. The pre-assessment will be aligned with the given central focus and learning targets. The pre-assessment has one function machine with missing numbers in the "out" function of the machine. Question two includes a function machine with a missing rule and two missing "out" functions. The results of the pre-assessment will aid in preparation of the instruction the teacher will give.
Lesson 1	
Lesson Title	What's My Rule?
MN/CC State Standard(s)	MN Standard: Number and Operation **1.2.2.3.** Use number sense and models of addition and subtraction, such as objects and number lines, to identify the missing number in an equation.
Central Focus	Students will use counting on, as well as addition and subtraction methods to identify a missing number and apply it in order to solve the problem.
Learning Target for this Lesson	I can count forward and backward from a given number. I can identify the rule in given problems.
Academic Language (AL)	**Domain-specific academic vocabulary:** function machine, rule, add, subtract
	General academic vocabulary: apply
	Sentence Frame: **T**he rule is…. The rule is addition/subtraction because...
	Students will be asked to explain how they came upon the rule to two other people using the words rule and add or subtract.
Needed modifications/supports	Student 1 will accomplish the stated learning target with visuals on the board and preferential seating during the lesson. Student 2 will accomplish the stated learning target with frequent checking of understanding and preferential seating during lesson and guided practice. Student 3 will accomplish the stated learning target with support from a one-on-one paraprofessional and frequent checking of understanding.
Resources & materials needed	SMART Board document, Everyday Mathematics journal page 105.

Lesson Part	Activity description / teacher does	Students do
<u>Phase 1</u> <u>State Target & Activate Prior Knowledge</u>	Ask students what a pencil sharpener does. After students respond, ask if a pencil sharpener can bake cookies or fry an egg. Explain that a pencil sharpener is a machine and all machines have only one job. *We will be learning of a different machine today, called a function machine.* Today we will count forward and backwards to find the. Reminding students of frames and arrows. Go over example of frames and arrows, which is found, on the SMART Board document.	Participate during frames and arrows practice to elicit prior knowledge.
Phase 1 Assessment	Teacher will observe students who may be struggling with activating prior knowledge. Students, who are unfamiliar with prior knowledge, will receive a "O" on the class roster.	

<table>
<tr><td></td><td colspan="2">Students who understand the prior knowledge will receive a ✓ next to their name to show they understand their prior knowledge necessary for this lesson.</td></tr>
<tr><td><u>Phase 2 Teacher Input / Inquiry</u></td><td>Teacher will make connection from frames and arrows to the new material, function machines. Today we will learn about function machines. (show function machine on the SMART Board) This should look familiar to you because we did this for morning math yesterday. Today we will learn all about these! This is a function machine. The function machine has a rule, similarly to frames and arrows. We must start by finding the rule. To find the rule, we will look at the number in the “in” side and compare it to the number on the “out” side. Have the students use skills of counting forward and backward to find what they needed to add to the “in” number to get to the “out” number. Explain that the number they get is called the rule. Together with the students, start at the “in” number by putting in on your cheek (a skill the students use for counting on) and count on to the number in the “out” column. How many does it take to get to the number in the “out” column? Students should respond with the number that it took to get from the “in” number to the “out” number.</td><td>Students will use number sense to count forward and backward on the number line to solve for the rule.</td></tr>
<tr><td><u>Phase 3 Guided Practice</u></td><td>With the students, work through examples to find the rule. Use methods in which the students will discuss amongst each other in find the rule. While students are discussing amongst each other, listen for and note students that are not easily finding the rule.</td><td>Use skills of counting forward and backward to find the rule. Discuss amongst peers.</td></tr>
<tr><td>Phase 3 Assessment</td><td colspan="2">While students discuss amongst themselves, make a note of students who do not understand and students who understand the concept fluently using O and ✓. This will in turn, help in deciding where students will be sitting on the carpet for the next day. If there are students that are not ready to move to independent practice at this time, make note. These students will join together on the carpet for more instruction during the next phase.</td></tr>
<tr><td><u>Phase 4 Independent practice</u></td><td>Send students to their tables and have them find the rule for the function machines on Everyday Mathematics Journal page 103. <u>Challenge</u>: Any students that finish may work on applying the rule. This is not required for assessing the students’ work for today.</td><td>Students will apply the skills they know to find the rule.</td></tr>
<tr><td>Phase 4 Assessment</td><td>While students are working on Everyday Mathematics Journal page 103, walk around the room and observe if students are counting on correctly. If the students are not, make note of that in the checklist (shown below) using O and ✓. Check Everyday Mathematics Journal page 103. Look for students’ ability to find the correct rule. Keep a checklist of whether the students have the ability to correctly find the rule.</td><td>Students will use counting forward and backward skills to find the rule and complete page 103 in Everyday Mathematics Journal.</td></tr>
<tr><td><u>Phase 5 Restatement & Closure</u></td><td colspan="2">Have students give a thumb up, thumb to the side, or thumb down to show how they feel about the lesson. Students are familiar with this assessment tool. Thumb down means “Help!”; thumb to the side means “I need more practice”; thumb up means “Got it!”. Today we learned the first skill! We will continue tomorrow but learning how to use this rule to find the missing numbers in the function machine!</td></tr>
<tr><td><u>Phase 6 Summative Next Steps</u></td><td colspan="2">Key: O-Students have not shown mastery of skill being assessed
✓Students have shown mastery of skill being assessed
<table>
<tr><th>Student</th><th>Phase 1 Assessment-Prior Knowledge</th><th>Phase 3 Assessment-Pre independent work</th><th>Phase 4 Assessment-Post independent work</th><th>Next Steps</th></tr>
<tr><td>Aubrey</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Aaron</td><td></td><td></td><td></td><td></td></tr>
</table></td></tr>
</table>

	Peyton				
	Nevaeh				
	Jack				
	Kaitlyn				
	Anna				
	Gavin				
	Addyson				
	Garrett				
	Rylee				
	Tommy				
	Mackenzie				
	Gabe				
	Lucas				
	Julian				
	Ava				
	Carleen				
	Karsten				
	Bailey				
	Maddie				
	Olivia				
	Aidyn				
	Ellie				
	Zach				

Lesson 2	
Lesson Title	Apply the Rule
MN/CC State Standard(s)	MN Standard: Number and Operation **1.2.2.3.** Use number sense and models of addition and subtraction, such as objects and number lines, to identify the missing number in an equation.

Central Focus	Students will use counting on, as well as addition and subtraction methods to identify a missing number and apply it in order to solve the problem.
Learning Target for this Lesson	I can use addition and subtraction facts to solve given problems. I can continue patterns in given problems.
Academic Language (AL)	**Domain-specific academic vocabulary:** function machine, rule, add, subtract
Academic Language (AL) Needed modifications/supports	**General academic vocabulary:** apply
	Sentence Frame: **T**he rule is…. The rule is addition/subtraction because...
	Students will be asked to explain how they came upon their answer to two other people using the words rule and add or subtract.
	Student 1 will accomplish the stated learning target with visuals on the board and preferential seating during the lesson. Student 2 will accomplish the stated learning target with frequent checking of understanding and preferential seating during lesson and guided practice. Student 3 will accomplish the stated learning target with support from a one-on-one paraprofessional and frequent checking of understanding.
Resources & materials needed	SMART Board document, K-5 Learning online interactive game, Everyday Mathematics journal page 105.

Lesson Part	Activity description / teacher does	Students do
Phase 1 **State Target & Activate Prior Knowledge**	Begin by having the students read the learning target in an "I can" statement. "I can use adding and subtracting to find missing numbers and solve function machines." This will give the students and idea of what they will accomplish in the lesson. *Today we will continue working with function machines. Yesterday we learned how to find the rule in a function machine. Today we will be learning how to apply that rule to the function machine. We will be using our addition and subtraction skills to find the missing numbers.* Work through examples of frames and arrows as guided practice for review of applying a rule.	Read and understand the learning target. Prepare for the skills to be learned.
Phase 1 Assessment	Teacher will observe students who may be struggling with activating knowledge from previous day's lesson. Students, who are unfamiliar with this knowledge, will receive a "O" on the class roster. Students who understand the prior knowledge will receive a ✓ next to their name to show they understand their prior knowledge necessary for this lesson.	
Phase 2 Teacher Input / Inquiry	*The function machine is similar to the frames and arrows because there is a rule. The rule will be applied to the function machine. Today we will practice applying that rule. The rule is applied differently in function machines than frames and arrows. The frames and arrows follows a pattern but the function machine follows a pattern but differently. Frames and arrows uses the last number to find the next number. In function machines, we will use*	Students will give response when prompted as well as ask any questions necessary.

<table>
<tr><td></td><td>the number from the “in” side and that number will not be the number we found from the last function. To find each missing number, we will use the rule. This rule says (have students insert answer here) so we will be adding seven to each number on the “in” column. We will do this for each number on the “in” column.
Work through examples to show students that each function begins with a new number in the “in” column.</td><td></td></tr>
<tr><td><u>Phase 3 Guided Practice</u></td><td>Work through examples of applying the rule as well as examples where the students have to find the rule AND apply it. Use discussion as much as possible. When discussing, have students turn to the people next to them to discuss their answer.

Play K-5 Learning interactive game. Give students opportunity to come to the SMART Board and select the numbers to put into the machine as well as to answer the given questions.</td><td>Use skills of adding or subtracting the rule to the number in the “in” column.</td></tr>
<tr><td>Phase 3 Assessment</td><td colspan="2">While students discuss amongst themselves, make a note of students who do not understand and students who understand the concept fluently using O and ✓. If there are students that are not ready to move to independent practice at this time, make note. These students will join together on the carpet for more instruction during the next phase.</td></tr>
<tr><td><u>Phase 4 Independent practice</u></td><td>Send students to their tables and have them solve the function machines on page 103 that they previously found the rule for.</td><td>Students will apply addition and subtraction skills to find the missing numbers in the function machine.</td></tr>
<tr><td>Phase 4 Assessment</td><td>Take small group of students that do not understand the concept to join in a small group at the carpet for further instruction. After students are dismissed back to their tables, walk around the room and observe the students completing the Everyday Mathematics Journal page 103, using the skills we practiced. If the students are not, make note of that in the checklist (shown below) using O and ✓. Check Everyday Mathematics Journal page 103. Look for students’ ability to find the correct rule. Keep a checklist of whether the students have the ability to correctly find the rule.</td><td>Students will use</td></tr>
<tr><td><u>Phase 5 Restatement & Closure</u></td><td colspan="2">Today we learned that we can…(have students state learning target that is written on whiteboard). We will keep working with function machines tomorrow!</td></tr>
<tr><td><u>Phase 6 Summative Next Steps</u>
Attach a class roster (first names only) with space to indicate for each student the needed next steps of instruction.</td><td colspan="2">Key: O-Students have not shown mastery of skill being assessed
✓Students have shown mastery of skill being assessed
<table>
<tr><th>Student</th><th>Phase 1 Assessment-Day 1 Knowledge</th><th>Phase 3 Assessment-Pre independent work</th><th>Phase 4 Assessment-Post independent work</th><th>Next Steps</th></tr>
<tr><td>Aubrey</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Aaron</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Pe ton</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Nevaeh</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Jack</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Kaitlyn</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Anna</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Gavin</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Addyson</td><td></td><td></td><td></td><td></td></tr>
</table></td></tr>
</table>

	Garrett				
	Rylee				
	Tommy				
	Mackenzie				
	Gabe				
	Lucas				
	Julian				
	Ava				
	Carleen				
	Karsten				
	Bailey				
	Maddie				
	Olivia				
	Aidyn				
	Ellie				
	Zach				

TPA-Referenced Lesson Plan

Teacher Candidate Name: Regan Zimmer
Grade & Subject Area: 1st Grade Mathematics
Date for Planned Lesson:

Lesson 3	
Lesson Title	Function Machine – small group
MN/CC State Standard(s)	MN Standard: Number and Operation **1.2.2.3.** Use number sense and models of addition and subtraction, such as objects and number lines, to identify the missing number in an equation.
Central Focus	Students will use counting on, as well as addition and subtraction methods to identify a missing number and apply it in order to solve the problem.
Learning Target for this Lesson	I can count forward and backward from a given number. I can identify the rule in given problems. I can use addition and subtraction facts to solve given problems. I can continue patterns in given problems.
Academic Language (AL)	**Domain-specific academic vocabulary:** function machine, rule, add, subtract
Academic Language (AL) Needed modifications/supports	**General academic vocabulary:** apply
	Sentence Frame: **T**he rule is…. The rule is addition/subtraction because...
	Students will be asked to explain how they came upon their answer to two other people using the words rule and add or subtract.
	Student 1 will accomplish the stated learning target with visuals on the board and preferential seating during the lesson. Student 2 will accomplish the stated learning target with frequent checking of understanding and preferential seating during lesson and guided practice. Student 3 will accomplish the stated learning target with support from a one-on-one paraprofessional and frequent checking of understanding.
Resources & materials needed	Individual Whiteboards, markers, and erasers

Lesson Part	Activity description / teacher does	Students do
Phase 1 **State Target & Activate Prior Knowledge**	Work with small groups that are divided by ability level. The groups are as follows: Group 1- Addyson, Ava, Maddie, Garrett, Olivia, and Zach. Group 2- Neveah, Kaitlyn, Anna, Julian, Aaron, and Ellie. Group 3- Aubrey, Karsten, Carleen, Peyton, Bailey, and Mackenzie. Group 4- Jack, Aidyn, Gabe, Rylee, Gavin, and Tommy. Begin each group by having students explain the rule.	Students will participate in group discussion.
Phase 1 Assessment	Teacher will observe students who may be struggling with describing the rule. Students, who are unfamiliar with academic language, will receive a "O" on the class roster. Students who are familiar with and understand the academic language will receive a ✓ next to their name to show they understand the necessary requirements for this lesson.	
Phase 2 Teacher Input / Inquiry	*This week we have been learning function machines. Today we will make and solve our own function machines. By the end of today's lesson, we will be masters of solving function machines.*	Students discuss their knowledge of function machines and converse with teacher about comfort level

<table>
<tr><td></td><td>Discuss with students their knowledge of function machines and their comfort level with solving function machines.

Demonstrate on whiteboard how the students should form a function machine on whiteboard. (Picture shown in Instructional Materials).</td><td>with the skill.</td></tr>
<tr><td><u>Phase 3 Guided Practice</u></td><td>Give students problems to solve on their whiteboards. Discuss problems with students. With groups that can be challenged, give problems with higher level thinking requirements (doubles, subtraction, and finding missing numbers in the “in” column”.)</td><td>Students will use skills of addition, subtraction, and counting on to solve given problems. Students will discuss process</td></tr>
<tr><td>Phase 3 Assessment</td><td colspan="2">While students complete given problems, observe student response. In the roster, record student response by using O and ✓. Mark in roster only when students complete problems that require expected skills. When challenging the students, make side note if students complete the problem correctly.</td></tr>
<tr><td><u>Phase 4 Independent practice</u></td><td>Students will create function machines on their own on their individual whiteboards and trade with the person next to them to solve. Students check over work. Teacher observes students.</td><td>Students use skills learned throughout learning segment to create and solve function machines.</td></tr>
<tr><td>Phase 4 Assessment</td><td>While observing students, mark on class roster with ✓ if students show mastery of skill. Give students a O if students have not demonstrated mastery of skill.

Use cans labeled “Got it”, “Need more practice”, and “Help!” to get student feedback on their ability level.</td><td>Students will use prior knowledge as well as newly learned skills to demonstrate mastery of skill by completing problems on whiteboards.</td></tr>
<tr><td><u>Phase 5 Restatement & Closure</u></td><td colspan="2">Discuss with students the things they have learned throughout the learning segment. Talk through the academic language with the students.</td></tr>
<tr><td><u>Phase 6 Summative Next Steps</u></td><td colspan="2">Key: O-Students have not shown mastery of skill being assessed
✓Students have shown mastery of skill being assessed
<table>
<tr><th>Student</th><th>Phase 1 Assessment-Academic Language Knowledge</th><th>Phase 3 Assessment-Pre independent work</th><th>Phase 3 Assessment-Post independent work</th><th>Phase 3 Can response</th><th>Next Steps</th></tr>
<tr><td>Aubrey</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Aaron</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Peyton</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Nevaeh</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Jack</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Kaitlyn</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Anna</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Gavin</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Addyson</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Garrett</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Rylee</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Tommy</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Mackenzie</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Gabe</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Lucas</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Julian</td><td></td><td></td><td></td><td></td><td></td></tr>
</table></td></tr>
</table>

	Ava					
	Carleen					
	Karsten					
	Bailey					
	Maddie					
	Olivia					
	Aidyn					
	Ellie					
	Zach					