<table>
<tr>
<td>Unit Name: Order of Operations

CCSS.MATH.CONTENT.5.OA.A.1
Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.

CCSS.MATH.CONTENT.5.OA.A.2
Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. For example, express the calculation "add 8 and 7, then multiply by 2" as 2 × (8 + 7). Recognize that 3 × (18932 + 921) is three times as large as 18932 + 921, without having to calculate the indicated sum or product.</td>
<td>Group Members:
Jennifer Dino
Lauren Levetan
Briar Pizzuto
CCSS.MATH.CONTENT.5.OA.B.3
Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane. For example, given the rule "Add 3" and the starting number 0, and given the rule "Add 6" and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so.</td>
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<tr>
<td colspan="2">Stage 1 – Desired Results</td>
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<tr>
<td colspan="2">Established Goals Students will be able to:
1. Identify the correct order of operations using PEMDAS
2. Write simple expressions without solving
3. Explain the relationship between corresponding terms on a coordinate plane</td>
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<td>Understandings
(BIG IDEA – SO WHAT?)
Students will understand THAT there is a specific order of set rules in which we must solve expressions and equations to achieve the correct answer.</td>
<td>Essential Questions (Question must be open ended to be a true EQ)
What is the correct order for performing mathematical operations?

How can expressions be written to indicate an order for operations?

Does changing the order of operations affect the outcome when simplifying an expression?</td>
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Students will know how to use PEMDAS, how to write simple expression, and explain how to place order pairs on a coordinate planes.	**Students will be able to apply** PEMDAS to a given expression, **create** simple expressions and explain how the order to solve, and **analyze** the relationship of X,Y in coordinate pairs.
Stage 2 – Assessment Evidence	
Performance Tasks • Pre and Post test • Interactive journals • guided math/center completion • PEMDAS graphic organizer	**Other Evidence** • homework/practice • progress on Edmodo assignments
Stage 3 – Learning Plan	
Learning Activities • Flocabulary - Order of Operations (Flipped lesson - introduction) https://www.youtube.com/watch?v=zanq7gmXY88 • Study Jams - Order or Operations (Flipped lesson) • Guided Math Centers • Order of Operations Treasure Hunt • Coordinate Plane introduction https://www.youtube.com/watch?v=FXYWL38HPn4 • Battle ship • Hurkle game • http://www.adaptedmind.com/Fifth-Grade-Math-Worksheets-And-Exercises.html (select Algebra, Order of Operations) • https://www.youtube.com/watch?v=HfecU1nqKFc (Flipped Lesson - coordinate plane)	

	Math
	Day 1: Introduce Edmodo and help students set accounts in computer lab SIGN UP ASAP (teacher will have already set up 15/16 classroom group and give sign up instructions with Pin) **Pre-assessment:** (order of operations) Students will be grouped for rotations based on pre-assessment scores allowing for extension and differentiation as needed for each group. **(Flexible grouping)** **Task:** 10-15min virtually chat and practice exploring Edmodo **Homework:** Flipped lesson on Edmodo. Flocabulary video order of operations https://www.youtube.com/watch?v=zanq7gmXY88 After video students complete a 3-2-1 in their interactive journal (3 things I learned, 2 questions, and 1 example of a problem) Standards MA.5.MCC5.OA.1
	Day 2: Students will Pair and share their 3-2-1. *Whole group discuss questions students had. Teacher will hand out PEMDAS graphic organizer that students will glue in their interactive journal and complete the acronym. *Daily practice: Use ipads, white boards, or BYOD for practice. Teacher gives examples for students to solve (5-10min) students will collaborate and communicate with their table group and check their answers. *Students will create 2 equations on their boards or device. Swap with a partner and solve. *Exit slip/ticket out the door: On sticky note with name. Choose one problem from your 2 equations. Explain the steps you used to solve this problem. **Homework:** Edmodo: Complete the assignment. Fill out PEMDAS acronym and solve problem posted. Standards MA.5.MCC5.OA.1
	Day 3: Teacher will explain guided center rotations. Begin each day with review/discussion/practice from homework. Students will complete one center rotation per day. **Teacher 1:** Link for Order of Operations Treasure Hunt carrousel activity https://ccgps-task-submission-guidelines.wikispaces.com/file/view/Performance+Task+Order+of+Operations+Treasure+Hunt.pdf **Teacher 2:** Show Coordinate plane video (https://www.youtube.com/watch?v=FXYWL38HPn4) discuss as a group. Using Netbooks login into IXL: https://www.ixl.com/math/grade-5/coordinate-graphs-review-whole-numbers-only; https://www.ixl.com/math/grade-5/coordinate-graphs-review-whole-numbers-only. **Post ahead of time on Edmodo** **Math facts:** On Ipads: MonsterMath app (Practice multiplication facts) **Hands on/Independent practice:** Math word problems. Glue in journal and follow problem solving guide to solve. Problem: (Every night,

	Phillip sleeps for nine hours. If he kept up this pattern for two years, how many total hours would he have slept? Solve and EXPLAIN.) **Differentiation:** Provide two possible equations and solutions for AS and HC when they get to this center. They will explore each and decide which gives the correct answer. They may draw and diagram, picture, and orally describe to a teacher or use written words to explain their thinking. **Extension:** When student's finish assigned tasks: Wonderopolis.org. Read and research the wonder of the day. Copy the question on a notecard on one side and complete a 3-2-1 on the other side and leave it in the Wonderopolis box! **Homework:** (Flipped Lesson - coordinate plane) Fly on the ceiling YouTube. Watch on Edmodo https://www.youtube.com/watch?v=HfecU1nqKFc Standards MA.5.MCC5.OA.1
	Day 4: Whole class discussion on how the fly on the ceiling book connects to what we are learning in math. . Begin each day with review/discussion/practice from homework. **Students will complete one center rotation per day.** **Teacher 1:** Link for Order of Operations Treasure Hunt carrousel activity https://ccgps-task-submission-guidelines.wikispaces.com/file/view/Performance+Task+Order+of+Operations+Treasure+Hunt.pdf **Teacher 2:** Show Coordinate plane video (https://www.youtube.com/watch?v=FXYWL38HPn4) discuss as a group. Using Netbooks login into IXL: https://www.ixl.com/math/grade-5/coordinate-graphs-review-whole-numbers-only; https://www.ixl.com/math/grade-5/coordinate-graphs-review-whole-numbers-only. **Posted ahead of time on Edmodo** **Math facts:** On Ipads: MonsterMath app (Practice multiplication facts) **Hands on/Independent practice:** Math word problems. Glue in journal and follow problem solving guide to solve. Problem: (Every night, Phillip sleeps for nine hours. If he kept up this pattern for two years, how many total hours would he have slept? Solve and EXPLAIN.) **Differentiation:** Provide two possible equations and solutions for AS and HC when they get to this center. They will explore each and decide which gives the correct answer. They may draw and diagram, picture, and orally describe to a teacher or use written words to explain their thinking. **Extension:** When student's finish assigned tasks: Wonderopolis.org. Read and research the wonder of the day. Copy the question on a notecard on one side and complete a 3-2-1 on the other side and leave it in the Wonderopolis box! **Homework:** www.brainpop.com Edmodo link Brainpop Order of Operations and they will explain the following vocabulary in their own words. Sheet will be glued into journal to complete. Located under activities. Standards MA.5.MCC5.OA.1

Day 5-6: Repeat. Students continue to move through rotations.

****Note:** Target Day- Review and Remediation based on teacher assessment of center completion. Work with students in small groups or individually as needed while others play Battleship or Hurkle (Coordinate Graphing Skills)

**We will Provide review and posttest within the next 2 days.*

Curriculum Design Discussion

Using the backward design process is the most efficient way to plan units and lessons. The 4C's are easily integrated into everyday learning in this unit. We use guided math center rotations several days a week to meet standards and provide opportunity for collaboration, creativity, critical thinking, and communication. Through teacher directed lessons in smaller groups students are given "safe" opportunity to ask questions and communicate with teachers and other students in their group. In these specific lesson plans the Treasure Hunt/Carrousel activity draws on a student's ability to perform with others using collaboration, communication, and critical thinking in order to complete the tasks. Critical thinking is needed in order to complete the expectations of the Hands On/Independent Practice rotation as well as creativity for the Wonderopolis extension activity. Children learn best when given multimodal opportunities to gain new concepts. Using lessons designed with the 4 C's in mind provide students with a greater understanding of what they need to learn as well as how to work with others in order to have the best outcome.

In comparing our plans using the Tiers of Technology Integration matrix. I see evidence of Tier 2 and Tier 3 indicators. Delivering presentations with graphics and sound, facilitating group discussions with interactive technology, and student use of technology for practice and assessment are examples of Tier 2 use. Tier 3

integration can be supported by the activities expecting students to complete independent research and publish their findings, as well as use online resources to facilitate inquiry (i.e., the Wonderopolis extension activity).