EASTERN COLLEGE OF EDUCATION - LESSON PLAN

Name ___Sidney Ryan_ Content Area _Mathematics/Communication___ Grade Level__4th_

Duration of Time 60 min_ Subject/Lesson Topic: Communicating Fraction Thinking: Building, Explaining, and Comparing Fractions

Context for Lesson (*please describe what students did in lessons before and after this lesson plan*)	
This lesson is part of a 4th grade math unit on fractions, with a focus on representing, adding, and comparing fractions with like denominators. In previous lessons, students practiced identifying numerator and denominator, building unit fractions, and using fraction strips to represent parts of a whole. In this lesson, students will add fractions with like denominators while also practicing how to communicate their mathematical thinking using speech, AAC devices, PECS, gestures, visual choice boards, sentence starters, and core vocabulary boards. This lesson supports an inclusive classroom of students with and without autism by giving all students multiple ways to express answers, ask for help, respond to peers, and explain their reasoning. After this lesson, students will continue applying fraction models to solve word problems and compare fraction sums.	
Common Core and/or PA State Standards **[NAEYC 5c]**	Essential Question(s)
CC.2.1.4.C.2: Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers. *CC.1.5.4.A: Engage effectively in a range of collaborative discussions on grade-level topics and texts, building on others' ideas and expressing their own clearly.*	*How can visual models help us explain our mathematical thinking?* *How can communication tools help everyone share ideas and participate in a math lesson?*

Instructional Objectives:

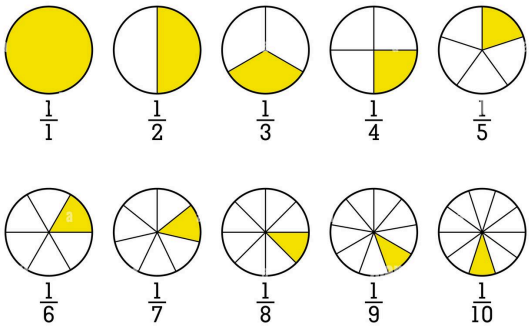
Overarching Goals/Big Idea (1-2 goals)	Assessment(s) **(NAEYC 3b)**
[Complete this sentence] Students will know *that…* *Students will know that fractions can be built, added, compared, and explained using visual models and accessible communication supports.* *Students will know that people communicate in different*	• *The teacher will use a math and communication observation checklist during guided and independent practice.* • *Students will also complete an exit ticket where they build, write, point to, select, or communicate a*

ways, and speech, AAC, PECS, gestures, pointing, writing, and visuals are all meaningful ways to share ideas.	*fraction answer using their preferred communication method.*
Content/Knowledge Goals (4-5 goals) **[NAEYC 5a, 5c].**	Assessment(s) **(NAEYC 3b)**
Students will know *(terms, facts, people, etc)…* [*if applicable, specific to content areas]* ● A fraction represents part of a whole. ● The denominator tells how many equal parts are in the whole. ● The numerator tells how many parts are being counted. ● Fractions with like denominators can be added by combining the numerators. ● Communication tools such as AAC, PECS, core vocabulary boards, gestures, visual supports, and sentence starters can help students express ideas and respond to others.	Students will demonstrate content knowledge by building fraction sums with fraction strips, matching models to equations, comparing sums to one whole, and using a communication support to express or confirm their answer.
Skill Goals (1-2 goals)	Assessment(s) (NAEYC 3b)
Students will be able to *(use Bloom's Taxonomy)…* ● Build and compare fraction sums with like denominators using fraction strips, fraction circles, and equation cards. ● Communicate a fraction answer, request help, or respond to a peer using speech, AAC, PECS, gestures, pointing, writing, sentence starters, or a core vocabulary board.	Teacher observation checklist during guided and independent practice: ● Students build the correct fraction model. ● The student identifies or writes the matching equation. ● The student compares the fraction sum to one whole. ● Students communicate an answer using an accessible method. ● Students ask for help or clarification using an appropriate communication method. ● Students respond to a peer using "I agree," "I disagree," "Can you show me?" or another accessible response.
IEP or ELL Goals (if applicable)	Assessments
Students with IEPs will be able to: ● Students with autism, language delays, AAC needs, or other communication differences will use their individualized communication method to participate in the lesson. ● Students may communicate through AAC, PECS,	Students with IEPs will be able to: ● Students will be assessed on their ability to communicate mathematical understanding using their preferred communication mode. Students will not be

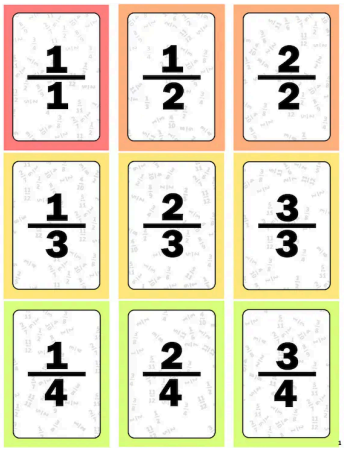
gestures, pointing, writing, drawing, verbal responses, sentence starters, or partner-assisted choices. • English Language Learners will be supported through visuals, gestures, modeled vocabulary, sentence frames, and peer modeling.	penalized for limited verbal speech if they can demonstrate understanding through AAC, PECS, pointing, gestures, drawing, writing, or model building.

Materials/Resources

- Fraction strips
- Fraction circles



- Whole number mats
- Dry erase boards and markers
- Fraction equation cards



- Greater than, less than, and equal to cards
- Visual schedule
- Core vocabulary boards
- PECS cards
- AAC devices or iPads with communication apps
- Visual choice board
- Emoji cards
- Sentence starter cards: “My answer is ___,” “I agree because ___,” “I disagree because ___,” “Can you show me?” “I need help.”
- “Help please,” “show me,” “I agree,” “I disagree,” and “my turn” cards
- Teacher math and communication checklist
- Exit ticket with multiple response options
- CAST UDL Guidelines: https://udlguidelines.cast.org/
- PA SAS Standards: https://www.pdesas.org/
- ASHA AAC information: https://www.asha.org/practice-portal/professional-issues/augmentative-and-alternative-communication/



- Wheeler, J. J., Mayton, M. R., & Carter, S. L. (2014). *Methods for teaching children with autism spectrum disorders: Evidence-based practices*. Pearson.

Instructional Process

Student Activities (Highlight all that apply for activities throughout lesson):				
Building Background:	Links to Experience	Links to Prior Learning	Key Vocabulary	Explicit Instruction
Scaffolding:	Modeling	Guided	Independent (IEP)	Explicit Instruction
Grouping:	Whole Class	Small Group	Partners	Independent
Processes:	Reading	Writing	Listening	Speaking
Strategies:	Hands-on	Meaningful	Linked to Objectives	
Assessment:	Individual	Group	Written	Oral

Instructional steps
include the amount of time allocated for each step, add as many parts as you need - be aware of transition time

Lesson Hook: Warm-up/Motivation/Pre-Assessment (5 mins)

The teacher will begin by displaying the visual schedule for the lesson: Look, Build, Communicate, Practice, Share. The teacher will say, "Today we are going to practice adding fractions, but we are also going to practice different ways to communicate our math thinking. Some students may use their voice, some may point, some may write, some may use gestures, some may use PECS, and some may use an AAC device. All are ways to communicate."

The teacher will show a picture of a pizza cut into fourths on the board. Two pieces will be shaded. The teacher will ask, "What fraction of the pizza is shaded?" Students will be invited to answer using their preferred communication method. They may say the answer, point to a fraction card, hold up a response card, write the answer on a dry erase board, use PECS, gesture, or select the answer on an AAC device. The teacher will then say, "Now I want you to show me how confident you feel about explaining a fraction answer today." Students will select an emoji card, point to a visual scale, or use AAC to choose I feel ready, I need help, or I am not sure yet. The teacher will use students' responses as a quick pre-assessment of both fraction readiness and communication support needs.

To connect to the communication objective, the teacher will model: "If I know the answer, I can say, 'The answer is two fourths.' If I am not sure, I can point to or select 'I need help.' If I want someone to explain, I can ask, 'Can you show me?' Today we will practice using these communication tools while we solve fraction problems."

Main Activity:
Part 1 Modeling and Direct Instruction (I DO) Explicit instruction: 15 min

The teacher will gather students' attention at the front of the room and display the visual schedule. The teacher will point to the first two steps, Look and Build, and say, "We already looked at a fraction during our warm-up**.** Now we are going to build a fraction addition problem and practice communicating our thinking."

The teacher will display the problem ¼ + 2/4 on the board and place a whole number mat under the document camera. The teacher will say, "Today we are adding fractions with the same denominator. The denominator tells us how many equal parts are in the whole. I see fourths, so I am counting

fourths." The teacher will place one ¼ fraction strip on the mat and say, "First, I am building one fourth." The teacher will then place two more ¼ pieces beside it and say, "Now I am adding two fourths. I am going to count how many fourths I have altogether. One fourth, two fourths, three fourths. My answer is three fourths."

The teacher will write ¼ + 2/4 = ¾ on the board and circle the denominator. The teacher will say, "The denominator stayed the same because I am still counting fourths. The numerator changed because I counted how many fourths I have altogether."

The teacher will then intentionally model the communication expectation. The teacher will say, "Now I need to communicate my answer. I can communicate in more than one way. I can use my voice and say, 'My answer is three fourths.' I can write ¾. I can point to the ¾ answer card. I can use a PECS card. I can use my AAC device or core vocabulary board to select 'my answer is' and then point to or select ¾. All of those are acceptable ways to communicate."

The teacher will model using the core vocabulary board by pointing to my answer, is, and then the ¾ card. The teacher will say, "If I use my communication board, I can still show my math thinking. Communication does not have to look the same for everyone."
Next, the teacher will model how to ask for help. The teacher will say, "Sometimes I may not know what to do next. If I am confused, I can communicate that. I can say, 'I need help.' I can point to the help card. I can select 'help please' on my AAC device. I can also ask, 'Can you show me?'"

The teacher will model a peer response. The teacher will hold up an I agree card and say, "If my partner shows me ¾ and I think it is correct, I can say, 'I agree because your model shows three fourths.'" The teacher will then hold up an I disagree card and say, "If I think something does not match, I can say, 'I disagree because I counted a different number of fourths.' We will use respectful communication even when we disagree."
The teacher will end the modeling section by restating both objectives: "Today, you are not only solving fraction problems. You are also practicing how to communicate your answer, ask for help, and respond to a classmate in a way that works for you."

Part 2: Guided Practice with Students: 15 min

The teacher will display the problem 2/6 + 3/6 on the board and provide each student or pair with sixths fraction strips, a whole number mat, fraction answer cards, and communication supports. The teacher will say, "Now we are going to solve one together. First, look at the denominator. What size pieces are we counting?" Students may respond by saying "sixths," pointing to the denominator, selecting a "sixths" card, using AAC, or holding up the matching fraction strip.

The teacher will say, "Build two sixths on your mat." The teacher will pause and circulate to check student models. Then the teacher will say, "Now add three more sixths. Count how many sixths you have altogether." Students will count the pieces using speech, pointing, touch counting, gestures, or partner support. The teacher will ask, "What is 2/6 plus 3/6?" Students will communicate their answer using their preferred method. The teacher will remind students, "You can say the answer, write it, point to the answer card, use PECS, use your AAC device, gesture, or show the answer with your fraction strips." The teacher will wait before calling on students so students using AAC or visual supports have time to respond.

The teacher will guide students to communicate with a partner. The teacher will say, “Partner A, communicate your answer to Partner B. You can use the sentence starter, ‘My answer is ___.’ You can also point to your model, hold up your answer card, or use your communication board.” After Partner A responds, the teacher will say, “Partner B, respond respectfully. You can use one of these choices: ‘I agree,’ ‘I disagree,’ or ‘Can you show me?’”

The teacher will model and prompt as needed. For example, if a student points to the correct model but does not communicate with a peer, the teacher may say, “You showed ⅝ with your model. Now choose how you want to tell your partner. You can point to ⅝, use your sentence strip, or select your answer on your device.” If a student is unsure, the teacher may say, “You can ask for help by saying ‘help please,’ pointing to the help card, or selecting help on your AAC device.” The teacher will then display a second guided problem: ⅓ + ⅓. The teacher will say, “This time, I want you to build the problem with your partner first. Then, you will communicate the answer using one of our communication tools.” Students will build the model and communicate the answer.

The teacher will ask, “How do you know your answer is correct?” Students may respond by explaining verbally, pointing to the model, using the sentence starter “I know because ___,” selecting picture cards, using AAC, or showing the counted pieces. The teacher will reinforce both math and communication by saying, “I noticed you used your model to show your thinking,” or “I noticed you gave your partner wait time before responding.”

The teacher will close guided practice by saying, “You practiced building fractions and communicating your answer. In the next part, you will solve a problem more independently, but your communication tools will still be right here.”

Wiggle / Regulation Break

2 minutes

Before independent practice, the teacher will lead a brief movement break to support attention, regulation, and transition back to independent work. The teacher will say, “Before we solve on our own, we are going to reset our bodies. You can stand, stay seated, or move in a way that works for your body.”

When we sit back down, your job is to build your fraction, choose or write your answer, and communicate your thinking using the tool that works for you.”

Part 3: Independent Practice/You DO: 14 min

Students will complete an independent fraction task using the materials and communication supports available at their table. Each student will receive a fraction problem card, fraction strips or circles, a whole number mat, answer cards, and access to communication supports such as AAC, PECS, gestures, sentence starters, visual choice cards, or a core vocabulary board. The teacher will say, “Now you are going to solve one fraction problem on your own. First, build the fraction problem. Next, choose or write the equation that matches your model. Then, communicate your answer to a partner or to me using the method that works best for you.”

The teacher will review the communication expectation before students begin. The teacher will say, “Before you are finished, you have two jobs. Your math job is to solve the fraction problem. Your communication job is to share your answer, ask for help, or respond to someone else’s answer. You

may use your voice, your AAC device, PECS, pointing, gestures, writing, drawing, sentence starters, or your communication board."

Students will work independently while the teacher circulates with the observation checklist. The teacher will look for whether students can build the fraction model, identify or write the matching equation, and communicate their answer using an accessible method. The teacher will provide prompting only as needed.

Possible teacher prompts include:

"Show me your answer in a way that works for you."

"Point to the fraction that matches your model."

"Use your sentence starter: 'My answer is ___.'"

"Can you ask your partner, 'What did you get?'"

"If you need help, how can you communicate that?"

"Can you use your model to show why your answer makes sense?"

After students solve their problem, they will complete a short partner exchange. Partner A will communicate their answer using speech, AAC, PECS, pointing, writing, gestures, or a sentence starter. Partner B will respond using one of the available response options: I agree, I disagree, Can you show me?, or I need help understanding. Then students will switch roles. Students who need additional support may choose from two answer cards instead of writing the equation independently. Students who use AAC or PECS may select from pre-taught vocabulary and fraction cards. Students who need enrichment may create their own fraction addition problem and communicate it to a partner using at least one math vocabulary word and one response phrase.

The teacher will close independent practice by saying, "I saw students solving fraction problems and communicating in different ways. Some students used their voice, some pointed, some wrote, some used visuals, and some used communication tools. All of those ways helped us understand each other's math thinking."

Lesson Closure (NAEYC 3b): 7 min

The teacher will bring students back together as a whole group and point to the final step on the visual schedule: Share. The teacher will say, "Today we practiced two important skills. We added fractions with the same denominator, and we practiced communicating our thinking in different ways." The teacher will revisit the essential questions by asking, "How can visual models help us explain our mathematical thinking?" Students may respond verbally, point to their fraction model, use sentence starters, select a picture card, write a response, gesture, or use AAC. The teacher will then ask, "How can communication tools help everyone share ideas and participate in a math lesson?" Students may respond by selecting from choices such as help, answer, agree, show me, or my turn on the core vocabulary board.

Students will complete a brief exit ticket. The exit ticket will show the problem ⅛ + ⅜. Students may complete the exit ticket by writing the answer, building the answer with fraction strips, pointing to the correct answer card, selecting the answer using AAC or PECS, drawing the model, or verbally explaining their thinking. Before collecting the exit ticket, the teacher will say, "Choose one way to communicate your answer. You can write it, build it, point to it, say it, draw it, or use your communication tool." The teacher will use student responses and the observation checklist to determine whether students need reteaching, additional practice with fraction models, or more support using communication tools during math activities.

The teacher will close by saying, "Everyone communicated today. Communication looked different for different students, and that is okay. What matters is that we used our tools to share our thinking and understand each other."

Universal Design for Learning <= click on this link. Please include a minimum of one way to apply UDL pedagogy to your lesson for each of the three criteria listed below. Considerations must be specific to your lesson.

Explain how you will address the diverse needs and learning styles of the students in your classroom. Consider both UDL principles and differentiation strategies. (NAEYC 4b)
Applies 3+ elements from the CAST website; reflects thoughtful application of UDL considerations to lesson plan.

Engagement: Students will be given choices in how they participate and communicate during the lesson. They may choose to answer using speech, AAC, PECS, gestures, writing, pointing, sentence starters, or visual response cards**.** Students will also choose whether to communicate their independent answer to a partner or directly to the teacher. This supports engagement because students can participate in a way that feels accessible and meaningful while still working toward the same math and communication goals. CAST explains that engagement involves designing learning so students can connect to the learning environment and participate in ways that support motivation and effort.
Presentation: The teacher will present fraction concepts in multiple ways, including verbal explanation, written equations, fraction strips, fraction circles, whole number mats, visual vocabulary cards, teacher modeling, and a displayed visual schedule. Communication expectations will also be represented through sentence starter cards, PECS cards, core vocabulary boards, and modeled AAC use. This supports students with autism, language delays, ELL needs, and different learning styles because students are not expected to understand the lesson through spoken language alone. CAST explains that representation should provide multiple ways for learners to access and make meaning from content
Action and Expression: The teacher will present fraction concepts in multiple ways, including verbal explanation, written equations, fraction strips, fraction circles, whole number mats, visual vocabulary cards, teacher modeling, and a displayed visual schedule. Communication expectations will also be represented through sentence starter cards, PECS cards, core vocabulary boards, and modeled AAC use. This supports students with autism, language delays, ELL needs, and different learning styles because students are not expected to understand the lesson through spoken language alone. CAST explains that representation should provide multiple ways for learners to access and make meaning

from content.

Differentiation Strategies:

Plans are appropriate and challenging for all ability groups. Lesson is clearly differentiated and activities align to meet the same instructional goals

ELL: English Language Learners will be supported through visual vocabulary cards, modeled language, gestures, fraction manipulatives, and sentence starters. Important words such as fraction, numerator, denominator, sum, agree, disagree, and help will be shown with pictures or symbols**.** Students may respond by pointing, drawing, building with fraction strips, using a translated visual if available, or using sentence frames such as "My answer is ___" and "I know because ___." The teacher will pair verbal directions with visual models so students do not have to rely only on spoken English to understand the task.

LCLP (low content, low process): Students who need low content and low process support will work with fewer fraction pieces and more concrete visual models. These students may use fraction strips with like denominators only, two answer choices instead of several, and step-by-step visual directions. They may show understanding by building the model, pointing to the matching answer, selecting a PECS card, using AAC, or responding with gestures. The teacher or support staff may provide modeling, wait time, and prompts such as "First build," "Now count," and "Show your answer."

HP (high content, high process): Students who need high content and high process extension will create their own fraction addition problem with like denominators and explain it to a peer using at least one math vocabulary word. They may also compare two fraction sums and explain which is greater and why. These students will be encouraged to use stronger communication skills by asking a peer a follow-up question, explaining their reasoning with a sentence starter, or helping model respectful responses such as "I agree because…" or "Can you show me how you got that?"
IEP/504 Accommodations (*EDUC 201/501/402/406/407/408 only*):

Classroom arrangement

Students will be seated in small groups of three to four so they can see each other's fraction models and practice communicating with peers. Each table group will have a basket with fraction strips, fraction circles, equation cards, sentence starters, PECS cards, "I agree/I disagree/I need help" cards, and a core vocabulary board. Students who use AAC devices will have their devices on their desks and accessible throughout the entire lesson, not placed away in backpacks or cubbies.

The teacher will teach from the front of the room using the board and document camera so all students can see the fraction models being built step by step. A visual schedule will be posted at the front of the room with the steps Look, Build, Communicate, Practice, Share. Students who need reduced distractions or closer teacher support may sit near the front or on the edge of a group so the teacher or support staff can easily provide prompts, wait time, or communication support.

This arrangement supports the lesson goals because students need access to materials, visuals, peer models, and communication tools during every part of the lesson. Small groups allow students to practice partner responses such as "I agree," "Can you show me?" and "I need help," while still allowing the teacher to circulate and monitor both math understanding and communication.

Possible Problems with solutions - must be specific to your lesson plan
What do you do if you run out of time? If the lesson runs short on time, the teacher will shorten the independent practice section and have students complete one fraction problem instead of multiple problems. The teacher will still require each student to communicate their answer using their preferred method, such as speech, AAC, PECS, pointing, writing, gestures, or sentence starters. The exit ticket can also be completed as a quick oral, visual, or AAC-based response before students transition to the next activity. **What do you do if your lesson ends early?** If the lesson ends early, students who are ready for enrichment will create their own fraction addition problem with like denominators and trade it with a partner. They will then solve the partner's problem and communicate their answer using one of the communication supports. Students may also practice asking a peer, "Can you show me how you got that?" or responding with "I agree because…" or "I disagree because…" using speech, AAC, sentence strips, or response cards**.** **What do you do if your resources fail?** If the document camera, board, or AAC app is not working, the teacher will use printed fraction models, physical fraction strips, dry erase boards, PECS cards, and paper core vocabulary boards. If a student's AAC device is not available or not working, the student will still have access to a backup communication board, picture cards, pointing choices, gestures, writing, or partner-assisted scanning. The lesson can continue because the main materials are hands-on and not dependent on technology. **What behavioral challenges and solutions do you anticipate?** Some students may become frustrated if they do not know the fraction answer or cannot communicate quickly. To prevent this, the teacher will provide wait time, visual choices, sentence starters, and help cards. The teacher will remind students that asking for help is part of the lesson and can be done by saying "help please," pointing to the help card, or selecting help on AAC. Some students may grab materials or interrupt a partner during the partner communication portion. The teacher will review turn-taking expectations before partner work begins by saying, "One partner communicates first, and the other partner watches, waits, and responds." Students will have "my turn" and "your turn" cards to support this routine. Some students may avoid participating if they are uncomfortable speaking in front of others. Students will not be required to speak aloud. They may communicate through whatever method they are comfortable with.

VI. Reflect and Revise Reflect on your lesson and discuss the strengths, weaknesses, and how you would modify your lesson for future instruction. (NAEYC 6e)