Lesson Plan

Grade: fifth

Subject: mathematics

Materials: white boards, dice, anchor chart

Technology Needed: none

Instructional Strategies:

- € Direct instruction
- € Guided practice
- € Socratic Seminar
- € Learning Centers
- € Lecture
- € Technology integration
- € Other (list)
- € Peer teaching/collaboration/ cooperative learning
- € Visuals/Graphic organizers
- € PBL
- € Discussion/Debate
- € Modeling

Guided Practices and Concrete Application:

- € Large group activity
- € Independent activity
- € Pairing/collaboration
- € Simulations/Scenarios
- € Other (list)
- € Hands-on
- € Technology integration
- € Imitation/Repeat/ Mimic

Explain:

Standard(s)

5.NF.4 - Apply and extend previous understanding of multiplication to multiply a fraction or whole number by a fraction

Objective(s)

By the end of the lesson, students will be able to build off their previous knowledge of multiplication to multiply fractions times fractions by creating an original recipe and then taking it times a given fraction.

Bloom's Taxonomy Cognitive Level: applying, creating

Differentiation

Below Proficiency:

- Reference the white board for visuals of the problems we are working on
- Reference the anchor chart for the process on how to multiply fractions times fractions
- Research a recipe that is already created by searching the internet instead of creating their own
- Provide pair and share time for students to discuss their thinking or gain a better idea of the concept from a peer
- Come up with groups in advance to place below proficient students with high proficient students during the dice activity. The below proficient students will be able to see more modeling and discussion with their above proficient peers

Above Proficiency:

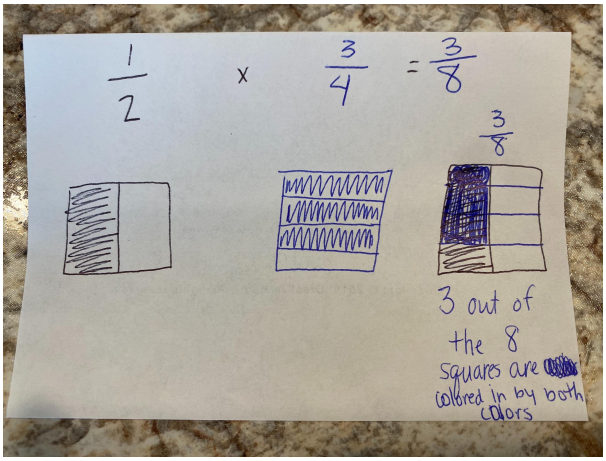
- Be able to discuss their thought process on solving a problem with below proficient students
- Create a recipe with more challenging fractions to have to multiply together
- Students may use another method other than representing their multiplication of fractions times fraction with a picture.
- Participate in pair and share to further their understanding and thinking when they are talking about the problem process.

Approaching/Emerging Proficiency:

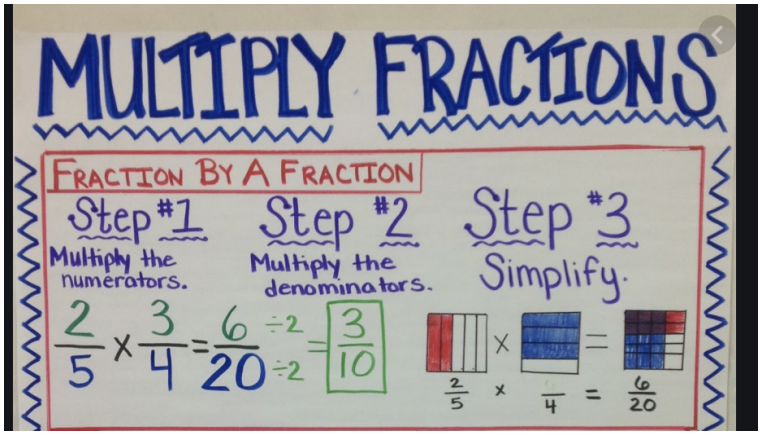
- Reference the anchor chart when needed
- Use the turn and talk discussion as a time to further understand their thought process on how to multiply fractions time fractions
- Be creative for the recipe they will create

	Modalities/Learning Preferences: ● Visual - anchor chart as well as problems being solved on the white board ● Kinesthetic - rolling the dice and moving them around to create the fraction they are wanting to multiply together ● Auditory - listening to teacher instructions, peer discussions ● Social - discussing their thought process with a group of peers and learning from one another on how to multiply fractions times fractions using pictures
Classroom Management- (grouping(s), movement/transitions, etc.) ● Attention getter ○ (give me ___, hold up ___ amount of fingers) ○ Eyes and ears on me in three, two, one ○ Back to your seats in five, …, one ● When students will be seated at their desks and have a voice level of 0 during instruction time ● Students should have nothing on their desks until asked to get their white boards out ○ if they have something on their desks, then I will ask the students if their job is to be listening or to have materials out right now ● Teacher will use the "give me __" method to gain the student's attention back to start cleaning up ● After turn and talks, I will call the students back to me by saving, "eyes on me in 5,.. 1" ● When students will be moving into groups for the dice activity they will be except to move quietly, safely, and efficiently ● Teacher will share out how many minutes the students have left so they can pace themselves while working through their fraction problems ● When I need to get the students attention back, I will call out "class, class" for them to reply "yes, yes" ○ Repeat if needed ● Students will be told that if they don't use their dice materials properly, then I will ask for them back and they will have to create fraction problems without the dice ● Students will use voice level 1 while they are working on the dive problems and also during the pair and share time ● If a student is talking out of turn or during instruction, the teacher will remind them that she only wants to hear from students who raise their hand	**Behavior Expectations- (systems, strategies, procedures specific to the lesson, rules and expectations, etc.)** ● Students will not blurt out when teacher is talking ● Students must have whole body listening (listening with their eyes and ears) ● Students must not lay their heads on the desk when teacher is talking ● Students must raise their hands when they want to answer a question ● Students will work independently when they are solving problems with the teacher during the we do portion of the lesson on their white boards ○ During turn and talks, students must participate with their peers ● Students will work together and take turns rolling the dice and figuring out how they should prace their four dice numbers to create their two fractions ○ When solving the problems, each students should use their white boards to discuss what they are doing ● Students must be working, and if they have a question they may ask a neighbor for help or raise their hand so a teacher can help ● Students must come back to their seats and clean up when they are called in by the teacher ● When students are helping their peers, they will be expected to be on task and help guide their classmates to the answers, not just tell them the answers ● If students choose to research a recipe, the student should use their computers properly and only be researching appropriate things ○ If the student is not using their computers properly, their computers will be taken away and they will be written up

Minutes	Procedures
	Set-up/Prep: ● Anchor chart ready ● Markers by the white board ● Dice ready - there will be 6 groups of 4 and each group will need 4 dice ● Papers to write the dice activity on

	● Recipe papers (the students will work on writing their recipe the following day for the formative assessment on multiplying fractions)
	Engage: (opening activity/ anticipatory Set – access prior learning / stimulate interest /generate questions, etc.) ● "Mathematicians, how many of you have ever baked something before?" ○ "What kinds of things have you baked? Did you make it for a large group of people or small group of people? What happens if the serving size for the recipe is for 8 people, but I only want to make it for Mrs. Hintz and I?" ● "Today we are going to work on learning how to multiply fractions times fractions using models/pictures. Learning how to multiply fractions times fractions is important because a lot of chefs and bakers have to do this to make a recipe smaller which you are going to practice in tomorrow's lesson."
	Explain: (concepts, procedures, vocabulary, etc.) ● Vocabulary - fractions times fractions, multiplication, model ● "Mathematicians, what do you think it means when we multiply fractions times fractions?" (means we are finding a part of that fraction) ○ Students should be seated at their desks during this time and they should have nothing on their desks right now ● **I DO** - "Ladies and gentleman, let's practice what this process looks like using a model." ○ "Do I have a volunteer that would like to come up with a fraction for us? For this first one, try to think of an easier fraction." ■ Write the fraction on the board ■ Ask another student to come up with the second easier fraction ■ Write the second fraction on the board right next to it and place a multiplication sign between the two numbers and an equal sign at the end ■ "Now mathematicians, I am going to draw a square underneath my first fraction to represent what this fraction looks like." ● Draw a square ● "How do you think that I could show the representation of this?" ○ Direct students to the answer or state that I am going to the the square into ____ vertical pieces because the denominator of a fraction always tells us how many parts there are ○ Show that since there are ____ pieces in the numerator, I need to fill in ___ amount of **vertical** pieces in my square ○ Ask the students if there are any questions so far ○ Move on to the second fraction and repeat this same procedure but this time draw the lines **horizontal** (this will help the students in the next process and using a <u>different color</u> ○ "Now mathematicians, what do you think we are going to do with these two modules?" (we are going to redraw a square and "combine them" together) 

- (repeat the above process again modeling for the students my thinking out loud and reminding the students the importance of making sure they have one model that has vertical lines and a second model that has horizontal lines
- **WE DO -** "Now mathematicians, I want you to practice with me. I am going to create two fractions that we have not used yet. (Use ⅔ and ¾ if no one has come up with this problem yet.) Everyone please grab their white board and marker. Everything else can stay in your desk.)
    - "Can someone please tell me what the first thing is that you have written on your board?"
        - Write down the two fractions at the top with room to work underneath
    - "Now what should we do next?"
        - "Why do you think that?"
        - We should model the first drawing with vertical lines
    - "What should we do next?"
        - "What do we need to remember to do when we are drawing this model?"
        - We should all use horizontal lines and use a different color
    - "What is the third and final step?"
        - Draw the model again combining the two fraction models like the picture shows above
        - Have the students hold of their white boards when they are done with the step so I can check for understanding
- Write another problem down on the white board for the students to do on their own this time
    - Allow the students a good 2 minutes to complete this task
    - If there are some students who are not quite done with this, it is okay
    - Allow for a 15 second turn and talk for the students to talk with their peers about the process, ask their peer an understanding question, or check for mistakes
    - After this is done, use an attention getter to gain the students attention again
    - Next, have one student come up and draw the first model of the fraction on the white board, repeat this with the second fraction, and the answer
    - Talk through the process with the remaining students and ask them if they respectfully agree or disagree with the answer by showing a thumbs up or down
- "Now mathematicians, I am going to have you guys get into groups that I have created when I say **GO.** But first I am going to tell you that you each need your white board, marker, and one partner is going to grab four dice. How many dice? And another partner is going to grab one paper and two different colored pencils for your group. The dice are sitting on the high table in the back and the paper and pencils are sitting on the lower table in the back. I will explain the instructions once you get into your groups, you have 30 seconds to get there, **GO**."
    - Once students are in their groups, explain the instructions
        - "Your group should have four dice. One person is going to roll the four dice (model this for them) and using the numbers you get with your dice you are going to create two fractions. Your group gets to decide what numbers to put as the numerators and what numbers to use as the denominators."
        - Once you have your two fractions, you <u>all</u> are going to use your white boards to create models of the fractions and solve for the answer.
        - After you have the answer. One person in the group is going to copy the model and answer onto the piece of paper that your group has.
        - If your group finishes before the five minutes are up, they can continue to work on more problems using the dice to create fractions.
        - Once the five minutes are up, use an attention getter to gain the students attention back.
            - "One person from the group needs to return the dice back to the high top table in the back, another person needs to put the two colored pencils back. A third person needs to bring me the piece of paper you guys wrote on with a name on it. And then everyone can return back to their seats at their desk."
- "Okay learners, we have been working hard to learn how to use models to multiply fractions. Can someone remind me what the first step is? Second step? Final step? Are there any other key things to remember when we are multiplying the two fractions? What are some complications you are still having? Any other questions?"

	● **The students have a split math block, so this is where they are going to go to PE and we will return to the you do/explore section after PE.**
	Explore: (independent, concrete practice/application with relevant learning task -connections from content to real-life experiences, reflective questions- probing or clarifying questions) ● **YOU DO -** ○ "Welcome back mathematicians, before you went to PE we were working on fraction times fractions and I had three people tell me some rules, can I have three new people tell me the rules for a refresher?" ○ Fill in an anchor chart with the steps as they are answering the questions so they have this to reference:  ■ Use something similar to this, but draw the models under the fractions like we have been practicing with in class ○ "We are going to practice another problem together before you get to practice by yourself. ■ Practice another math problem - use the the first example in their workbooks ■ "Learners, is there anyone who would like to come up and volunteer making the first model of our problem on the white board?" ● Ask a student if they agree or disagree with the representation, explaining their answer ■ "Now can we have someone else come and draw the second model of our problem?" ● Have a new student explain if they agree or disagree and explain why or why not ■ "Who would like to come and draw our last step of multiplying fractions?" ● Have another new student explain their thinking on why they agree or disagree ○ "Mathematicians, now we are going to get out our pencils and math workbooks and turn to page __" ■ "I would like you all to complete page ___ in your work book drawing the model for each math problem like we have been doing. I will be walking around the room, so if you need help please raise your hand and I will come by to help you. Once you are done, you may hand in the worksheet and work on any other homework you haven't finished or read a book." ■ Allow the students to work on their math worksheet for around 15 minutes depending on what I am seeing around the room ● When I notice most of the students done, I will state that they have around 5 more minutes to work quietly at their desks or quietly reading around the room ● Use an attention getter to gain the students back after those 5 minutes ■ Reflective questions - "Learners, now that we have worked on multiplying fraction time fractions using models, what is something that was easier than you expected? Something harder? In your opinion, what is the most important thing to remember when you are multiplying the two fractions using a model?"

Review (wrap up and transition to next activity):

- "Ladies and Gentlemen, now that we have worked together and independently multiplying fractions time fractions, tomorrow we will be ready to create or research a recipe that we want to use and then learn how to reduce the recipe to feed less people. Today we learned how to use the model method of multiplying the two fractions together. How many steps are there in using this method? (3). Good job today learners on working so hard to learn this new model of multiplying fractions times fractions. Now, I would like you to get ready for our math and reading buddies to come in by clearing off your desk and grabbing their materials from the back of the room."

Formative Assessment: (linked to objectives)

Progress monitoring throughout lesson- clarifying questions, check-in strategies, etc.

- Have the students hold up their white boards during we do portion of the lesson - this will help me be able to quick scan over the students work and see who is understanding the process or not
- Have the students turn in their group work - i won't assess students individually here but it will help me gauge to see if students really understand the concept as a whole group or not
- Use their math workbook page ___ to assess their knowledge for tomorrow's lesson. The students will turn this in with models drawn for each problem. I will only be assessing this for the direction of my lesson tomorrow and completeness, not for a grade

Consideration for Back-up Plan:

Summative Assessment (linked back to objectives)

End of lesson:

- Summative assessment will be done in tomorrow's lesson
  - The students will be creating a recipe or researching for one on the internet (their recipe can be a real one or made up one for fun)
  - The students will use the recipe worksheet that I will hand out to create their original recipe. This recipe sheet will be turned in
  - Their recipes must contain at least 8 ingredients and 4 of them have to be fractions
  - The students will be tasked to ½ the recipe (students can choose to either show their work with the model we learned about in today's lesson of cross multiplying like we will learn in tomorrow's lesson on the recipe sheet)
  - Once they have ½ their recipe, they will rewrite it on a google slide and find or create a picture to put on their recipe card
    - They will share their google slides to hannah.obrigewitch@gmail.com

If applicable- overall unit, chapter, concept, etc.:

Reflection (What went well? What did the students learn? How do you know? What changes would you make?):