

Lesson Plan Template

Grade: 5 th grade	Subject: Math, Social Studies
Materials: Three decks of cards (take out most of the lower numbers and add the higher numbers from the third deck into the other two decks), Three packs of napkins (100 each) in different colors, One America map with longitude and latitude lines, 11 different City multiplication cards, notebooks and pencils, thirty popsicle sticks with different math sentences written on 26 of them and “Kaboom!” written on four of them, Mason jar for the popsicle sticks, 25 sheets of grid paper, construction paper, scissors, Large bag of Folgers Coffee Beans, ¼ and ½ measuring cups, large bowl or Tupperware, thirty multiplication problems written on separate sheets of paper	Technology Needed: iPads, SmartBoard to view this link (https://garzameracadocapital.com/wp-content/uploads/2019/03/62366ec6af572669c0088871cab9158c.jpg#.XYOlou2Rj4s.link)
Instructional Strategies: <ul style="list-style-type: none"> <input type="checkbox"/> Direct instruction <input type="checkbox"/> Guided practice <input type="checkbox"/> Socratic Seminar <input checked="" type="checkbox"/> Learning Centers <input type="checkbox"/> Lecture <input type="checkbox"/> Technology integration <input type="checkbox"/> Other (list) <ul style="list-style-type: none"> <input type="checkbox"/> Peer teaching/collaboration/cooperative learning <input type="checkbox"/> Visuals/Graphic organizers <input type="checkbox"/> PBL <input type="checkbox"/> Discussion/Debate <input type="checkbox"/> Modeling 	Guided Practices and Concrete Application: <ul style="list-style-type: none"> <input type="checkbox"/> Large group activity <input type="checkbox"/> Independent activity <input checked="" type="checkbox"/> Pairing/collaboration <input type="checkbox"/> Simulations/Scenarios <input type="checkbox"/> Other (list) <p>Explain: The students will work together in their groups as they rotate through the stations. The students will manipulate math problems by visualizing them with arrays and coffee beans.</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Hands-on <input type="checkbox"/> Technology integration <input type="checkbox"/> Imitation/Repeat/Mimic
Standard(s) Math: 5.NBT.5 Fluently multiply multi-digit whole numbers using strategies flexibly, including the standard algorithm. Social Studies: G.3_5.2: Use geographic tools and technologies to acquire, process, and report information from a spatial perspective.	Differentiation Below Proficiency: The students will solve two to three math sentences at each station successfully. The student will solve math problems with only one multi-digit number. The student will use two different strategies to solve problems. The student will successfully find one city or area on the map using latitude and longitude on their own. Above Proficiency: The student will use all four strategies to solve the math problems at each station. The student will solve over 90 percent of the math problems successfully on their own. The student will find all cities on the map using latitude and longitude.
Objective(s) By the end of the lesson, the learner will solve problems containing the multiplication of multi-digit whole numbers using the standard algorithm strategy, lattice method, breaking-up-numbers strategy, or box strategy. By the end of the lesson, the student will use a map to find the latitude and longitude of a place to help solve math problems. Bloom’s Taxonomy Cognitive Level: Apply	Modalities/Learning Preferences (Auditory, Visual, Tactile, Kinesthetic) Visual: The students will visualize the math multiplication problems by creating arrays using the graph paper and napkins and by grouping the coffee beans to represent the variables for the math problem. The student will visually see the latitude and longitude lines for the cities and convert that into a math problem. Tactile: The student will manipulate the coffee beans, graph arrays, and napkin arrays to represent the math problems. Kinesthetic: The students will create their napkin arrays on the floor utilizing movement to arrange the napkins.
Classroom Management- (grouping(s), movement/transitions, etc.) The students will be in six different groups of four, with one group of five. The students will rotate through the math stations with ten minutes at each station. The students will be warned when two minutes are left before the transition, and a timer will be used to signal the transition.	Behavior Expectations- (systems, strategies, procedures specific to the lesson, rules and expectations, etc.) The students will use quiet, walking feet to move about the stations. Students will talk to their peers with quiet voices. Students will actively participate in each station utilizing the manipulatives and engaging in the games. Students will transition to the next station when the timer beeps leaving the station clean and organized. The students will take their notebooks and pencils to each station and write their math problems in an organized way using a different section for each station.

Lesson Plan Template

Minutes	Procedures
10	<p>Set-up/Prep: Set out each station.</p> <p>Station 1: Latitude and Longitude with Ms. Hanson (Pull up the large America map with longitude and latitude lines on SmartBoard with link above, 10 different Cities and their coordinates, box method)</p> <p>Station 2: War (Two sets of card decks, instruction sheet, lattice method)</p> <p>Station 3: Skyline Arrays (grid paper, scissors, construction paper, glue sticks, Instruction sheet for Mrs. Riopelle, standard algorithm)</p> <p>Station 4: Coffee Beans (Bowl with coffee beans in it, measuring cups, instruction sheet, breaking numbers apart method)</p> <p>Station 5: Kaboom! (Mason Jar with popsicle sticks in it, instruction sheet, strategy of choice)</p> <p>Station 6: Dancefloor Array (Napkins divided into two stacks, strategy of choice)</p> <p>See instruction sheets in Appendix A</p>
7	<p>Engage: (opening activity/ anticipatory Set – access prior learning / stimulate interest /generate questions, etc.)</p> <p>“Students, who can come up and find the latitude and longitude coordinates for Bismarck? (Have volunteer come up and find that coordinate, write it on the whiteboard). Okay, now Ms. Hanson is from South Dakota, so we are going to find the Latitude and Longitude coordinate for Pierre, South Dakota, who wants to find that? (have student come up and find the coordinate, write it on the board). Okay students, what have we been practicing in Math this week? (Students should say multiplying multi-digit numbers). That’s right, students. How could we turn these coordinates into a multiplication problem? (Students could suggest: multiply the latitude degrees together and the longitude lines together or multiply each city’s latitude and longitude lines together. Either way will work for this). Okay, let’s figure out that problem. Tell me what my first step will be. (follow the students’ instructions to complete the problem). What if we used a different strategy? (Solve problem again using different strategy). Excellent students!</p>
5	<p>Explain: (concepts, procedures, vocabulary, etc.)</p> <p>“Today, students, we are going to rotate through stations to help us practice these multiplication strategies. There are four different strategies to solve multiplication problems that we are going to practice: the standard algorithm, the box strategy, the lattice method, and breaking numbers down. You are going to rotate through each station in groups which I will number off. There are six stations, and each station has an instruction sheet that you need to read so that you know what to do at each station. It will tell you which strategy to use at that station. Mrs. Riopelle will be walking around the room, so if you do not understand what to do, she is a great resource for you. One of the stations will be doing exactly what we did here. We are going to find the latitude and longitude coordinates of different cities and multiply them together. You are going to do that with me right here by the SmartBoard. We will be practicing the box method at this station. This is the only strategy that we have not talked about so far, so I will walk you through how to use this strategy while at this station. One of the stations is playing War, but it is a little different than how we usually play, so make sure you read the instructions. At this station, you will be using the lattice method which you guys are stellar at. Another station has to do with making a skyline out of arrays. An array is a table that represents different numbers (hold up an example, 3 x 6). This array has three boxes down the column and six boxes across the rows. Your arrays will be much bigger because we are practicing multi-digit multiplications, but your buildings should all look different, so have fun with that! At this station, we are practicing using the standard algorithm. Another station has to do with arrays, but you are going to make your array with napkins. You will make up a multiplication problem and create an array that represents that problem on the floor with napkins. Have fun with the patterns you can make! With your last array that you make, I want you to ask Mrs. Riopelle to take a picture of your group and their best dance moves next to your array. At this station you are going to choose which strategy to practice. At the coffee beans station, you will be measuring out coffee beans into two piles, one using the $\frac{1}{4}$ cup and one using the $\frac{1}{2}$ cup. You will count the beans in each group and multiply the numbers together. At this station, you will be practicing breaking numbers apart. For example, if you had 34 beans in one group, and 27 beans in another group, you would break 34 into 30 and 4 and break 27 into 20 and 7. Then you would multiply 30 by 20 and 30 by 7 (Ensure that you are modeling this at the board). Then you would multiply 4 by 20 and 4 by 7. The last step is to add all of those products together. This strategy is still a little new to us, so there is an example on the instruction sheet for you to follow as well. At the last station you will be playing “Kaboom!”. You will lay each popsicle stick facedown, and you will take turns drawing a popsicle stick. If you draw a popsicle stick with a math equation, you will solve the problem. If you solve it correctly, then you get to keep the stick. If you do not, then you put the stick back. If you draw a popsicle stick with “Kaboom!” written on it, then you have to put all of your popsicle sticks back. You can use any strategy that you would like at this station. You will take a notebook or sheet of paper with you to each station and write down each math problem, your work, and solution down on your paper. You will start a new section with each station, so your notes are organized. I want you to have fun, but make sure to take this time to practice those math skills, use quiet, indoor voices with friends, and walking feet when transitioning. You will have fifteen minutes at each station, and I will give you a two minute warning, so you have enough time for one more equation and to clean up the station before transitioning. When the timer beeps, it is time to transition. Let’s break you into your groups (number off the students into six groups). Alright, students, grab your notebooks and pencils. If you had a one, you are with me at the SmartBoard. Twos are the War station. Threes are at the Skyline Station. Fours are at the Coffee Bean station, Fives are at the Kaboom! Station, and Fives are at the Dancefloor station. You have twenty seconds to get to your stations and start, 20, 19, 18.....3, 2, 1. Have fun! (start timer for ten minutes)</p>
94	<p>Explore: (independent, concrete practice/application with relevant learning task -connections from content to real-life experiences, reflective questions- probing or clarifying questions)</p> <p>Engage with the students at the Latitude and Longitude station and prompt them to explain their reasonings behind the answers to the math equations and how they determined the coordinates with questions like:</p>

Lesson Plan Template

	<p>“How did you know that the coordinates were those coordinates? How did you start to find the coordinates? How do you know that this is the answer to that equation? Explain to me how you used the box method strategy? What other strategy might help you with this problem?” (Keep a running record of each student’s responses).</p> <p>Give the two minute warning before each transition. Reinforce walking feet and quiet voices as needed. Enlist Mrs. Riopelle to observe students at the other stations.</p>
<p style="text-align: center;">2</p>	<p>Review (wrap up and transition to next activity): “Students, you did a fabulous job practicing your math strategies with multi-digit multiplication problems today! Think for a minute about which strategy that we practiced today fit best with your learning style? Which strategy is most helpful for you to solve problems? (give students 30 seconds of think time). Turn to your neighbor and share which strategy was most helpful to you and why. (give students 1-2 minutes of time to share). Come back to me in 5, 4, 3, 2, 1. Let’s have three share-outs of strategies that were helpful and why (take three share-outs). Great job today, learners, I appreciated your body control with your walking feet and inside voices, and when I looked around the room, I saw all of the groups actively engaging at each station, thank you for taking ownership of your learning!</p>
<p>Formative Assessment: (linked to objectives) Progress monitoring throughout lesson- clarifying questions, check-in strategies, etc. Group solving of the latitude and longitude problem in Engage section. Running Record at the Latitude and Longitude section during the Explore section.</p> <p>Consideration for Back-up Plan: We could use student birthdays as latitude and longitude coordinates, find those areas on a world map, and create math problems from those coordinates as a group. We could have less stations and have high-fliers help run the stations to minimize large groups.</p>	<p>Summative Assessment (linked back to objectives) End of lesson: Notebooks with equations and solutions, Skyline Arrays, iPad pictures of Dancefloor Arrays</p> <p>If applicable- overall unit, chapter, concept, etc.:</p>
<p>Reflection (What went well? What did the students learn? How do you know? What changes would you make?): This lesson went very well. I was explicit in my instructions and expectations, took time to answer questions, and modeled how to complete each station, and the students were incredibly engaged. I actually extended the time spent on each station because of the students’ engagement. For this reason, and other reasons, the students only rotated through three of the stations, but they asked repeatedly about getting to finish them at some point in time which reinforced my sense of their engagement. Additionally, the students were able to gain extensive practice in multiplication due to the variety of ways to practice multiplication presented in the stations. I saw the students’ ease in solving problems increase, and their thinking grow more thorough in their explanations of their work. The visual, tactile, and sensory aspects of the different stations enabled all learners to practice multiplication in their preferred learning style. This allowed for natural differentiation., quite a few of the students experienced deeper understanding of latitude and longitude at my station. They were able to ask more questions, practice the concept, and review the information in a small group setting which allowed quite a few students to find that “ah-ha” moment where they finally got it. It was amazing to see the concept click in students’ brains as they practiced math. Lastly, the students really enjoyed the Skyline Array station and Dancefloor array station because there were able to channel their personal creativity while practicing math. The changes I would make to this lesson is extend it over a period of days so that all students get a chance at each station with at least fifteen minutes at each station. When I teach this in the future, I would also be sure to practice expectations for responsibility and staying on-task during centers before I implement these stations. When I taught this today, I had three other teachers to help me and that was integral to the success of the stations. My wonderings about this lesson in terms of what to change are how to differentiate in terms of students’ ability within this lesson. Because each station is independent, I am wondering how best to differentiate for those learners who just do not get the concept of multidigit multiplication. This is something I want to brainstorm further in order to make this lesson more applicable in every classroom I teach. The two ways that I was differentiating already had to do with providing students with several different learning modalities to practice the concept and varying the difficulty of the math problems. I had three-digit multiplication problems, two-digit multiplication problems, and one-digit multiplication problems, but for students who need even more support, I am not sure how to scaffold this particular lesson. I know that in the future, I will not always have the luxury of so much help in the forms of other teachers and paraprofessionals to scaffold learning, so I want to brainstorm how to make this lesson doable with highly active learners at very different levels of mathematic knowledge. To help me in my desire to brainstorm, I am going to seek advice from my cooperating teacher and professors for ideas and resources.</p> <p>I added the utilization of different strategies to increase fluency in my students in this lesson. In addition, I added time to the rotations in order to make the most out of the engagement of the students at each of the stations.</p>	

Lesson Plan Template
Appendix A

Let's Play War!

There are two sets of War cards. You are going to pair up and play War with a partner, but there's a twist. Instead of drawing one card, each player will draw two cards, multiply them together, and whoever has the bigger product wins the round and gets to keep the cards. The Jack is worth 11. The Queen is worth 12, and the King is worth 13. The Ace is worth 14. You will use the lattice method at this station!

Have fun playing, and make sure you are writing the math problems, showing your work, and circling the solutions in your notebook!

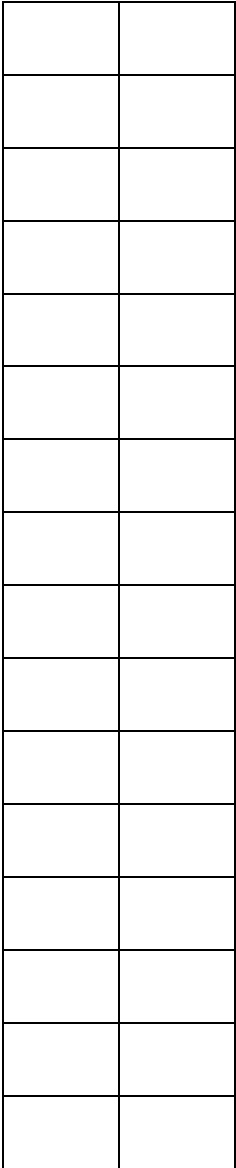
It's Coffee Time!

Grab the measuring cups and take one scoop of coffee beans from each measuring cup and put them in two different piles. Count the coffee beans in each pile and multiply them together. Don't forget to smell the coffee while you are doing it!

Make sure you write down all of the math equations and solutions in your notebook! You will break your numbers apart as a strategy for these problems.

Lesson Plan Template
Build Your City

Write a math equation, solve it, and represent it with the graph paper. For example, $15 \times 2 = 30$, so I would take the grid paper and cut out a section with fifteen grids down and two grids across, like this:



Next, I will glue this building on my construction paper, and it will be the first building of my skyline. You should have at least five buildings, and feel free to get creative with the buildings and the names! Make sure you write down all of your math equations and solutions down in your notebook! You can use standard algorithm as your strategy for this station.

Lesson Plan Template

Kaboom!

Lay out the popsicle sticks face down on the table like you are playing memory. Take turns drawing a popsicle stick. If the popsicle stick has a math equation on it, solve it! (Make sure to write it down in your notebook). If you get it right, you get to keep the popsicle stick. If you don't, then put it back. Beware of the sticks that have "Kaboom!" on them. If you draw this, you have to put all of your popsicle sticks back! Lucky you, you get to choose a strategy for this station!

Lesson Plan Template
Get Your Groove On!

Write a math equation, then represent the equation with napkins on the floor! This is just like the Skyline Activity. For example, I wrote the math equation 5×3 . I solved it for 15, and then

I created a dancefloor with five napkins down and three napkins across, just like this table:

1	2	3
2		
3		
4		
5		

For a total of 15 squares. Have fun with this and create some cool patterns with the different colored napkins! Make sure you write down your math equations, show your work, and circle your solutions in your notebook! Have even more fun, take a picture on your iPad with your group in awesome dance move poses and the coolest dancefloor you created! Lucky you, you get

to choose your strategy for this station!

Lesson Plan Template

Where Am I?

Find the latitude and longitude coordinates of these cities:

Bismarck, ND

Pierre, SD

New Orleans, Louisiana

Springfield, Illinois

Augusta, Maine

Then write the latitude and longitude point as a multiplication problem.

Solve using the box method. For example, the coordinate points of Denver, Colorado are (45° N, 105°W). I would write my math sentence

as: $45 \times 105 = \underline{\hspace{2cm}}$

Using the box method I would write:

40	5	
$40 \times 100 = 4000$	$5 \times 100 = 500$	100
$40 \times 5 = 200$	$5 \times 5 = 25$	5

Then I would add my products together:

$$4000 + 200 + 500 + 25 = 4725$$

Lesson Plan Template

