

OUR MINI STORES (GRADE 4)

Preparation:

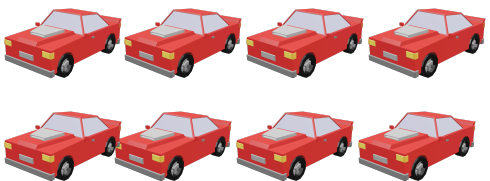
Leading Question	How can we use multiplication to build and run a store?
Description:	Learners will work in groups to create and run their own mini stores, using real-life scenarios to apply multiplication skills. Through hands-on activities like pricing, billing, and managing orders. They will learn multiplication facts, multiplication of 3-digit numbers with 1 and 2 digit numbers, and explore methods like the standard algorithm and lattice multiplication. This project aims to help learners see how math is useful in everyday decision-making and problem-solving. This project covers Chapter 4 - Multiplication on Pg. 21 of the textbook. A detailed table showing the topics taught through this project is included at the end of this plan. Some textbook questions will be covered through the project as classwork/homework. Please ensure the remaining questions are completed after the project. Do upload pictures of their mini stores to the project completion form!
Resources required:	Paper/notebook, pen/pencil, materials needed to make items to sell Optional: printouts of Appendix 1 (2-3 for the whole class)

Day 1 –

Learners will learn about PBL and the first project that they will work on. They will also understand multiplication as repeated addition and use multiplication facts to represent groups of objects.

Time	Activity and Description
10 minutes	Introduction to PBL and Norm Setting: (Whole Class) Teacher Says: - Have you ever done a project? What was it about? (Take 1-2 responses.) - This year, we're going to try Project-Based Learning, or PBL, to learn math. In PBL, we learn by doing real projects. Instead of only solving sums and word problems, we will work in teams to solve real problems and build things! For example, in this project, you will build and run your own mini stores! - To help us work well in groups, we need to set some rules just for our PBL time. These will help everyone feel heard and included, and use our PBL time well. - Let us begin with a few simple rules. At the end of this project, we will talk about which rules helped us, which ones didn't, and whether we need to add any new rules for further projects. Write these rules on the board and explain them to the learners:

	- We listen carefully to each other and speak kindly. - Everyone in the group has a job and helps with the work. - We ask each other for help when we need it. Note: Add or change rules based on what works best for your classroom, and to include any suggestions from learners. Once done, have someone volunteer to write the finalised class rules on paper and stick them on the classroom wall. Use these rules to manage class during PBL and ensure active participation of every learner.
20 minutes	Opening Activity - Shopping Relay: (Group Work) Divide the class into groups of 4-5 learners. Inform them that throughout this project, they will work in the same groups. They will work in a different group in the next project. Ensure each group has a mix of learners with different abilities, learning levels, and genders. Discuss with learners why it's important to work in different groups. Take a few responses from them and conclude that working in different groups help learn from different people and even make new friends! Write the following price list on the board: 1. Packet of pencils = ₹ 10 2. Pack of 2 erasers = ₹ 5 3. 1 ruler = ₹ 10 4. 1 pencil box = ₹ 20 5. 1 sketch pen = ₹ 7 Ask learners to imagine that each group has a budget of ₹50 to spend. Give them a few minutes to discuss and decide which items they would buy within this limit. Each group should then create a list of chosen items based on their discussion. Invite a few groups to share their lists with the class. Use the following questions to initiate a discussion on how learners made the list and how the use of multiplication can help: 1. How did your group come up with a list that falls within the given budget? 2. How did your group figure out how much money you would spend if you bought more than one of the same item? 3. Did anyone try adding the same number again and again? What did you notice? 4. How did multiplication make it faster or easier than adding again and again? 5. If a pencil costs ₹10 and you bought 3, how would that look as an additional sentence? (₹ 10 + ₹ 10 + ₹ 10 = ₹ 30) 6. How would you write that as a multiplication sentence? (₹ 10 X 3 = ₹ 30) 7. When you go shopping with your parents/guardians, do you help calculate the cost of things? Which operations do you use? (addition, multiplication, and subtraction (for discounts))

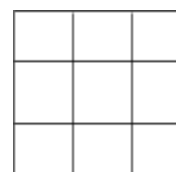
	8. How do shopkeepers know the price for 4 chocolates without adding them again and again? Summarise that when we have to add the same number again and again, we can use multiplication to save time and effort. Write down the following example on the board to explain: Instead of doing ₹5 + ₹5 + ₹5, we can just do $3 \times ₹5 = 15$. Tell learners that $5+5+5=15$ is an addition fact and $3 \times 5=15$ is a multiplication fact. It means 3 groups of 5 rupees makes it a total of 15 rupees. Learners will practise writing multiplication facts on Pg. 25 of their textbook. Do the first one as an example. (a)  2 groups of 4 cars each Multiplication fact: $2 \times 4 = 8$ Instruct learners to do the remaining three parts (b), (c), and (d). Once done, share the correct answers and ask them to check. (b) $2 \times 5 = 10$ (c) $3 \times 6 = 18$ (d) $4 \times 5 = 20$ Ask: Why are we discussing multiplication? (Take a few responses) Inform learners that the first project they will work on will use multiplication.
10 minutes	Introduction to the Project: (Whole Class) Teacher says: - In this project, you will work in your groups to set up your own mini stores! - Each mini-store will sell one item/thing of your choice. - On the fifth and final day of the project, we will have an audience to shop from your mini stores. So, be ready to sell your items and make a profit! - In every project, you will work towards solving a 'big question', also known as the leading question. - The <u>leading question</u> for this project is: <i>How can we use multiplication to build and run a store?</i> - Every group will set up a fun mini store! Make sure your store has: 1. One item to sell – The price of your item should be a 3-digit number between ₹100 and ₹999. 2. A bill design – Make a simple and neat bill to show what your customer buys and how much it costs.

	3. Use multiplication – Use multiplication facts to work out the total price when someone buys more than one item. <i>Example: If one toy costs ₹125 and your friend buys 2 toys, your bill should show: ₹125 × 2 = ₹250</i> Get 1-2 learners to write down the leading question and criteria (written above in bold) and put them up in the classroom throughout the duration of this project.
Homework	Think of a few items that you would like to sell in your mini store. Make sure that the price of the item can be a 3-digit number. Think of items that are local, unique, and can be made from materials that are easily available around you. For example, a set of bamboo bookmarks, paper or cloth bags with popular prints and patterns from your culture like spear motifs, animal symbols, patterns using red, white and black symbols, etc.

Day 2 –

Learners will revise multiplication facts through a game of multiplication bingo. They will also finalise the item they would like to sell in their mini store and assign a price to it.

Time	Activity and Description
15 minutes	Recap and Multiplication Bingo: (Individual Work) Invite 1-2 learners to share what they did in the last class. Summarise: - They were introduced to project-based learning and made rules to follow in all PBL classes. (Remind them of the rules.) - They understood that multiplication is repeated addition through an activity and wrote multiplication facts for a few groups of objects. - They were also introduced to the first project that they will be working on - creating their own mini stores. Inform them that they will play multiplication bingo to revise multiplication facts. To play this game, learners must follow these instructions: 1. Draw a 3x3 grid (3 rows and 3 columns) on a page. You will have 9 boxes. 2. Write any 2-digit numbers (from 10 to 99) in the boxes — one number in each box. 3. The teacher will say some multiplication facts (like 6×7 or 8×9). 4. If the answer to the question is on your grid, cut it out or cross it. 5. The first one to cut out the most numbers in 5 minutes wins! Once the learners have drawn the grid and written the numbers, call out the following multiplication facts: 1. 4 groups of 5 items is equal to ____ (Write $4 \times 5 = ?$ on the board) 2. 5 groups of 8 items is equal to ____ (Write $5 \times 8 = ?$ on the board) 3. 9 groups of 7 items is equal to ____ (Write $9 \times 7 = ?$ on the board) 4. 6 groups of 6 items is equal to ____ (Write $6 \times 6 = ?$ on the board)



	5. 10 groups of 9 items is equal to ____ (Write $10 \times 9 = ?$ on the board) 6. 8 groups of 4 items is equal to ____ (Write $8 \times 4 = ?$ on the board) 7. 7 groups of 3 items is equal to ____ (Write $7 \times 3 = ?$ on the board) 8. 5 groups of 2 items is equal to ____ (Write $5 \times 2 = ?$ on the board) 9. 7 groups of 10 items is equal to ____ (Write $7 \times 10 = ?$ on the board) 10. 3 groups of 6 items is equal to ____ (Write $3 \times 6 = ?$ on the board) 11. 8 groups of 7 items is equal to ____ (Write $8 \times 7 = ?$ on the board) 12. 9 groups of 9 items is equal to ____ (Write $9 \times 9 = ?$ on the board) Continue calling out more multiplication facts for 5 minutes. At the end of 5 minutes, announce the winner. After the winner is announced, invite different learners to answer all the multiplication facts written on the board. The correct answers for the above ones are given below: <table> <tr> <td>1. $4 \times 5 = 20$</td><td>7. $7 \times 3 = 21$</td></tr> <tr> <td>2. $5 \times 8 = 40$</td><td>8. $5 \times 2 = 10$</td></tr> <tr> <td>3. $9 \times 7 = 63$</td><td>9. $7 \times 10 = 70$</td></tr> <tr> <td>4. $6 \times 6 = 36$</td><td>10. $3 \times 6 = 18$</td></tr> <tr> <td>5. $10 \times 9 = 90$</td><td>11. $8 \times 7 = 56$</td></tr> <tr> <td>6. $8 \times 4 = 32$</td><td>12. $9 \times 9 = 81$</td></tr> </table>	1. $4 \times 5 = 20$	7. $7 \times 3 = 21$	2. $5 \times 8 = 40$	8. $5 \times 2 = 10$	3. $9 \times 7 = 63$	9. $7 \times 10 = 70$	4. $6 \times 6 = 36$	10. $3 \times 6 = 18$	5. $10 \times 9 = 90$	11. $8 \times 7 = 56$	6. $8 \times 4 = 32$	12. $9 \times 9 = 81$
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15 minutes	<u>Brainstorm Ideas for Mini Store: (Group Work)</u> Choosing an Item to Sell: 10 minutes Ask learners to sit in their groups (the groups that were created in the previous class) and talk about the item they want to sell in their mini store. They should begin by sharing the ideas they thought of during their homework. Encourage everyone in the group to share their suggestions. They should listen to each other, talk about which idea is the most suitable, and agree on one item to sell. To help them work in groups effectively, share the following steps that they can follow: - Take turns to share your ideas. - Everyone gets a chance to speak — one at a time. - Use a sentence like: <i>"I think we can sell..."</i> - Listen carefully to your teammates. - Don't interrupt. - Show you're listening by nodding or saying, <i>"That's a nice idea!"</i> - Ask questions if you don't understand. <i>"Can you explain how that would work?"</i> <i>"Why do you think this is a good item to sell?"</i> - Think about what works best for the group. - Is the item easy to make or find? (For example, craft items like pebbles painted with popular Naga patterns, bamboo bookmarks, trays or pencil holders with popular prints from tribal cultures of Nagaland, decorated paper bags using old newspapers and magazines, toy sets or puzzles using												

	cardboard showing significant animals like hornbill or Mithun in their natural environment, bead jewellery or wristbands, mini baskets, etc.) • Can we give it a price between ₹100–₹999? If a single item is too inexpensive to be priced at ₹100, consider selling it as a set. For example, one bookmark may not be worth ₹100 on its own, but a pack of 5 bookmarks can be grouped and sold together as one item for ₹100. • Will it be fun and useful for the buyers? 5. Combine ideas if needed. • If more than one idea is good, see if you can mix them. • Example: <i>“We can make a set of bracelets and bookmarks!”</i> 6. Take a group vote if you can’t decide! • Raise your hands for each idea. • Choose the one with the most votes — fairly and kindly. 7. Once your group decides, everyone supports the idea. • Say: <i>“Let’s work together to make this great!”</i> • Remember: It’s “our” item/thing, not just “my” idea. Note: As groups discuss, walk around the class and see if students are following the steps. Once all the groups decide, invite one member from each group to share the item they have decided to sell. Ensure that every group chooses a different thing so that there is variety in the mini stores they create. Assigning a Price for the Item: 5 minutes Learners will work in their groups to assign a price to the item they have chosen. Share the following steps with them to help them assign a price to their chosen item. <table border="1"> <tr> <td data-bbox="378 1163 581 1478">Step 1: Find out the cost of materials.</td><td data-bbox="581 1163 1466 1478"> Example: If you are selling a set of 5 painted paper bags, find out the cost of the materials used to make one set. Example: Cost of newspaper = ₹ 10 Cost of glue = ₹ 10 Cost of colours = ₹ 20 Cost of strings/ribbon handles on the paper bag = ₹ 20 Total cost = ₹ 60 </td></tr> <tr> <td data-bbox="378 1478 581 1724">Step 2: Add the cost of your effort.</td><td data-bbox="581 1478 1466 1724"> If your chosen item is special and takes more time, care, or skill to make, you can add a little more for your effort. But if it’s something simple or easy to find, you should add only a small amount for your effort. Example: If your paper bag looks neat and has special artwork like Naga patterns and prints on it that took time and effort, you can charge ₹ 50 for your effort. </td></tr> <tr> <td data-bbox="378 1724 581 1810">Step 3: Add packaging</td><td data-bbox="581 1724 1466 1810"> Example: Did you use anything like ribbon, string, or another bag to pack your paper bag? If yes, add the cost of the packaging material. </td></tr> </table>	Step 1: Find out the cost of materials.	Example: If you are selling a set of 5 painted paper bags, find out the cost of the materials used to make one set. Example: Cost of newspaper = ₹ 10 Cost of glue = ₹ 10 Cost of colours = ₹ 20 Cost of strings/ribbon handles on the paper bag = ₹ 20 Total cost = ₹ 60	Step 2: Add the cost of your effort.	If your chosen item is special and takes more time, care, or skill to make, you can add a little more for your effort. But if it’s something simple or easy to find, you should add only a small amount for your effort. Example: If your paper bag looks neat and has special artwork like Naga patterns and prints on it that took time and effort, you can charge ₹ 50 for your effort.	Step 3: Add packaging	Example: Did you use anything like ribbon, string, or another bag to pack your paper bag? If yes, add the cost of the packaging material.
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	cost (if any).	Example: If you are typing the 4 paper bags together with a ribbon, find out the cost of that ribbon (a piece of ribbon = ₹ 5).						
	Step 4: Add all the costs together.	Now, add the costs from step 1 + step 2 + step 3. Example: ₹ 60 + ₹ 50 + ₹ 5 = ₹ 115 Check to ensure that the price of your item should be a 3-digit number. If it is not, you may increase the number of items in your set to reach a 3-digit number.						
Note: Please move around the class and provide support to groups who may need it. Help learners with prices of items they may not be aware of.								
10 minutes	Design Your Own Bill: (Group Work) Ask: Do you know what a bill is? Have you seen a bill? Take a few responses and summarise that a bill is a paper or note that shows how much you have to pay for something. For example, electricity bill, shopping bill, bill at a restaurant, etc. Instruct learners to work in their groups and design the bill for their mini store. Show some examples of bills to give learners some ideas. Refer to Appendix 1 for some sample bills. Some guiding questions to help learners design their bill are given below: - What do you want your store's bill to look like? - Do you want to add the store's name and a logo for it? (Instruct them to think of a fun and creative name for their store, something that attracts customers and tells them what you sell. Think of a logo/symbol to represent your store.) - Do you want to add the date and bill number? - Would you like to add a thank you line at the end of the bill? For example, Thank you for shopping with us! - How can you show how many items were bought by a customer and how much they cost? (For example, a table can be created with 4 columns - column 1 can be the price of 1 item, column 2 can be the number of items purchased by the customer, column 3 can be the multiplication fact showing the total amount to be paid. <table border="1"> <thead> <tr> <th>Price of 1 Item</th><th>Number of Items Purchased</th><th>Total Amount to be Paid</th></tr> </thead> <tbody> <tr> <td>₹ 115</td><td>2</td><td>₹ 115 x 2 = ₹ 230</td></tr> </tbody> </table> - Would you like to decorate your bill or keep it simple and neat? Note: Please move around the class and help groups that may need support.		Price of 1 Item	Number of Items Purchased	Total Amount to be Paid	₹ 115	2	₹ 115 x 2 = ₹ 230
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Day 3 –

Learners will design their own bills and learn how to multiply 3-digit numbers with 1 and 2-digit numbers.

Time	Activity and Description																																								
5 minutes	Recap: (Whole Class) Invite a learner to read aloud the leading question (put up in the classroom): How can we use multiplication to build and run a store? Ask them to discuss in their groups what they have done so far to answer the leading question. Invite 2-3 groups to share their responses. Summarise that so far they have decided the item they would like to sell in their mini stores and its price. Share with them that today they will create a bill for their mini store and learn how to use multiplication for billing.																																								
15 minutes	Billing Practice - Multiplication of a 3-Digit Number with a 1-Digit Number (Whole Class) Ask: Do you know how to bill a customer? Take a few responses and inform learners that they will now practise billing using some situations that the teacher will present before them. Situation 1: A store is selling a painted pencil box for ₹ 125. A customer buys 6 pencil boxes. How much money will she pay? Ask learners to discuss in their groups how they will find out the total amount to be paid by this customer. Take a few responses and tell learners that they can use multiplication or repeated addition to find out the total amount. Repeated addition will take longer. Hence, multiplication would be an easier choice! Take the example of situation 1 to teach learners how to multiply a 3-digit number with a 1-digit number. Steps to Multiply a 3-Digit Number with a 1-Digit Number: <table><tr><td> Step 1: Write the numbers in columns. Make sure to line up the digits correctly - ones below ones, tens below tens and hundreds below hundreds. <table><tr><td></td><td>H</td><td>T</td><td>O</td></tr><tr><td></td><td>1</td><td>2</td><td>5</td></tr><tr><td>x</td><td></td><td></td><td>6</td></tr><tr><td></td><td></td><td></td><td></td></tr></table></td><td> Step 2: Multiply the ones place. If there is a carry over, carry it to the ten's place. 6 x 5 = 30 <table><tr><td></td><td></td><td>3</td><td></td></tr><tr><td></td><td>H</td><td>T</td><td>O</td></tr><tr><td></td><td>1</td><td>2</td><td>5</td></tr><tr><td>x</td><td></td><td></td><td>6</td></tr><tr><td></td><td></td><td></td><td>0</td></tr></table></td></tr><tr><td> Step 3: Multiply the 1-digit number with the digit in the tens place. If you had a </td><td> Step 4: Multiply the 1-digit number with the digit in the hundreds place. If you had a </td></tr></table>	Step 1: Write the numbers in columns. Make sure to line up the digits correctly - ones below ones, tens below tens and hundreds below hundreds. <table><tr><td></td><td>H</td><td>T</td><td>O</td></tr><tr><td></td><td>1</td><td>2</td><td>5</td></tr><tr><td>x</td><td></td><td></td><td>6</td></tr><tr><td></td><td></td><td></td><td></td></tr></table>		H	T	O		1	2	5	x			6					Step 2: Multiply the ones place. If there is a carry over, carry it to the ten's place. 6 x 5 = 30 <table><tr><td></td><td></td><td>3</td><td></td></tr><tr><td></td><td>H</td><td>T</td><td>O</td></tr><tr><td></td><td>1</td><td>2</td><td>5</td></tr><tr><td>x</td><td></td><td></td><td>6</td></tr><tr><td></td><td></td><td></td><td>0</td></tr></table>			3			H	T	O		1	2	5	x			6				0	Step 3: Multiply the 1-digit number with the digit in the tens place. If you had a	Step 4: Multiply the 1-digit number with the digit in the hundreds place. If you had a
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	Instruct learners to practise multiplication of a 3-digit number with a 1-digit number using another situation. Situation 2: If 5 people bought the item you are selling at your store, how much money would they pay in total? Allow learners to solve the problem and share the multiplication fact with them: price of 1 item x 5 = total amount Move around the class and provide support to those who may need it.																																									
15 minutes	Billing Practice - Multiplication of a 3-Digit Number with a 2-Digit Number (Whole Class) Tell learners that they will now look at another situation and think how the problem can be solved. Situation 3: A store sells a pack of bamboo bookmarks for ₹100. The principal of a school buys 45 packs to give one bookmark to each student on Children's Day. How much will the principal pay in total? Take a few responses and inform learners that the amount to be paid by the principal can be calculated by multiplying the cost of 1 pack of bamboo bookmarks with the number of packs that the principal bought; ₹ 100 x 45. To solve this problem, they must learn how to multiply a 3-digit number with a 2-digit number. Share the following steps with the learners. Steps to Multiply a 3-Digit Number with a 2-Digit Number: <table border="1"><tr><td> Step 1: Break the 2-digit number into tens and ones. Example: 45 = 40 + 5 (4 tens and 5 ones) So, 100 x 45 = 100 x (40 + 5) </td><td> Step 2: Multiply the 3-digit number by the one's place. Example: 100 x 5 = 500 </td></tr></table>		Step 1: Break the 2-digit number into tens and ones. Example: 45 = 40 + 5 (4 tens and 5 ones) So, 100 x 45 = 100 x (40 + 5)	Step 2: Multiply the 3-digit number by the one's place. Example: 100 x 5 = 500																																						
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Step 3: Multiply the 3-digit number by the tens place. 100 x 40 = <table border="1"><tr><td></td><td>1</td><td>3</td><td></td></tr><tr><td></td><td>H</td><td>T</td><td>O</td></tr><tr><td></td><td>1</td><td>0</td><td>0</td></tr><tr><td>x</td><td></td><td>4</td><td>0</td></tr><tr><td></td><td>0</td><td>0</td><td>0</td></tr><tr><td>4</td><td>0</td><td>0</td><td>+</td></tr><tr><td>4</td><td>0</td><td>0</td><td>0</td></tr></table>					1	3			H	T	O		1	0	0	x		4	0		0	0	0	4	0	0	+	4	0	0	0	Step 4: Add the 2 numbers you got in steps 2 and 3. 100 x 5 = 500 100 x 40 = 4000 500 + 4000 = 4500 <table border="1"><tr><td></td><td></td><td>H</td><td>T</td><td>O</td></tr><tr><td></td><td></td><td>5</td><td>0</td><td>0</td></tr><tr><td>+</td><td>4</td><td>0</td><td>0</td><td>0</td></tr><tr><td></td><td>4</td><td>5</td><td>0</td><td>0</td></tr></table> Write the final answer: ₹100 x 45 = ₹ 4500						H	T	O			5	0	0	+	4	0	0	0		4	5	0	0
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Teacher says:

- There's an easier way to multiply numbers that end with zero.
 - To multiply any number by 10, put a zero after the number. For example, $234 \times 10 = 2340$.
 - To multiply any number by 100, put two zeros after the number. For example, $234 \times 100 = 23400$
- Can you tell what will be the product of 234×1000 ?

Instruct learners to practise multiplication of a 3-digit number with a 1-digit number by solving **Q 1 (a)** on **Pg. 27** of the textbook.

Allow learners to solve the problem and share the correct answer with them: **125 x 58 = 125 x (50+8)**
 $= 125 \times 8 = 1000$
 $= 125 \times 50 = 6250$

	$= 6250 + 1000 = 7250$
5 minutes	Materials Needed to Create Items to Sell: Ask learners to sit in their groups and discuss what materials they will need to bring for making their mini store item in the next class. Encourage them to: - List all the materials they will need. - Share the responsibility by deciding who will bring what. - Make sure everyone is included, but no one is asked to bring something that's hard to find.
Homework	Answer Q 2, Q 4 and Q 6 on Pg. 27 of the textbook. Bring items needed to create the items you want to sell to the next class.

Day 4 –

Learners will learn the lattice method of multiplication and improve their store plan based on peer feedback. They will also work on the store design and create the items they wish to sell.

Time	Activity and Description
5 minutes	Recap: (Whole Class) Invite a few learners to share what their group has done so far in the project. Then summarise the key milestones by saying: - So far, you have: 1. Learned that multiplication is repeated addition 2. Practised writing multiplication facts 3. Chosen an item to sell in your mini store 4. Assigned a price to your chosen item 5. Designed a bill for your store 6. And practised billing by multiplying 3-digit numbers with 1-digit and 2-digit numbers Let learners know how much they've already achieved and how these steps have helped them prepare to run their stores confidently! Inform them that today they will continue practising billing by learning the lattice method of multiplication. They will also present their store plan to another group. After receiving peer feedback on what is working well and what could be improved, learners will reflect on the suggestions and make changes to strengthen their mini stores. They will then work in their groups to start creating their chosen items and prepare to run their stores in the next class. Share the answers to the previous day's homework questions and ask learners to check and correct their answers: Q 2. 987×65 $= 987 \times (60+5)$ $= 987 \times 5 = 4935$ $= 987 \times 60 = 59220$ $= 59220 + 4935 = \mathbf{64155}$ Q4. 99×999 $= 999 \times (90+9)$ $= 999 \times 9 = 8991$ $= 999 \times 90 = 89910$ $= 89910 + 8991 = \mathbf{98901}$

	Q 6. Number of guavas in one branch = 29 Number of branches = 125 Total number of guavas = $125 \times 29 = 125 \times (20+9)$ $= 125 \times 9 = 1125$ $= 125 \times 20 = 2500$ = 3625				
10 minutes	Billing Practice - Multiplication Using the Lattice Method: (Whole Class) Teacher says: - In the last class, we practised billing methods using multiplication. - Today, we will learn a new method of multiplication called the lattice method. - Imagine a store is selling a shawl for ₹ 945. A customer buys 36 such shawls to give to his family and friends. How will you find out how much the customer must pay? Take a few responses and share that they must multiply ₹ 945 with 36 to find out the amount that the customer must pay. They can use the steps they learnt in the last class to find out the amount. They can also learn a new method to do this calculation, known as the lattice method. Share the following steps of the lattice method of multiplication with the learners: <table border="1"> <tr> <td> Step 1: First, count how many digits are in each number. Then, check which number has more digits. Draw that many boxes across (horizontally) for your lattice grid. Write the digits of the bigger number on top of the boxes, one digit above each box. Example: 945 has 3 digits, and 36 has 2 digits. Since 945 has more digits, draw 3 boxes across for the lattice method. 9 4 5 □ □ □ </td><td> Step 2: Draw one more row below the first row in your lattice grid. Write the second number vertically along the right side of the grid. Example: 9 4 5 □ □ □ □ □ □ 3 6 </td></tr> <tr> <td> Step 3: Draw diagonals in each box, from the top right to the bottom left. Example: 9 4 5 □ □ □ □ □ □ 3 6 </td><td> Step 4: Multiply the number at the top of each column with the first number at the side of the first row. Write the answer in the matching box - Put the tens digit in the top triangle. Put the ones digit in the bottom triangle. If the answer is a 1-digit number, write 0 in the top triangle and the number in the bottom triangle. Example: 9 4 5 2 7 1 1 5 □ □ □ □ □ □ 3 6 </td></tr> </table>	Step 1: First, count how many digits are in each number. Then, check which number has more digits. Draw that many boxes across (horizontally) for your lattice grid. Write the digits of the bigger number on top of the boxes, one digit above each box. Example: 945 has 3 digits, and 36 has 2 digits. Since 945 has more digits, draw 3 boxes across for the lattice method. 9 4 5 □ □ □	Step 2: Draw one more row below the first row in your lattice grid. Write the second number vertically along the right side of the grid. Example: 9 4 5 □ □ □ □ □ □ 3 6	Step 3: Draw diagonals in each box, from the top right to the bottom left. Example: 9 4 5 □ □ □ □ □ □ 3 6	Step 4: Multiply the number at the top of each column with the first number at the side of the first row. Write the answer in the matching box - Put the tens digit in the top triangle. Put the ones digit in the bottom triangle. If the answer is a 1-digit number, write 0 in the top triangle and the number in the bottom triangle. Example: 9 4 5 2 7 1 1 5 □ □ □ □ □ □ 3 6
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	Step 5: Multiply the number at the top of each column with the first number at the side of the second row. Write the answer in the matching box - Put the tens digit in the top triangle. Put the ones digit in the bottom triangle. If the answer is a 1-digit number, write 0 in the top triangle and the number in the bottom triangle. Example: <table><tr><td>9</td><td>4</td><td>5</td><td></td></tr><tr><td>2</td><td>1</td><td>1</td><td>3</td></tr><tr><td>5</td><td>2</td><td>3</td><td>6</td></tr><tr><td></td><td>4</td><td>4</td><td>0</td></tr></table>	9	4	5		2	1	1	3	5	2	3	6		4	4	0	Step 6: Add up the diagonal numbers (right to left) to get the result. If needed, carry over to the next diagonal (just like regular addition). Example: <table><tr><td></td><td>9</td><td>4</td><td>5</td><td></td></tr><tr><td>3</td><td>2</td><td>1</td><td>1</td><td>3</td></tr><tr><td></td><td>7</td><td>2</td><td>5</td><td></td></tr><tr><td>4</td><td>5</td><td>2</td><td>3</td><td>6</td></tr><tr><td></td><td>4</td><td>4</td><td>0</td><td></td></tr><tr><td></td><td>0</td><td>2</td><td>0</td><td></td></tr></table> Diagonal 1: 0 Diagonal 2: 5+3+4 = 12 Diagonal 3: 1+2+2+4+1 (carry over) = 10 Diagonal 4: 5+7+1+1 (carry over) = 14 Diagonal 5: 2+1 (carry over) = 3 Answer: 34024		9	4	5		3	2	1	1	3		7	2	5		4	5	2	3	6		4	4	0			0	2	0	
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	Instruct learners to practise lattice method of multiplication by solving Q 1 (a) - Question Time 1 on Pg. 24 of their textbook. Once done, share the correct answer for them to check. Q1 (a) 342 x 53 = 18126																																															
10 minutes	Peer Feedback: (Group Work) Tag two groups together. For example, group 1 with group 2, group 3 with group 4 and so on. Ask each group to create their plan for their mini stores. Each plan must include: 1. The item they want to sell 2. It's assigned price 3. Bill design 4. A name for their store Learners will then present their store plan to the group they are paired with and receive feedback. To guide this process, share the following questions to help them give useful and thoughtful feedback: 1. Is the product something people would want to buy? 2. Is it made using low-cost or easily available materials? 3. Does the price seem fair? Would you buy it at this price? 4. Does the bill design clearly show the price of one item and the quantity being purchased? 5. Is there space to write the multiplication used to find the total cost? 6. Is the store name creative? Does it help customers understand what is being sold?																																															

	Encourage learners to give and receive feedback with an open mind, politely and respectfully. Instruct them to share positive feedback first and then suggestions for improvement. Some sentence starters that they can use to give feedback are: 1. Your group did a great job on identifying the item to sell. 2. I liked the way your group explained the different parts of the bill. 3. Maybe you could try using bamboo sticks to make the pen holders. 4. One small thing your group could improve is to give more space for multiplication facts in the bill design.
15 minutes	Create the Items and Design Your Store: (Group Work) Learners will now begin creating the items they plan to sell and start working on their store design. Choose a venue for the mini market where all groups will set up their stores in the next class. Assign a space to each group in that area. Encourage groups to divide the work so that everyone has a role. You may share the example below, but it's fine if groups divide tasks differently, as long as all members are involved. Example of task division: • 1–2 learners make the items to be sold. • 1 learner plans the store layout: where items will be displayed, where the seller will stand, how they will attract buyers, and where the store name will go. • 1 learner creates decorations—like the store banner and catchy taglines. They can also create multiple copies of the bills to be used and fake currencies that can be used for shopping by the people visiting their stores. • 1 learner writes the seller's script, including what makes the product special and why customers should buy it. He/she can also create the price tags to be put on each item such that it is clearly visible.
Homework	Complete any pending work on your stores. Be ready to run your stores in the next class. Answer Q1 (b), (c), and (d) of Question Time 1 on Pg. 24 of the textbook. Note for the Teacher: Invite learners and teachers from other grades to visit and shop at the mini stores your students will set up in the next class. If possible, create a mini marketplace within the school and welcome parents or community members to join in and be part of the experience.

Day 5 –

Learners will run their mini stores and reflect on their journey of doing this project.

Time	Activity and Description
10 minutes	Setting Up the Store: (Group Work) Share the answers to previous day's homework questions with the learners and ask them to check it: Q 1 (b) $123 \times 56 = 6888$, (c) $843 \times 76 = 64068$ (d) $731 \times 28 = 20468$ Invite 1 learner to share the leading question of the project: How can we use multiplication to build and run a store? Ask learners to discuss in their groups whether they have been able to answer the leading question through the work they have done over the past few days. Then, invite a few groups

	to share their reflections with the whole class. Learners will then set up their stores. Once they have set up their stores, ask them to check if they have fulfilled all the criteria that was shared with them on the first day of the project: <i>Every store must have:</i> 1. One item to sell – The price of your item should be a 3-digit number between ₹100 and ₹999. 2. A clear price tag – Write the price neatly so everyone can see it. 3. A bill design – Make a simple and neat bill to show what your customer buys and how much it costs. 4. Use multiplication – Use multiplication facts to work out the total price when someone buys more than one item. <i>Example: If one toy costs ₹125 and your friend buys 2 toys, your bill should show: ₹125 × 2 = ₹250</i> 5. A store name – Think of a fun and creative name for your store (like “Magic Shop” or “Smart Supplies”). If learners are using fake currency, assign 1–2 learners the responsibility of making sure that every visitor to the mini stores receives at least ₹1000 to use for shopping.
20 minutes	Running the Stores: (Group Work) Open the market for visitors. Allow them to move around and purchase items of their choice. Encourage groups to divide responsibility amongst themselves. For example, 1-2 of them can focus on bringing customers to their stores to buy items, 1 of them can focus on billing, 1 of them can focus on taking money from the customers, returning the change, and handing over the item they bought.
10 minutes	Reflection: (Individual Work) Ask learners to reflect on their experience with these questions: - What did you enjoy the most in this project? - What was the hardest part? Why? - Did you use multiplication while billing your customers? - Look at the PBL rules you agreed to follow at the start of the project. Can you think of two times you followed each rule? - Were there any times you didn’t follow the rules? What made it difficult? Once done, invite a few learners to share their reflections with the class.
Additional enrichment activities:	- They can also organise a school <i>haat</i> or market every week or fortnight. Based on the needs and interests of the school community, each group can decide what products they would like to sell during these regular events. - They can also visit a local store and observe how it is run with permission from the store owner. They can write a diary entry explaining what they observed and note down the mathematical operations involved in running a store.

Modifications for simplification	- Learners can be given a set of items they can make and sell along with an assigned price for each product. - They can be given a pre-designed billing format instead of them coming up with one. - They can focus on multiplication of 3-digit numbers with 1-digit numbers.
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ASSESSMENT CRITERIA

A majority of my learners were able to:

- ☐ Multiply 3-digit numbers with 1 and 2-digit numbers using standard algorithm and the lattice method.
- ☐ Solve word problems on multiplication.
- ☐ Understand that multiplication is repeated addition and write multiplication facts..
- ☐ Choose and make items that can be created from locally available materials to sell in their mini stores.
- ☐ Assign a price to their products.
- ☐ Design their own bill and use it to calculate the total price each customer must pay.
- ☐ Run a store efficiently.

APPENDIX

Project Details

Leading question:	How can we use multiplication to build and run a store?
Subjects covered:	Mathematics, Literacy
Age group:	8-10-year-olds
Total time required:	In Class: 40 min a day for 5 days At Home: 10-15 minutes on Days 1, 3 & 4
Learning outcomes:	Knowledge-Based Outcomes: - Understand multiplication as repeated addition. - Writes multiplication facts for given situations. - Use number operations (especially multiplication) to find the total amount. - Multiply 3-digit numbers with 1 and 2-digit numbers using standard algorithm and lattice method. - Assign a price to an item by calculating the total cost in making the item and adding a cost for their effort to it. - Organise and run a mini store. 21st Century Skill Outcomes: - Think critically and creatively of items that can be made from low or no-cost materials easily available in their surroundings. - Collaborate to assign roles in group work so as to build and run the mini stores efficiently.

CHAPTER-PROJECT MAPPING

Corresponding SCERT Nagaland Chapter: **Chapter 4 - Multiplication**

SCERT Topic	SCERT Sub-Topic	Coverage
Word Problems on Multiplication	Word Problems on Multiplication	Yes
Multiplication Using Standard Algorithm	Multiplication Using Standard Algorithm	Yes
Multiplication Using Lattice Algorithm	Multiplication Using Lattice Algorithm	Yes
Multiplication Facts	Multiplication Facts	Yes