Lesson Plan: The Pizza Parlor Challenge

Subject: Mathematics

Topic: Multiplication & Division in a Real-World Context (Focus on 6, 7, 8 Times Tables)

Target Learner: A 14-year-old student who excels in math but prefers hands-on, practical learning over formal instruction.

Materials Needed

- Notebook or plain paper
- Pencils, pens, and colored markers
- A calculator (for checking work, not for initial calculations)
- Optional: Poster board or a computer with design software for creating the final menu

Learning Objectives

By the end of this lesson, you will be able to:

- Apply multiplication facts (specifically 6s, 7s, and 8s) to calculate costs and set prices for a business.
- Use division to solve problems related to splitting costs and resource management.
- Create a complete, costed-out menu for a fictional business.
- Explain the mathematical reasoning behind your business decisions.

Lesson Structure

I. Introduction (5-10 minutes)

Hook: The Business Pitch

"Forget textbooks for a bit. Imagine we're starting a business—our own gourmet pizza parlor. But before we can open, we need to figure out the most important part: the money. How much do we charge for our pizzas? How do we make sure we make a profit? Today, you're not a student; you're the General Manager. Your mission is to design the menu and set the prices that will make our parlor a success."

Setting the Stage & Objectives

"Your main job today is to use your math skills to design a profitable menu. We'll be using multiplication to figure out our prices and deals, and division to see how customers can split the bill. By the time we're done, you'll have a full menu ready for opening day and you'll see how businesses use these math skills every single day."

II. Body: Building the Business (30-40 minutes)

Part 1: Inventory & Costs (Warm-up & "I do")

Educator: "Every business starts with inventory. Let's figure out our ingredient costs. I'll show you how

we calculate the cost for our first signature pizza, the 'Mega Meat.' Let's say the total cost of ingredients for this pizza comes to **$7**."

Modeling ("I do"):

- "To make a profit, restaurants usually charge about 3 times what the ingredients cost. This is called the 'markup'. So, to find our menu price, we need to calculate **$7 x 3**. That's $21. So, we'll list the Mega Meat for $21."
- "Now, what if a sports team of **8 players** all order this pizza? We'd calculate their total bill: **8 pizzas x $21**. We can break that down: 8 x 20 is 160, and 8 x 1 is 8. So, their total is $168."
- "What if those **8 players** want to split the bill evenly? That's where division comes in. We'd take the total bill, $168, and divide it by 8. So, $168 ÷ 8 = $21 per person. Makes sense, right?"

Part 2: Menu Development (Guided Practice & "We do")

Educator: "Alright, let's create our second pizza together: the 'Volcano Veggie.' The ingredients cost us **$6** to make. What should our menu price be if we use the same 'times 3' markup rule?"

- **Learner Activity:** Calculate $6 x 3. (Answer: $18)

Educator: "Great, $18 it is. Now, let's create a 'Family Friday' deal. A family of **6** comes in and they order 2 Volcano Veggies. What would their total pizza cost be?"

- **Learner Activity:** Calculate 2 x $18. (Answer: $36)

Educator: "Perfect. Now for a division problem. Let's say a different table's bill came to **$56**, and we know they bought **7** of our special garlic breadsticks. How much does one breadstick cost?"

- **Learner Activity:** Calculate $56 ÷ 7. (Answer: $8)

Part 3: The General Manager's Task ("You do")

Educator: "Okay, Manager. The business is in your hands. Your task is to complete the menu. You need to invent and price at least **3 more items** (pizzas, drinks, sides, etc.). Here are your rules:"

The Challenge Brief:

1. **Create & Cost:** For each new item, decide what it is and what its ingredients cost. Use one of these costs: **$6, $7, or $8**.
2. **Price for Profit:** Calculate the menu price for each item by multiplying its ingredient cost by 3 (or by 4 if you want to make more profit!). Write this price on your menu.
3. **Design a Combo Deal:** Create one special combo meal. For example, "The Duo Deal: 2 pizzas and 2 drinks." You must calculate the total price for the deal.
4. **Solve Customer Scenarios:** Once your menu is done, solve these two problems:
    - **Scenario A:** A birthday party of **6 people** orders one of everything you added to the menu. What is their total bill? How much does each person pay if they split it evenly?
    - **Scenario B:** A book club of **7 members** has a budget of $100. Using your menu, figure out a combination of items they could buy without going over budget. Show your calculations.

Let the learner work independently, offering guidance only when needed. Encourage creativity in the menu design and item names.

III. Conclusion (5-10 minutes)

Showcase & Recap

Educator: "Time for the big reveal! Present your menu. What are you most proud of? Which item do you think will be the bestseller? Let's review your solutions for the customer scenarios."

- The learner shares their menu and walks through their calculations for the scenarios.

Reflection & Reinforcement

Educator: "Let's think back on your work as Manager.

- When was multiplication most useful today? (Setting prices, calculating total bills).
- Where did division come in handy? (Splitting bills, figuring out unit costs).
- Do you think our 'times 3' pricing rule is fair? Why or why not?

You did an excellent job. You've seen that multiplication and division aren't just abstract math problems—they are active tools that people use every single day to run businesses, manage money, and make decisions."

Assessment

- **Formative (During the lesson):** Observe the learner’s calculations during the "We do" and "You do" sections. Ask clarifying questions like, "How did you get that number?" to check their thought process.
- **Summative (End of lesson):** The completed menu with accurate pricing and the correctly solved "Customer Scenarios" serve as the final assessment. The key measure of success is the ability to apply multiplication and division correctly within the context of the challenge and explain the reasoning.

Differentiation & Extension

- **For Scaffolding (If needed):** Provide a menu template with item names already filled in, so the focus is purely on the calculations. Allow the calculator to be used for the initial calculations if frustration arises, but require the learner to explain the process (e.g., "I needed to do 7 times 8 to get this").
- **For Extension (To add challenge):**
  - **Add Percentages:** "Now, add a 10% sales tax to your Scenario A bill."
  - **Introduce Profit Calculation:** "For each item on your menu, calculate the actual profit (Menu Price - Ingredient Cost)."
  - **Budget Constraint:** "You have a budget of $48 to buy ingredients for the day. Using your ingredient costs, how many of your most popular pizzas can you afford to make?"