Lesson Plan: The Math-Powered T-Shirt Shop

Subject: Mathematics (Applied Math, Percentages, Basic Finance)

Target Learner: Vienna (11-year-old homeschool student)

Estimated Time: 45-60 minutes

Materials Needed

- Pencil and paper
- Calculator (optional, but recommended)
- "T-Shirt Business Plan" worksheet (details below)
- Colored pencils or markers (optional, for the creative part)

Learning Objectives

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

- Calculate the cost to produce a single item (unit cost).
- Determine a selling price by adding a specific profit margin.
- Calculate a percentage discount on a total price.
- Explain how math is used to make smart business decisions.

Lesson Structure

I. Introduction (5 minutes)

Hook & Engagement

"Vienna, have you ever thought about starting your own business? Maybe designing and selling your own cool t-shirts? It sounds like fun, right? But what’s the secret to making sure your business actually makes money and doesn't lose it? The answer is MATH! Today, we’re going to be business owners and use math as our superpower to create a successful t-shirt shop."

Setting the Stage

"Our goal today is to create a business plan for your very own t-shirt brand. We'll figure out how much to charge for your shirts so you can make a profit, and even how to offer special sales to attract customers. By the end, you'll be able to make smart financial choices for any project you dream up!"

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

Part 1: The "I Do" - Modeling Costs and Prices (10 mins)

Educator explains and demonstrates the core concepts.

"First, every business has costs. Let's imagine I'm starting 'Math-Tastic Tees'. To make one shirt, I have to pay for two things:

- A plain, blank t-shirt: **$4.00**
- The custom printing on the shirt: **$3.50**

"To find out the total cost to make just ONE shirt, we add these together. This is called the **Unit Cost**."

(Educator writes it out)

$4.00 (shirt) + $3.50 (printing) = $7.50 (Unit Cost)

"So, it costs me $7.50 to make one t-shirt. If I sell it for $7.50, I don't make any money! The extra money you make is called **profit**. I want to make a $5.00 profit on every shirt. To figure out my selling price, I add my cost and my desired profit."

(Educator writes it out)

$7.50 (Unit Cost) + $5.00 (Profit) = $12.50 (Selling Price)

"So, I should sell my Math-Tastic Tees for $12.50. See how we used simple addition to make a key business decision?"

Formative Assessment (Quick Check): "If I wanted to make a $10 profit instead, what would my new selling price be?" (Answer: $17.50)

Part 2: The "We Do" - Guided Practice with Discounts (10 mins)

Learner and educator solve a problem together.

"Okay, now let's work on one together. Imagine we found a new supplier. Their costs are:

- Fancy glow-in-the-dark shirt: **$6.00**
- Special glitter ink printing: **$4.00**

"First, what is our Unit Cost for this new shirt? Let's calculate it together."

(Wait for Vienna to calculate: $6.00 + $4.00 = $10.00)

"Perfect! Our cost is $10.00. Now, let's decide on a price. Instead of a dollar amount, many businesses use a percentage. Let's aim for a 50% profit margin. To find 50% of our cost, we can multiply by 0.50."

(Guide Vienna through the calculation)

$10.00 (Unit Cost) x 0.50 (50%) = $5.00 (Profit)

$10.00 (Unit Cost) + $5.00 (Profit) = $15.00 (Selling Price)

"Great! Now for the fun part: a sale! A customer wants to buy two shirts. The total would be $30.00. We want to offer them a **20% discount**. How do we figure that out?"

1. **Find the discount amount:** $30.00 x 0.20 (20%) = $6.00
2. **Subtract the discount from the total:** $30.00 - $6.00 = $24.00

"So the customer would pay $24.00. We still made a profit, and the customer got a good deal! It's a win-win."

Formative Assessment (Quick Check): "What if we only wanted to give a 10% discount? How much would the customer pay then?" (Answer: $27.00)

Part 3: The "You Do" - Create Your T-Shirt Business Plan (10-20 mins)

Learner applies concepts independently.

"Now it's your turn to be the boss! You're going to create a business plan for your very own t-shirt company. You can even draw a design for your shirt if you want!"

(Provide the "T-Shirt Business Plan" worksheet.)

Worksheet: T-Shirt Business Plan

1. Name Your Company: _____

2. Choose Your Supplies (Circle one of each):

- **Shirt Quality:**
  - Basic Cotton: $3.00
  - Super Soft Tri-Blend: $5.00
  - Eco-Friendly Bamboo: $7.00
- **Printing Style:**
  - One-Color Print: $2.50
  - Full-Color Image: $4.50
  - Glitter/Metallic Print: $6.00

3. Calculate Your Unit Cost:

My Shirt Cost: $_____ + My Printing Cost: $_____ = Total Unit Cost: $_____

4. Set Your Price:

I want to make a profit of $_____ on each shirt.

My Unit Cost: $_____ + My Profit: $_____ = My Selling Price: $_____

5. Create a Special Offer!

My offer is "Buy 3 shirts, get _____% off!" (Choose a discount: 10%, 20%, or 25%)

a. Price for 3 shirts (no discount): 3 x $_____ = $_____

b. Discount Amount: (Total from 5a) x (Your % as a decimal) = $_____

c. Final Sale Price: (Total from 5a) - (Discount from 5b) = $_____

6. (Optional) Creative Corner: Sketch your t-shirt design here!

III. Conclusion (5-10 minutes)

Share and Recap

Learner presents their work, and educator summarizes.

"Okay, business owner, tell me about your company! What's its name? What choices did you make for your shirt, and what is your final selling price?"

(Vienna shares her business plan and explains her calculations.)

"That's fantastic! You made excellent choices. Today, we learned three key business math terms. Can you tell me what they are?"

- **Unit Cost:** How much it costs to make one item.
- **Profit:** The extra money you make after costs.
- **Discount:** A reduction in price to encourage sales.

"You saw today that math isn't just numbers on a page—it's a tool that helps you build things, create a plan, and make smart decisions in the real world. You did an amazing job as a business owner!"

Assessment & Success Criteria

- **Formative:** Answering the quick check questions correctly during the "I Do" and "We Do" sections shows understanding of the steps.
- **Summative:** The completed "T-Shirt Business Plan" worksheet is the main assessment.
    - **Success looks like:** All calculations for Unit Cost, Selling Price, and Discount are performed correctly. The learner can explain *why* they chose their profit margin and discount.

Differentiation & Adaptability

- **Scaffolding for Support:**
    - Use a calculator for all calculations to focus on the concepts, not the arithmetic.
    - Work through the first part of the "You Do" worksheet together before letting the learner finish independently.
    - Use only whole numbers for costs and profits initially.
- **Extension for Challenge:**
    - **Bulk Orders:** "A school wants to order 50 shirts. If you give them a 30% discount, what is their total price? How much total profit would you make on that one big order?"
    - **Adding Overhead:** "Your business also has monthly costs, like a website for $10/month. How many shirts do you need to sell each month just to pay for the website?"
    - **Sales Tax:** Introduce a local sales tax (e.g., 7%) and have them calculate the final price a customer would pay.
- **Adaptability for Other Contexts:** This lesson can be easily adapted for a classroom (students work in pairs or small groups to create a business) or a training setting (using industry-specific products like widgets, software licenses, or baked goods instead of t-shirts). The core principles of cost, profit, and discount are universal.
