Title: T-Shirt Business Math: Lesson Plan on Smart Sales & Profit Impact

Lesson 3 of 4
Series: T-Shirt Business Math Project

Level Up Your T-Shirt Shop: The Power and Pitfalls of Sales & Discounts

Materials Needed

- Pencil and paper
- Calculator
- Completed "Monthly Business Report" worksheet from the previous lesson
- New "Sales Strategy Report" worksheet (details provided below)

Learning Objectives

Building on our understanding of costs and break-even points, by the end of this lesson, you will be able to:

- Calculate the new selling price of an item after a percentage discount.
- Analyze how a discount affects the profit margin per item.
- Determine how a sales promotion changes the break-even point for the business.
- Compare different sales strategies to make a smart business decision.

Lesson Structure

I. Introduction (5-10 minutes)

Review of Previous Lesson

"Last time, you took your t-shirt idea and ran the business for a whole month. We learned about two types of costs. Can you remind me what a **fixed cost** is? What about a **variable cost**?"

(Guide them to recall: Fixed costs stay the same no matter how much you sell, like a website fee. Variable costs change with each item made, like the cost of the shirt itself.)

"Excellent. And using those costs, we calculated the most important number for a new business: the **break-even point**. What did that number tell us?"

(Answer: The number of shirts you need to sell just to cover all your costs.)

Hook & Engagement

"Your business is up and running, but you want to grow! You walk by a big store and see a huge sign: 'EVERYTHING 50% OFF!' It's packed with customers. This gives you an idea: 'I should run a sale to attract more people!' But is it that simple? Does a big sale always mean big profits? Let's investigate."

Setting the Stage

"Today, we're going to become marketing strategists. We'll use the math skills we've built to explore the hidden side of sales. You'll learn how a simple discount dramatically changes your profit and your break-even point. This will help you decide if and when a sale is a smart move for your business."

II. Body: The Math Behind the Sale (25-30 minutes)

Part 1: The "I Do" - Impact of a Discount (10 mins)

Educator explains and models the new concepts.

"Let's go back to my 'Math-Tastic Tees' example. Remember, my numbers were:

- Unit Cost (Variable): $7.50
- Selling Price: $12.50
- Profit per Shirt: $5.00
- Monthly Fixed Costs: $20.00
- Break-Even Point: 4 shirts ($20 ÷ $5)

"Now, I'm going to run a **20% OFF** sale to get more customers. First, I need to find my new price."

(Educator writes out the calculation.)

Step 1: Find the discount amount. $12.50 × 20% (or 0.20) = $2.50 off.
Step 2: Find the new sale price. $12.50 - $2.50 = **$10.00**.
"Okay, my new price is $10.00. But how does that affect my profit for each shirt I sell?"

Step 3: Find the new profit per shirt. $10.00 (New Price) - $7.50 (Unit Cost) = **$2.50**.
"Woah! A 20% discount cut my profit in half! Now for the most important question: How does this change my break-even point?"

Step 4: Find the new break-even point. $20.00 (Fixed Costs) ÷ $2.50 (New Profit) = **8 shirts**.
"Look at that! To cover the same $20 bill, I now have to sell *twice as many shirts*. A sale can bring in more people, but it also means you have to work much harder just to break even."

Formative Assessment (Quick Check): "If I only ran a 10% off sale, would my new break-even point be higher or lower than 8 shirts?" *(Answer: Lower, because the profit per shirt would be higher than $2.50.)*

Part 2: The "We Do" - Planning a Sale Together (10 mins)

Learner and educator solve a problem together, using the learner's business numbers.

"Now it's your turn. Pull out your 'Monthly Business Report' from last lesson. Let's plan a **25% OFF** 'End of Summer' sale for your t-shirt company. What was your original selling price?"

(Wait for the learner to find the number, e.g., "$18.00".)

"Okay, let's calculate your new sale price together. First, what's 25% of your price?"

(Guide the calculation: $18.00 × 0.25 = $4.50 off.)

"So what's the new price for your customers?"

(Guide the calculation: $18.00 - $4.50 = $13.50.)

"Great. Now, what was your original profit per shirt? And what is your *new* profit per shirt with this sale?"

(Guide them to find their unit cost and subtract it from the new sale price. E.g., $13.50 - $12.00 unit cost = $1.50 new profit.)

"Look at your worksheet again. What were your Total Fixed Costs for the month?"

(Wait for learner to provide the number, e.g., "$35.00".)

"Perfect. Let's calculate your new break-even point with this sale. We'll take your fixed costs and divide by your new, smaller profit."

(Guide the calculation: $35.00 ÷ $1.50 new profit = 23.33 shirts. Remember to round up!)

"So your new break-even point is **24 shirts**! How does that compare to your old break-even point? A sale makes a huge difference!"

Part 3: The "You Do" - Your Sales Strategy Report (10 mins)

Learner applies all concepts independently using a new worksheet.

"You've analyzed the numbers, now it's time to make a business decision. Your goal this month is to make a **final take-home profit of at least $150**. You need to figure out the best way to do it. Use this worksheet to compare two strategies."

> **Worksheet: Sales Strategy Report**
> **Company Name:** _____
> **My Profit Goal This Month:** $150.00
>
> **Part 1: Review Your Numbers (From previous worksheets)**
>
> - My Original Selling Price: $_____
> - My Unit Cost (Variable Cost): $_____
> - My Original Profit per Shirt: $_____
> - My Total Monthly Fixed Costs: $_____
>
> ---
>
> **Part 2: Compare Your Strategies**
>
> **STRATEGY A: The Full-Price Pro**
> *(Sell shirts at your normal price. No discounts.)*
>
> How many shirts do you need to sell to reach your profit goal?
> **Formula:** (Fixed Costs + Profit Goal) ÷ Original Profit per Shirt = Shirts to Sell
> ($_____ + $150.00) ÷ $_____ = _____ shirts.
>
> **STRATEGY B: The Discount Dynamo**
> *(Run a **30% OFF** sale to attract lots of buyers.)*
>
> **Step 1:** Calculate your new Sale Price and new Profit per Shirt.
> New Sale Price: $_____

New Profit per Shirt: $_____

Step 2: How many shirts do you need to sell to reach your profit goal *with the sale*?
Formula: (Fixed Costs + Profit Goal) ÷ New Profit per Shirt = Shirts to Sell
($_____ + $150.00) ÷ $_____ = _____ shirts.

Part 3: Make Your Decision

1. How many more shirts do you have to sell if you choose Strategy B? _____
2. Which strategy would you choose for your business this month and why? (Think about risk vs. reward!)
   _____

III. Conclusion (5 minutes)

Share and Recap

The learner shares their "Sales Strategy Report," explaining their calculations and, most importantly, their final decision and reasoning.

"Fantastic analysis! Today you moved beyond being just a maker and became a real business strategist. We learned that a discount isn't just a way to be nice to customers; it's a powerful tool with a big mathematical impact. It lowers your profit on every single item, which means you have to sell significantly more to reach your goals."

Reinforce the Progression

"We've come so far. In Lesson 1, we priced one shirt. In Lesson 2, we learned to manage the finances for a month. Today, you learned to make strategic decisions that affect the health of your entire business. You're not just doing calculations; you're weighing options and making smart choices, just like a real CEO."

Assessment & Success Criteria

- **Formative:** Answering the quick check question and correctly participating in the "We Do" calculations shows a grasp of the core concept.
- **Summative:** The completed "Sales Strategy Report" is the main assessment.
  - **Success looks like:** The learner correctly calculates the number of shirts needed for both Strategy A and Strategy B. More importantly, they provide a well-reasoned justification for their final choice, explaining the trade-offs between selling more items at a lower profit versus fewer items at a higher profit.

Differentiation & Adaptability

- **Scaffolding for Support:**
  - Provide pre-calculated discount amounts (e.g., "30% off of your $18.00 shirt is a discount of $5.40.").
  - Use whole numbers for prices and costs to simplify the math.
  - Focus the worksheet only on comparing the two break-even points, removing the "profit goal" to reduce the number of steps.
- **Extension for Challenge:**

    - **Tiered Discounts:** "What if you create a 'Buy 2, Get 1 50% Off' deal? Assuming customers always buy in sets of 3, how many sets would you need to sell to reach your $150 profit goal?"
    - **Marketing Costs:** "Running your 30% off sale requires you to spend an extra $15 on social media ads. How does this *additional fixed cost* change your calculations for Strategy B?"
- **Adaptability for Other Contexts:** This lesson is ideal for teaching business or economics concepts. In a training context, this can be adapted to analyze real-world pricing strategies. For example, "Our software costs $1,000 per license with a profit margin of $600. The sales team wants to offer a 25% discount to close more deals this quarter. Analyze the impact on the number of licenses we need to sell to meet our quarterly revenue target."