BAMS 517: Assignment Number 1

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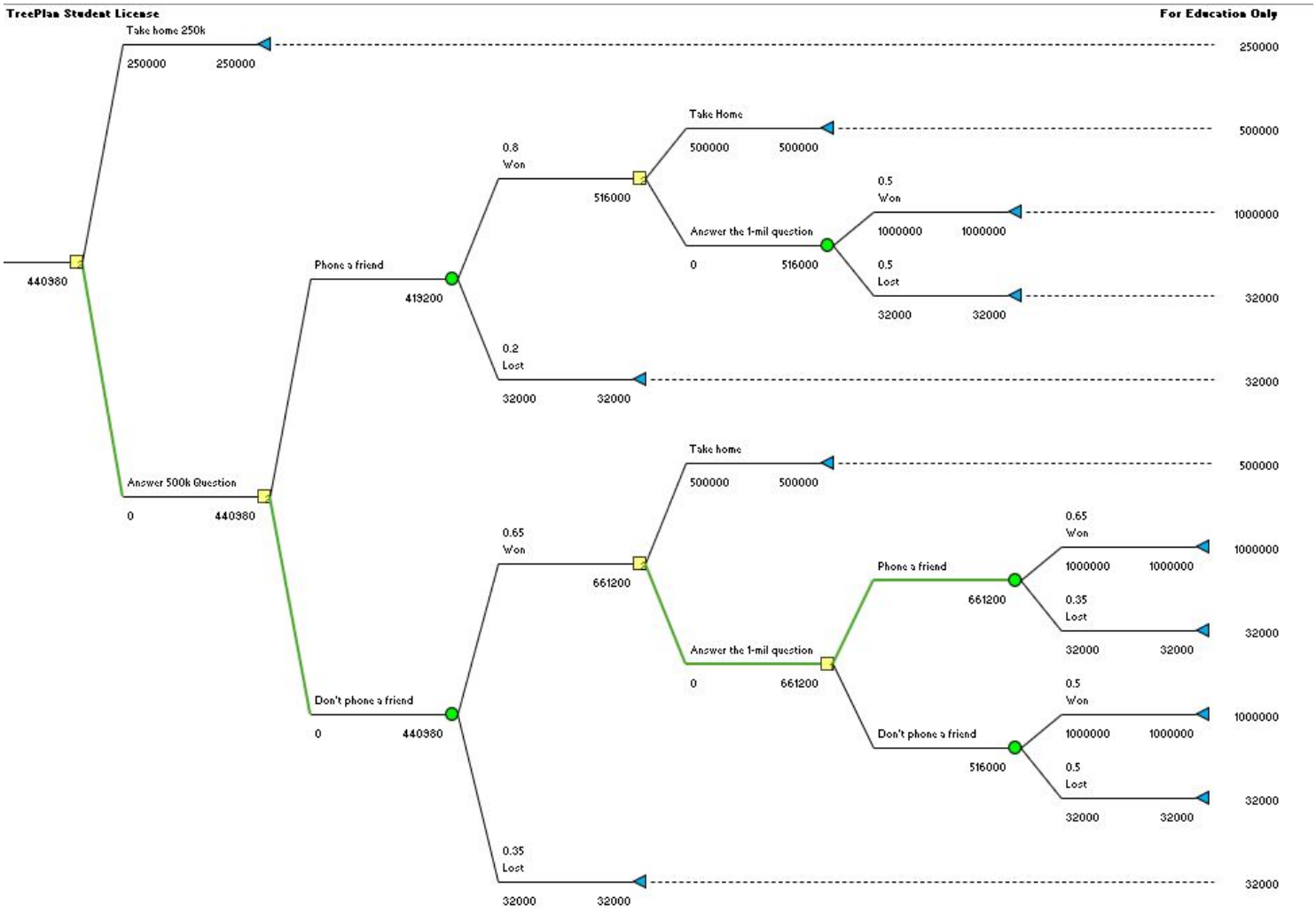
Q1. Who wants to be a Millionaire?

Objective: Come up with best course of action, assuming that our goal is to maximize expected winnings.

Decision Tree using TreePlan



Rationale for Best Course of Action:

1. **Answer the 500k question without using the "Phone a Friend" lifeline.**
   - This choice gives a 0.65 probability of winning, resulting in an expected payout of **661,200** if successful.

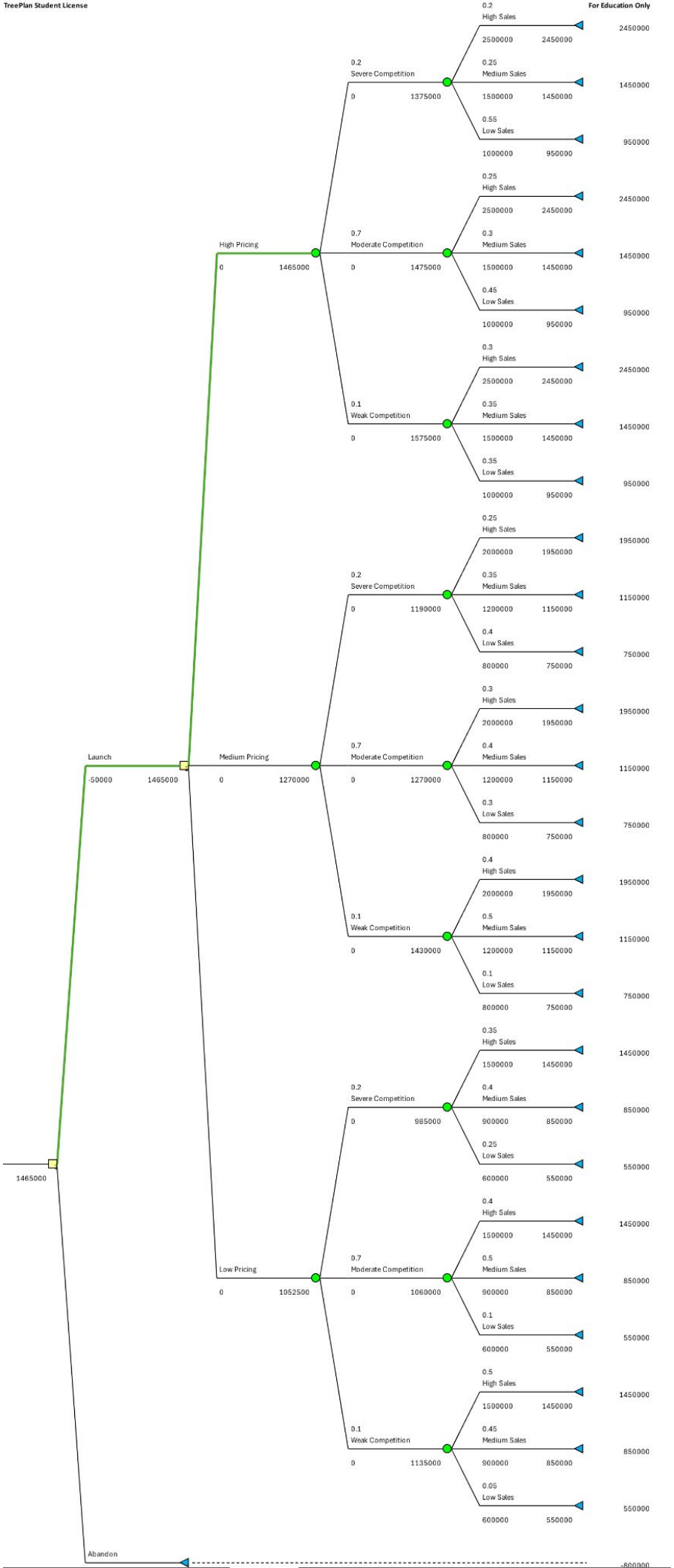
2. **If you succeed on the 500k question, proceed to the 1 million question and use "Phone a Friend."**
   - Using the lifeline here increases your probability of winning to 0.65, maximizing your chances of taking home the 1 million prize.
   - If you lose the 1 million question, the fallback amount is 32,000, but the potential gain justifies the risk with the lifeline.

Q2. Brainy Business Case

Objective (a): Payoff Table

Payoff Table

Payoff Table			
High Price	Severe	Moderate	Weak
Sales High	$25,00,000.00	$25,00,000.00	$25,00,000.00
Sales Medium	$15,00,000.00	$15,00,000.00	$15,00,000.00
Sales Low	$10,00,000.00	$10,00,000.00	$10,00,000.00
Medium Price	Severe	Moderate	Weak
Sales High	$20,00,000.00	$20,00,000.00	$20,00,000.00
Sales Medium	$12,00,000.00	$12,00,000.00	$12,00,000.00
Sales Low	$ 8,00,000.00	$ 8,00,000.00	$ 8,00,000.00
Low Price	Severe	Moderate	Weak
Sales High	$15,00,000.00	$15,00,000.00	$15,00,000.00
Sales Medium	$ 9,00,000.00	$ 9,00,000.00	$ 9,00,000.00
Sales Low	$ 6,00,000.00	$ 6,00,000.00	$ 6,00,000.00



Q2. Brainy Business Case

Objective (b): Find Charlotte's best course of action if she wants to maximize Expected Monetary Value (EMV).

Case Explanation:

1. **Initial Decision:**

   - Charlotte can choose to either Start the Campaign with a chosen pricing strategy or Abandon it. The abandonment leads to no revenue, resulting in a payoff of $0.

2. **Pricing Strategies:**

   - If Charlotte chooses to launch Brainet, she can set the price at $50 (High Price), $40 (Medium Price), or $30 (Low Price).
   - Each pricing strategy is followed by different market competition scenarios.

3. **Market Competition:**

   - For each pricing strategy, there are branches for Severe (20%), Moderate (70%), and Weak (10%) competition levels.
   - Each competition level leads to different probabilities of sales volumes (High, Medium, or Low).

4. **Sales Outcomes:**

   - Depending on the competition and pricing strategy, the tree calculates the expected revenue based on potential sales volumes:
     - High Sales (50,000 units)
     - Medium Sales (30,000 units)
     - Low Sales (20,000 units)

5. **Expected Monetary Value (EMV):**

   - For each pricing strategy, the EMV is calculated by summing the weighted payoffs for all possible outcomes under each competition level.
   - The EMV for each pricing strategy is noted next to the initial branches for High Price ($50), Medium Price ($40), and Low Price ($30).

Q2. Brainy Business Case

Objective (b): Find Charlotte's best course of action if she wants to maximize Expected Monetary Value (EMV).

Decision Tree using TreePlan (See last slide)

Rationale for Best Course of Action:

1. **Launch the product**

   The best course of action would to launch the product in order to avoid the loss of 800k.

2. **Continue with the high pricing ($50) strategy**

   High pricing strategy ($50) can make sure that the EMV is maximized across different competition scenarios. It also achieved the highest roll-back value.