

BC Economics 12
Unit 2: Consumer Behaviour & Decision-Making
Application Problems Sections 1-4

Utility Theory · Law of Diminishing Marginal Utility · Consumer Choice · Consumer Surplus

Name: _____

Date: _____ Class: _____

This workbook builds on your practice activities. Each section presents new situations — apply the concepts you have learned, show all calculations, and explain your answers in full sentences where asked.

PART 1: Utility Theory — What Is Satisfaction Worth?

Activity 1A: Reading Scenario — Making Sense of Satisfaction

Anya, an exchange student from Canada studying in Guangzhou, visits a Gong Cha shop on the weekend. She orders taro milk teas one at a time. After the first cup, she says "This is amazing!" By the third cup, she is satisfied. By the fifth, she says "I've definitely had enough." She stops there, even though she still has money in her wallet.

Answer the questions below in full sentences.

1. What economic concept best describes how Anya's satisfaction changes with each additional cup of milk tea? Define the concept in your own words.

2. Write the term that describes the feeling Anya would experience if she were forced to drink a sixth cup — well past the point of satisfaction.

3. Anya's friend says: "Keep buying more — your total enjoyment only keeps going up!" Is this correct? Explain using the concepts of Total Utility and Marginal Utility.

4. Anya stops buying even though she has money left. What does this tell us about rational consumer behaviour?

Activity 1B: Calculate Total Utility and Marginal Utility

Javier, a student from Mexico studying in Guangzhou, visits a local bakery and orders slices of mango cheesecake. The table below shows his Total Utility. Calculate the Marginal Utility for each slice using the formula: $MU = \text{Change in } TU \div \text{Change in Quantity}$.

Slices of Cake (Q)	Total Utility (TU)	Marginal Utility (MU)	How does it feel?
0	0	—	Nothing yet
1	80		Incredible!
2	150		Really good
3	210		Good
4	260		Satisfied
5	300		Getting full...
6	330		Almost too much
7	350		Too full
8	340		Uncomfortable

Answer these questions based on your completed table:

- a) At which quantity (Q) does Total Utility reach its highest point?
- b) At which slice does Marginal Utility first become negative?
- c) If Javier is a rational consumer, should he eat the 8th slice? Use numbers from the table to explain.
- d) What happens to Total Utility as Marginal Utility decreases but stays positive? Is TU rising or falling? Why?

Activity 1C: True or False? — Correct the False Statements

Write TRUE or FALSE. If the statement is FALSE, rewrite it so it is correct.

1. When Marginal Utility is decreasing but still positive, Total Utility is also decreasing.

True / False:

Correction (if false):

2. A rational consumer will always buy as much as possible in order to maximise Total Utility.

True / False:

Correction (if false):

3. Disutility occurs when Marginal Utility becomes negative.

True / False:

Correction (if false):

4. Total Utility reaches its maximum at the point where Marginal Utility equals zero.

True / False:

Correction (if false):

5. The first unit of a good always gives the consumer the lowest Marginal Utility.

True / False:

Correction (if false):

PART 2: The Law of Diminishing Marginal Utility

Activity 2A: Scenario — Afternoon at the Arcade

Luca, an Italian exchange student on a trip to Tokyo, spends an afternoon playing racing games at an arcade. The table below shows his Total Utility after each hour of gaming. Calculate the Marginal Utility for each hour and complete the table.

Hours of Gaming (Q)	Total Utility (TU)	Marginal Utility (MU) — Calculate!
0	0	—
1	90	
2	170	
3	240	
4	300	
5	350	
6	390	
7	420	
8	400	

e) Does this data demonstrate the Law of Diminishing Marginal Utility? Use your MU values as evidence.

f) Luca's friend says: "You've already paid for the full day — stay for 8 hours!" Is this good economic advice? Use specific numbers to explain.

g) At what hour does Luca begin to experience disutility? What does this mean for his decision-making as a rational consumer?

h) Between hours 1 and 7, MU decreases by a constant amount each hour. Calculate the rate of decrease. Even though MU is falling, why is Luca still gaining satisfaction over these hours?

Activity 2B: Apply the Concept — Short Answer

Answer each question in full sentences. Use the concepts from this unit.

1. Give ONE real-life example from your own experience where you have encountered the Law of Diminishing Marginal Utility. Name the good or activity, and describe how your satisfaction changed with each additional unit.

2. Social media: Imagine spending increasing hours scrolling through Instagram, WeChat Moments, or Douyin. Using the concepts of MU and TU, explain why most people naturally stop scrolling at some point. What would disutility look like in this scenario?

3. (Challenge) A classmate argues: "The more I study Economics, the more I understand — so my MU from studying must keep going up!" Do you agree or disagree? Use the Law of Diminishing Marginal Utility to make your case.

PART 3: Consumer Choice — Maximising Satisfaction on a Budget

Activity 3A: Budget Allocation — Coffee and Egg Tarts

Carlos is on a Guangzhou food tour with ¥65 to spend. He can buy Luckin Coffee drinks (¥15 each) or freshly-baked Portuguese egg tarts from a local bakery (¥10 each). The table shows the Marginal Utility he gets from each item. Help him spend his budget to get **MAXIMUM** total satisfaction.

★ **Tip:** A rational consumer compares MU per yuan (¥) spent: $MU \div \text{Price}$. Always buy the next unit of whichever good gives the most satisfaction per yuan. When two items have the same MU/¥, buy the cheaper one first.

Step 1: Fill in the MU per ¥ column for each item.

Units	Coffee MU	Coffee MU per ¥15	Egg Tart MU	Egg Tart MU per ¥10
1st	90		50	
2nd	60		30	
3rd	45		20	
4th	15		10	

Step 2: Use your MU-per-¥ values to decide the order in which Carlos should buy. Record his purchases below.

Purchase Order	Buy What?	Cost (¥)	Running Total Spent (¥)	MU Gained
1st purchase				
2nd purchase				
3rd purchase				
4th purchase				
5th purchase				

Summary: all numbers at a glance

Ranking	MU per ¥	Item	Balance Remaining	MU Gained
1st				
2nd				
3rd				
4th				
5th				

Step 3: Answer the questions.

j) What is the optimal combination of coffee drinks and egg tarts that Carlos should buy?

k) What is Carlos's Total Utility from this combination? (Add up all MU values gained.)

l) Is there any money left over? If yes, how much? What would a rational consumer do?

m) (Challenge) Suppose Carlos had ¥10 more to spend (¥75 total). What would he buy next, and what would happen to his Total Utility? Show your reasoning.

PART 4: Consumer Surplus — The "Good Deal" Benefit

Key Formula: $\text{Consumer Surplus} = \text{Willingness to Pay} - \text{Actual Price}$

Activity 4A: Calculate Consumer Surplus

Calculate the consumer surplus in each scenario. Show your working.

1. Priya is willing to pay ¥120 for a concert ticket to see her favourite K-pop group perform in Guangzhou. She buys a ticket online for ¥95.

Working:

Priya's Consumer Surplus:

2. Four international students are deciding whether to buy tickets to a basketball game at the Guangzhou Arena. The ticket price is ¥200. Their willingness to pay is shown below.

Student	Willing to Pay	Actual Price	Consumer Surplus
Da-eun (South Korea)	¥280	¥200	_____
Marco (Italy)	¥220	¥200	_____
Yuki (Japan)	¥195	¥200	_____
Chen Wei (China)	¥240	¥200	_____

n) Which student will NOT buy a ticket? Why not?

o) What is the TOTAL consumer surplus for the students who do buy tickets?

3. A wireless gaming headset is normally priced at ¥350 on JD.com. During the 618 Shopping Festival, it goes on sale for ¥270. Hao Ming was willing to pay ¥320 for the headset.

(a) At the regular price of ¥350, would Hao Ming buy the headset? Explain using consumer surplus.

(b) At the sale price of ¥270, calculate Hao Ming's consumer surplus. Show your working.

(c) How did the 618 discount change Hao Ming's decision? What does this tell us about how price affects consumer surplus?

Activity 4B: Think and Apply

Answer each question in full sentences. Use economic concepts and give your own original examples.

1. In your own words, explain why consumer surplus represents a "good deal" for the buyer. Give your own original example — not one from this worksheet.

2. (Challenge) Apps like iQiyi and Spotify know that some users are willing to pay ¥80 per month while others would only pay ¥30. If they charge everyone ¥50: who benefits from consumer surplus, and who decides not to subscribe? If the app could charge each user their exact willingness to pay, what would happen to consumer surplus? This is called price discrimination — can you think of a real-world example?

Reflection

Take a few minutes to think about what you explored in these activities. Answer honestly — there are no wrong answers here!

1. What is one thing you learned from these activities that you did not know before? Describe it in your own words.

2. Did you find these activities useful for understanding how people make decisions with limited money? Explain why or why not.

3. Do you think you will actually use any of these ideas — marginal utility, consumer surplus, or budget allocation — in your own life? Give a specific example of when you might apply one of these concepts.

4. Is there anything from this unit that you are still confused about or would like to explore further?