EE211 Assignment #2 Key

1. Belle is choosing ham (h) and cheese (c), which is assumed to be substitutable goods for her. Her total utility from each product is given in the table here.

Quantity	TU_h	MU_h	TU_c	MU_c
1	15	15	12	12
2	26	11	21	9
3	35	9	27	6
4	41	6	32	5
5	45	4	35	3
6	48	3	37	2
7	49	1	38	1

Answer the following questions.

(a) If Belle has $7 budget and both ham and cheese cost $1 each, how many units of ham and cheese she should purchase to maximize her utility? Explain your method clearly.

We do not have to calculate ratio of marginal utility and price since all the prices are 1. Considering choosing these two products according to the one providing more utility as follows

Decision 1: between 1st ham and 1st cheese – Belle chooses ham.

Decision 2: between 2nd ham and 1st cheese – Belle chooses cheese.

Decision 3: between 2nd ham and 2nd cheese – Belle chooses ham.

Decision 4 and 5: between 3rd ham and 2nd cheese – Belle chooses both.

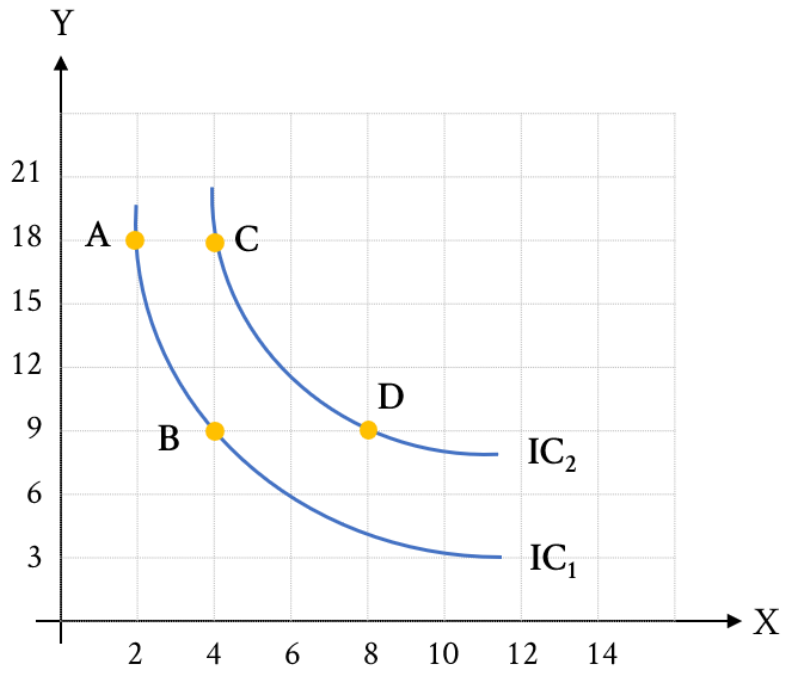
Decision 6 and 7: between 4th ham and 3rd cheese – Belle chooses both.

With these decisions, her budget will be all spent and her utility is maximized since her decision based on what is best for each decision. In other words, the condition that must be satisfied is $\frac{MU_x}{MU_y} = \frac{P_x}{P_y}$. Eventually, she chooses 4 units of ham and 3 units of cheese.

(b) Provide a clear explanation why her utility will not be maximized if the condition that you apply in part a. is not yet satisfied.

The condition that must be satisfied is $\frac{MU_x}{MU_y} = \frac{P_x}{P_y}$ which is true in this case. According to her last decision, it results in $\frac{6}{6} = \frac{1}{1}$. If one side is more than another, there will be additional benefit from switching consumption bundle which means that the current bundle does not yield the maximized utility.

2. A consumer finds that for him/her avocado (X) and nuts (Y) are substitutes. Assumed that this consumer yields 8 and 12 utils on IC_1 and IC_2 respectively, show your work and answer the following questions.



(a) Measured from point A to B, assumed Py is 10 baht per unit, how much Px must be to make you conclude that the consumer's equilibrium is on point B?

To maximize utility, $\frac{MU_x}{MU_y} = \frac{P_x}{P_y}$ must be achieved. Therefore, the $\frac{MU_x}{MU_y} = \left|\frac{\Delta y}{\Delta x}\right| = \left|\frac{18-9}{2-4}\right| = \frac{9}{2}$. Then, if the price of y is 10 then to satisfy the condition, $\frac{9}{2} = \frac{P_x}{10}$. So, **$P_x$ = 45.**

(b) Measured from point A to B, assumed Px is 180 baht per unit, how much budget does this consumer has to achieve the equilibrium on point B?

Measured from point A to B as in question (a), the ratio remains the same. Therefore, we can scale the price of y to match the price of x which is 10 x 4 = 40, since the price of x is 4 times more in this question.

Then, on point B, this consumer chooses 9 units of y and 4 units of x, expenditure for each product is

> For product y: 9 x 40 = 360

> For product x: 4 x 180 = 720

Total expenditure would be 360 + 720 = **1080.**

(c) Measured from point C to point D, how much is the average marginal utility per unit of avocado?

Dissecting the analysis into two steps:

(1) Moving from point C to point B reduces the utility by 4 units, as the difference between IC_2 and IC_1 is 4 utils.

(2) Moving from point B to point D gains back the 4 utility.

Now this consumer needs to consume 4 more units of avocado, which means that, **on average, an avocado yield 1 unit** of utility for this consumer moving from point C to point D.

(d) Show that this consumer's utility received from consuming avocado is in accordance with the law of diminishing marginal utility, using any essential information from any point. (But highly recommend that you consider all the points)

Comparing between moving to point A to B on IC_1 and point C to D on IC_2,

(1) On both ICs, this consumer loses 9 units of nut.

(2) On IC_1, this consumer is satisfied with 2 nuts replacing the 9 avocados lost, while this number is 4 on IC_2.

We can see that the number of nuts to replace 9 avocados becomes increasing as this consumer has more nut, resulted from the diminishing marginal utility of nuts.

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