



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	Total utility from ham (TU_h)	MU_x	Total utility from cheese (TU_c)	MU_y	MU_x/P_x	MU_y/P_y	choose	remaining budget
1	15	15	12	12	15	12	x	7-1 = 6
2	26	11	21	9	11	9	y	6-1 = 5
3	35	9	27	6	9	6	x	5-1 = 4
4	41	6	32	5	6	5	y	4-1 = 3
5	45	4	35	3	4	3	x	3-1 = 2
6	48	3	37	2	3	2	y	2-1 = 1
7	49	1	38	1	1	1	x	1-1 = 0

x = 4, y = 3

Answer the following questions.

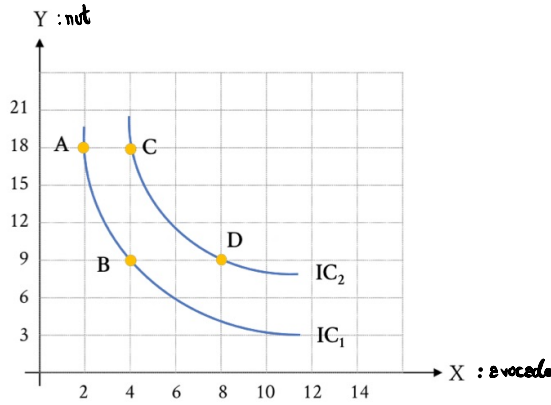
(a) If Belle has \$7 budget and both ham and cheese cost \$1 each, how many units of ham and cheese she should purchase to maximize her utility? Explain your method clearly.

(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.

a) To use utility maximisation with a constant budget, Belle should compare between marginal utility of product X per its price, MU_x/P_x , product Y either, MU_y/P_y , which both costs \$1 each. Then choose the product she gains benefit more. To sum up, she can purchase 4 hams and 3 cheeses to have utility maximisation.

b) Without a constant budget, her utility cannot be maximised. From marginal utility of each products, they cannot indicate where marginal utility of product X and product Y are equal zero, $MU_x = MU_y = 0$. If $MU_x = MU_y = 0$, she can purchase ham and cheese with utility maximisation.

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 IC1 and IC2 respectively, show your work and answer the following questions.



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

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

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

(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)

a) point A : (2, 18), point B : (4, 9)

$$|MRS_{xy}| = \left| \frac{\Delta y}{\Delta x} \right| = \left| \frac{9-18}{4-2} \right| = 4.5$$

$$\frac{MU_x}{MU_y} = \frac{P_x}{P_y}$$

$$4.5 = \frac{P_x}{10}$$

$$P_x = 45$$

b)

$$\frac{MU_x}{MU_y} = \frac{P_x}{P_y}$$

$$4.5 = \frac{180}{P_y}$$

$$P_y = 40$$

$$P_x \cdot x + P_y \cdot y \geq 1080$$

c) From point C → D : $MU_x = 4 \cdot 12 = 48$; $U(1) = 12$

the Average $MU_x = \frac{MU_x}{x} = \frac{48}{4} = 12$

d) On IC_2 curve, the consumers have the same satisfied to have any nut and avocado. From point C → D, they're willingness to pay more for avocado, so they consume less nut. Assumed that the price of avocado is increase, the consumers prefer to consume less avocado at any points, from point D → B and C → A, and it indicates on IC_1 curve.