

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)	Total utility from cheese (TU_c)
1	15	12
2	26	21
3	35	27
4	41	32
5	45	35
6	48	37
7	49	38

Answer the following questions.

1.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.

1.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.

1A) \$7 budget and both ham and cheese cost \$1 each

Quantity	Total utility from ham (TU _h)	Total utility from cheese (TU _c)	MU _h	MU _c	MU _h /P _h	MU _c /P _c	Decision	Budget (\$)
1	15	12	15	12	15	12	h ₁	7-1 = 6
2	26	21	11	9	11	9	c ₁	6-1 = 5
3	35	27	9	6	9	6	h ₂	5-1 = 4
4	41	32	6	5	6	5	c ₂	4-1 = 3
5	45	35	4	3	4	3	h ₃	3-1 = 2
6	48	37	3	2	3	2	c ₃	2-1 = 1
7	49	38	1	1	1	1	h ₄	1-1 = 0

∴ There are 4 units of ham and 3 units of cheese that she should purchase to maximize her utility

1B) I = \$7 < 4 units of ham
3 units of cheese

$$MRS_{hc} = \frac{MU_h}{P_h} = \frac{MU_c}{P_c}$$

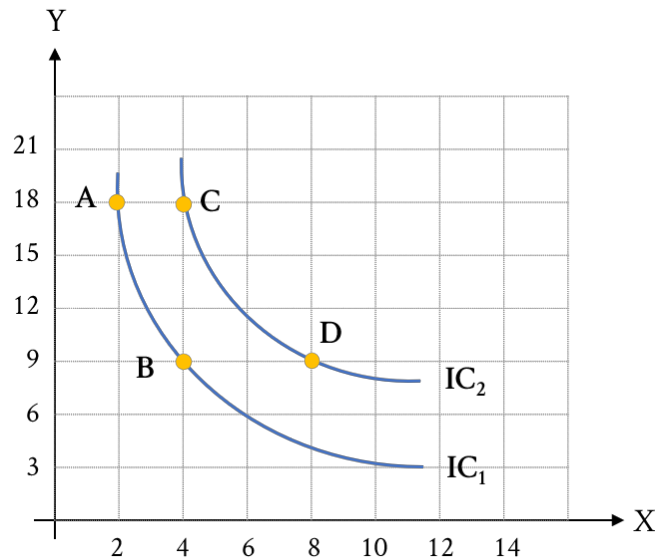
$$6 = 6$$

∴ when she purchases 4 units of ham and 3 units of cheese to have utility maximized.

Assignment 2

Assigned on Sep 22th, 2021. To be submitted on Oct 7th, 2021 before midnight.

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.



2.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?

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

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

2.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)

$$2A) \quad |MRS_{xyb}| = \left| \frac{\Delta Y}{\Delta X} \right|$$

$$= \left| \frac{y_b - y_a}{x_b - x_a} \right|$$

$$= \left| \frac{9-18}{4-2} \right| = \frac{9}{2}$$

$$\rightarrow P_y = 10$$

$$\frac{P_x}{10} = \frac{\Delta Y}{\Delta X}$$

$$\frac{P_x}{10} = \frac{9}{2}$$

$$P_x = \frac{9 \times 10}{2} = 45$$

$\therefore P_x = 45$ to make you conclude the consumer's equilibrium on point B. ✖

2B)

$$MRS_{xy} = \frac{P_x}{P_y}$$

$$\frac{9}{2} = \frac{180}{P_y}$$

$$P_y = 40$$

$$I = P_x X + P_y Y$$

$$= (180 \times 4) + (40 \times 9)$$

$$= 720 + 360$$

$$= 1080$$

$\therefore$ The budget is 1080 baht to make this consumer has to achieve that equilibrium on point B

2C)

$$\bullet \quad MU_C = \frac{\Delta TU}{\Delta X} = \frac{u_2 - u_1}{x_2 - x_1}$$

$$= \frac{12-8}{4-2} = \frac{4}{2} = 2$$

$$\bullet \quad MU_D = \frac{\Delta TU}{\Delta X} = \frac{u_2 - u_1}{x_2 - x_1}$$

$$= \frac{12-8}{8-4} = \frac{4}{4} = 1$$

$$\therefore \text{the average MV} = \frac{1+2}{2} = 1.5 \quad \text{✖}$$

2D)

$$\begin{aligned} (A-C) \quad MUX &= \frac{\Delta TU}{\Delta X} = \frac{U_C - U_A}{X_C - X_A} \\ &= \frac{12-8}{4-2} \\ &= 2 \end{aligned}$$

$$\begin{aligned} (B-D) \quad MUX &= \frac{\Delta TU}{\Delta X} = \frac{U_D - U_B}{X_D - X_B} \\ &= \frac{12-8}{8-4} \\ &= 1 \end{aligned}$$

∴ From the equation MUX is decreased. When consume more avocado, MU will decrease. Look at MUX(A-C) the marginal utility is 2 and MUX(B-D) the marginal utility is 1, so it decrease and from the law of diminishing marginal utility directly relates to the concept of diminishing prices. As the utility of a product decreases as its consumption increase, consumers are willing to pay smaller for more of the product.