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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

(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.

ans h = ham c = cheese

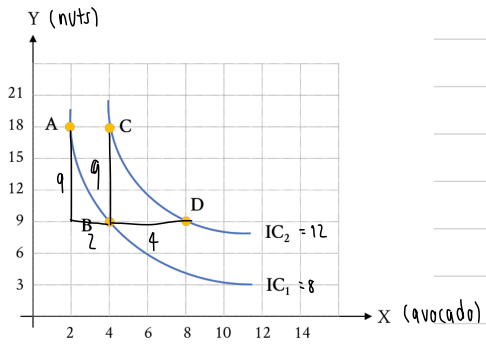
h, c	TU _h	TU _c	MU _h	MU _c	$\frac{MU_h}{P_h}$	$\frac{MU_c}{P_c}$	choice	remaining budget
1	15	12	15	12	15	12	h_1, c_1	$7-1=6$
2	26	21	11	9	11	9	h_2, c_1	$6-1=5$
3	35	27	9	6	9	6	h_2, c_2	$5-1=4$
4	41	32	6	5	6	5	h_3, c_2	$4-1=3$
5	45	35	4	3	4	3	h_3, c_3	$3-1=2$
6	48	37	3	2	3	2	h_4, c_3	$2-1=1$
7	49	38	1	1	1	1	h_4, c_4	$1-1=0$

From the table choose 4 ham and 3 cheese will purchase to maximize her utility.

(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.

ans Belle can only buy ham and cheese up to the \$7 unit but not the maximum because she has budget.

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(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?

$$MRS_{xy} = \left| \frac{\Delta Y}{\Delta X} \right| = \frac{P_x}{P_y}$$

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

$\therefore P_x = 45$

(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?

$MRS_{xy} = \left \frac{\Delta Y}{\Delta X} \right = \frac{P_x}{P_y}$ $= \frac{9}{2} = \frac{180}{P_y}$ <p>$\therefore P_y = 40$</p>	$I \geq P_x \cdot X + P_y \cdot Y$ $I \geq 180 \cdot 4 + 40 \cdot 9$ $I \geq 1080$
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(c) Measured from point C to point D, how much is the average marginal utility per unit of avocado?

$$MRS_{xy} = \frac{\Delta Y}{\Delta X}$$

$$= \frac{9}{4}$$

When 1 unit changes in avocado is 2.25 units change in nuts.

(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)

$$A \rightarrow B : MRS_{xy} = \left| \frac{\Delta x}{\Delta y} \right| \\ = \frac{9}{2} = \frac{4.5}{1}$$

$$C \rightarrow D : MRS_{xy} = \left| \frac{\Delta x}{\Delta y} \right| \\ = \frac{9}{4} = \frac{2.25}{1}$$

when total utility increases from 8 to 12, the marginal utility decreases because people can buy the thing easier so the marginal utility decreases.