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(a)

Quantity	MU_h	MU_c	$\frac{MU_h}{P_h}$	$\frac{MU_c}{P_c}$	choice ham/cheese	remaining budget
1	15	12	15	12	15 | 12	7-1 = 6
2	11	9	11	9	11 | 12	6-1 = 5
3	9	6	9	6	11 | 9	5-1 = 4
4	6	5	6	5	9 | 9	4-1 = 3
5	4	3	4	3	9 | 6	3-1 = 2
6	3	2	3	2	6 | 6	2-1 = 1
7	1	1	1	1	4 | 6	1-1 = 0

With 1 more unit that she will choose, it would provide her more net benefit, so she should buy in the amount which net benefit for each product equal to each other.

$\frac{MU_h}{P_h} = \frac{MU_c}{c}$ and that she can choose to buy 4 ham and 3 cheese to maximize her utility and use all the budget.

(b) To maximize the utility, it should be where $MU = 0$ which is not presented in the table. Moreover, the budget would be insufficient.

(a) $|MRS_{xy}| = \left|\frac{\Delta y}{\Delta x}\right| = \frac{MU_x}{MU_y}$

from point A to B $= \frac{MU_x}{MU_y} = \frac{9}{2}$

If A and B are on consumer's equilibrium, $\frac{MU_x}{P_x} = \frac{MU_y}{P_y}$

(b) From (a); $\frac{MU_x}{P_x} = \frac{MU_y}{P_y}$ $\quad \frac{9}{P_x} = \frac{2}{10}$

if $P_x = 180$ then $P_y = \frac{MU_y}{MU_x} \cdot P_x$ $\quad \therefore P_x = 45$ baht per unit

$= \frac{2}{9} \cdot 180 = 40$ baht per unit

The budget should be $I = x \cdot P_x + y \cdot P_y$

(on point B $= 4 \cdot 180 + 9 \cdot 40$

where $x = 4$, $y = 9$) $= 1080$ baht

(c) From C to B ; this consumer gives up 9 units of nuts and her utility decrease 4 units, from IC_2 to IC_1

From B to D ; this consumer gained more 4 units of avocado and gained utility more 4 units; from IC_1 to IC_2.

So the average marginal utility per unit avocado $= \frac{4}{4} = 1$

(d) on IC_1, from A to B, the consumer gives up 9 units of nuts to have 2 more units of avocado ($2 \rightarrow 4$ units)

on IC_2, from C to D, the consumer gives up 9 units of nuts to have 4 more units of avocado ($4 \rightarrow 8$ units)

MU_y (nuts) from 9 to 18 units has to be equal on both IC_1 and IC_2. As you can see that in order to get same MU_y, the consumer has to consume avocado more and more. So the more consuming avocado, the less marginal utility in accordance with the law of diminishing marginal utility.