

①

(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	11/9	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.

$$\frac{MU_h}{P_h} = \frac{MU_c}{P_c} \quad \text{she can choose to buy}$$

4 ham and 3 cheese to maximize her utility and use all the budget.

(B) To minimize the utility, MU should equal to 0 which is not presented in the table. Moreover, the budget would be insufficient.

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

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

2

If A and B are on consumer's equilibrium, $\frac{MU_x}{P_x} = \frac{MU_y}{P_y} \quad \left| \frac{9}{P_x} = \frac{2}{P_y} \right| \quad \therefore P_x = 45 \text{ \$/ per Unit}$

$$(B) \quad \text{From (A)} \quad ; \quad \frac{MU_x}{P_x} = \frac{MU_y}{P_y}$$

$$\text{If } P_x = 180 \text{ then } P_y = \frac{MU_y}{MU_x} \cdot P_x \\ = \frac{2}{9} \cdot 180 = 40 \text{ \$/ per Unit}$$

The budget should be
(on point B where $x=4$
 $y=9$)

$$I = x \cdot P_x + y \cdot P_y \\ = 4 \cdot 180 + 9 \cdot 40 \\ = 1080 \text{ \$/}$$

(C) From C to B; this consumer gives up 9 units of nuts and her utility decreases 4 unit from IC_2 to IC_1 .

From B to D; this consumer gained more 4 unit of avocado and gained utility more 4 units; from IC_1 to IC_2 , so the average marginal per unit avocado = $\frac{4}{4} = 1$

(D) On IC_1 , from A to B, the consumer give up 9 units of nuts to have 2 more unit of avocado (2-4 units)

On IC_2 , from C to D the consumer gives up 9 units of nuts to have 4 more units of avocado (4-8 units)

MU_y (nuts) from 9 to 8 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. The more consuming avocado, the less marginal utility in accordance with the law of diminishing marginal utility.