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① a.

MU_x	MU_y	$\frac{MU_x}{P_x}$	$\frac{MU_y}{P_y}$
15	12	15	12
11	9	11	9
9	6	9	6
6	5	6	5
4	3	4	3
3	2	3	2
1	1	1	1

Cheese and ham are subtitute. To maximize utility within her butget, she need to compare $\frac{MU}{P}$ of each unit. So she should purchase 4 hams and 3 cheeses.

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b. To maximize utility, she need to purchase good from where MU = 0. which is not presented on the table.
And she also doesn't have enough budget anyway.

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

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

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

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

$$P_x = 45$$

$\therefore$ $P_x = 45$ ฿ / unit //

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

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

from (a.) $\frac{MU_y}{MU_x} = \frac{9}{2}$; $P_y = \frac{9}{2} \times 180 = \boxed{40 \text{ ฿/ unit}}$

Budget $= x \cdot P_x + y \cdot P_y$

$= 4 \cdot 180 + 9 \cdot 40$

$= 1080$ ฿ //

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c. From C to B ; The consumer gave up 9 units of nuts.
His/her utility decreased by 4 units, from IC_2 to IC_1

From B to D ; The consumer gained 4 more units of avocado.
He/she gained 4 more units of utility, from IC_1 to IC_2

$\therefore$ utility per unit of avocado $= \frac{4}{4} = 1$ //

d. From A to B, the consumer gave up 9 units of nuts for 2 more units of avocado (2 → 4 units of avocado)

From C to D, the consumer gave up 9 units of nuts for 4 more units of avocado (4 → 8 units of avocado)

MU_y (nuts) from 9 to 18 units must be equal on IC_1 and IC_2.
To get equal MU_y, the consumer has to consume more avocado in order to decrease the marginal utility, due to the law of diminishing marginal utility.