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) MU	Total utility from cheese (TU_c)
1	15 15	12 12
2	26 11	21 9
3	35 9	27 6
4	41 6	32 5
5	45 4	35 3
6	48 3	37 2
7	49 1	38 1

a) $P_H = 1$

$P_C = 1$

$\frac{MU_H}{P_H} = 9 \rightarrow H = 3$

$\frac{MU_C}{P_C} = 9 \rightarrow C = 2$

$P_H H + P_C C = (1)(3) + (1)(2) = 5$

remaining budget = 0

Max U with budget constraint ; $\frac{MU_x}{P_x} = \frac{MU_y}{P_y}$

b)

$\frac{MU_H}{P_H} = 6 \rightarrow H = 4$

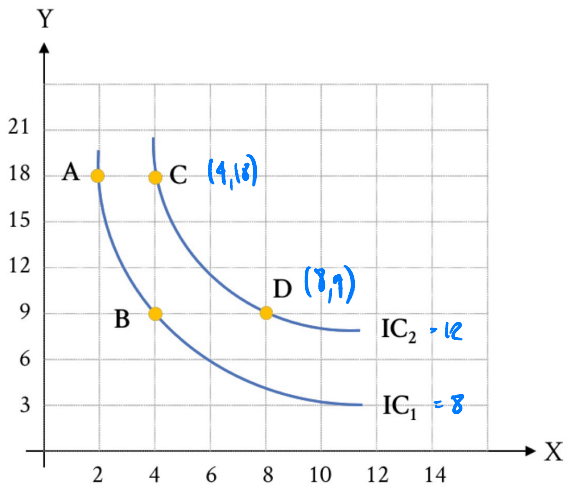
$\frac{MU_C}{P_C} = 6 \rightarrow C = 3$

$P_H H + P_C C = 7$

remaining budget = 0

H=4, C=3 #

2)



a) A (2,18)
B (4,9)
$MRS = \frac{\Delta Y}{\Delta X} = \frac{18-9}{2-4}$
$|MRS| = 4.5$

$\frac{P_x}{P_y} = \frac{P_x}{10}$ $\quad MRS = \frac{P_x}{P_y}$

$4.5 = \frac{P_x}{10}$

$P_x = 45$ *

$P_x X + P_y Y = I \rightarrow 180(4) + 40(9) = I$

b) Slope $= \frac{P_x}{P_y} = \frac{180}{P_y}$

$MRS = 4.5$

$MRS = \frac{180}{P_y}$

$4.5 = \frac{180}{P_y}$

$P_y = 40$

c) C → D

$MU_x = \frac{\Delta U}{\Delta X} = 0$

because $U_C = U_D \rightarrow \Delta U = 0$

d) $U_A = 8$
$U_B = 8$
$U_C = 12$
$U_D = 12$

B = (4,9)
D = (8,9)

$\Delta X = X_D - X_B = 8 - 4 = 4$

$\Delta U = U_D - U_B = 12 - 8 = 4$

$MU_x = \frac{\Delta U}{\Delta X} = \frac{4}{4} = 1$

When lower x → $MU_x = 2$ and higher x MU_x will be 1. So diminishing MU_x

A = (2,18) $U_A = 8$
C = (4,18) $U_C = 12$

$\Delta U_x = U_C - U_A = 12 - 8 = 4$
$\Delta X = X_C - X_A = 4 - 2 = 2$