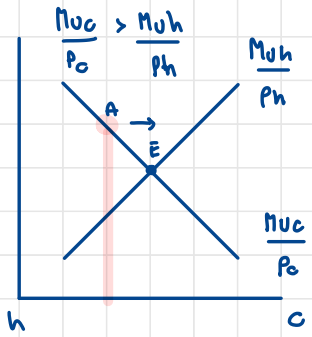
1.a) If Belle has $7 budget and both ham and cheese cost $1 each, how many units of ham and cheese she should purchase to maximize her utility? Explain your method clearly.

I	Q	TUh	Muh	TUc	Muc	Muh / Ph	Mc / Pc	Choice	remain Bud
	1	15	15	12	12	15 ✓	12 ✓	h_1	7-1 = 6
	2	26	11	21	9	11 ✓	9 ✓	C_1	6-1 = 5
	3	35	9	27	6	9 ✓	6 ✓	h_2	5-1 = 4
7	4	41	6	32	5	6 ✓	5 ✓	C_2	4-1 = 3
	5	45	4	35	3	4		h_3	3-1 = 2
	6	48	3	37	2			C_3	2-1 = 1
	7	49	1	38	1			C_4	1-1 = 0

first step, we need to find Marginal Utility to see the additional utility that consumer receive from consuming 1 more unit of product . we can culculate by $MU_2 = TU_2 - TU_1$ then use MU_x divide by P_{U_x} or benefit divide cost to know net benefit Now can compare h and c to choose most benefit. but if h and c is equal, we can choose either of it. In this situation, when budget is 7 ($h^* = 3$, $c^* 4$) we can buy 3 ham and 4 cheese to maximize utility.

1.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.

$\frac{MUh}{Ph} < \frac{MUc}{Pc}$ the net benefit of cheese is more than the net benefit of ham. we cannot control the market price (Pc, Ph) but we can consume cheese more, the MU of cheese will decrease by transfer money that spend on ham to cheese. This is call allocate budget to maximize utility



In this graph point A show the net benefit of cheese is more than ham, we need to consume more cheese to go to equlibrium point (A→E)

2.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?

In case of 2 substitutable good, MRS is the ratio of substituting 2 goods in which resulting in the same amount of utility

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

2.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?

$$MRMS_{xy} = \frac{\Delta y}{\Delta x} = \frac{P_x}{P_y} = \frac{9}{4} = 2.25$$

x is 2.25 time more expensive compared by y

$$\text{Price } x = 2.25y$$

$$180 = 2.25y$$

$$\frac{180}{2.25} = y$$

$$80 = y$$

$P_x = 180$	$x = 4$
$P_y = 80$	$y = 9$

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

$$I = (180 \cdot 4) + (80 \cdot 9)$$

$$I = 720 + 720$$

$$I = 1{,}440$$

2.c) Measured from point C to point D, how much is the average marginal utility per unit of avocado?

Marginal utility per unit

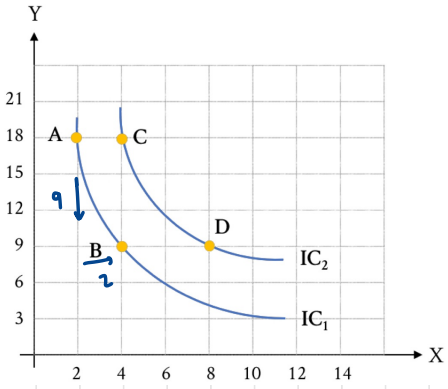
$$\frac{\Delta x}{\Delta y} \cdot \frac{y_1 + y_2}{x_1 + x_2} = \frac{9}{9} \cdot \frac{18+9}{4+8} = 0.4 \cdot \frac{27}{12}$$

$$= 0.4 \times 2.25$$

$$= 0.9$$

When spend 1 more avocado utility increase 0.9

2.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)



Point A → B = $\frac{MUx}{MUy} = \frac{9}{2} = 4.5$

· Mux is 4.5 time by Muy

Point C → D = $\frac{Mux}{Muy} = \frac{9}{4} = 2.25$

· Mux is 2.25 time by Muy