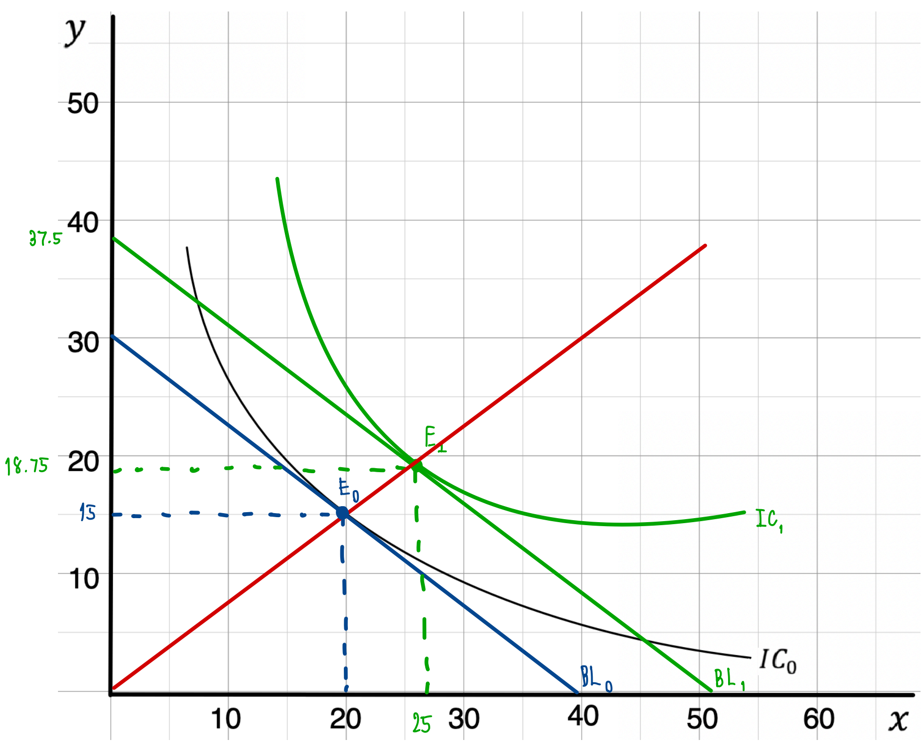
#1

12. Five consumers have the following marginal utility of apples and pears:

	Marginal Utility of Apples	Marginal Utility of Pears
Claire	6	12
Phil	6	6
Haley	6	3
Alex	3	6
Luke	3	12

The price of an apple is $1, and the price of a pear is $2. Which, if any, of these consumers are optimizing their choices of fruit? For those who are not, how should they change their spending?

#2 Given the price of x = 3, price of y = 4, and budget = 120.



budget line : $3x + 4y = 120$

A) Draw the budget line and find the equilibrium with the given indifference curve IC in the diagram below.
B) If the income increases from 120 to 150, where will be the new equilibrium so that the change in the consumption of x be such that the Income Elasticity of x is equal to 1.
C) With the change of equilibrium you found in (B), what will be the Income Elasticity of y?

B)

From the Information given, we know that $\% \Delta I = \frac{150-120}{120} = 0.25 = 25\%$

Income elasticity of x is equal to 1,

i.e. $\eta_{Ix} = 1$ only when $\frac{\% \Delta Q_x}{\% \Delta I} = 1 \Rightarrow \boxed{\% \Delta Q_x = \% \Delta I = 0.25}$

$$\% \Delta Q_x = \frac{Q_x^1 - Q_x^0}{Q_x^0} = 0.25$$

$$Q_x^1 = 0.25\, Q_x^0 + Q_x^0$$

$$Q_x^1 = 0.25\,(20) + 20$$

$$= 25$$

Therefore, when income rises from 120 to 150, the consumption of x must increase from 20 to 25 such that the income elasticity is exactly equal to 1

From the budget line, BL: $3x + 4y = 150$

$$3(25) + 4y = 150$$

$$y = 18.75$$

C) $\eta_{Iy} = \frac{\% \Delta QY}{\% \Delta I} = \frac{\frac{18.75 - 15}{15}}{0.25} = \frac{0.25}{0.25} = 1$

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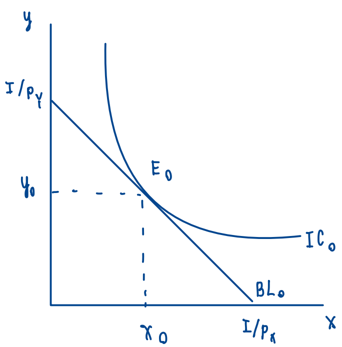

At the equilibrium point E_0, it is observable that

1) slope of BL = slope of IC (utility is maximized)
2) E_0 is on the budget line (the choice is feasible)

slope of BL : $\dfrac{\Delta y}{\Delta x} = -\dfrac{I/P_Y}{I/P_X} = -\dfrac{P_X}{P_Y}$

slope of IC : $MU_X \Delta X + MU_Y \Delta Y = 0$

$$\frac{\Delta Y}{\Delta X} = \frac{-MU_X}{MU_Y}$$

So, slope of BL = slope of IC

$$\frac{1}{2} = \frac{P_X}{P_Y} = \frac{MU_X}{MU_Y}$$

· Phil and Haley $\Rightarrow \dfrac{P_X}{P_Y} < \dfrac{MU_X}{MU_Y}$

· Luke $\Rightarrow \dfrac{P_X}{P_Y} > \dfrac{MU_X}{MU_Y}$