

#1

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

	Marginal Utility of Apples (x)	Marginal Utility of Pears (y)	$\frac{M_{u_x}}{P_x}$	$\frac{M_{u_y}}{P_y}$
Claire	6	12	6	6
Phil	6	6	6	3
Haley	6	3	6	1.5
Alex	3	6	3	3
Luke	3	12	3	6

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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?

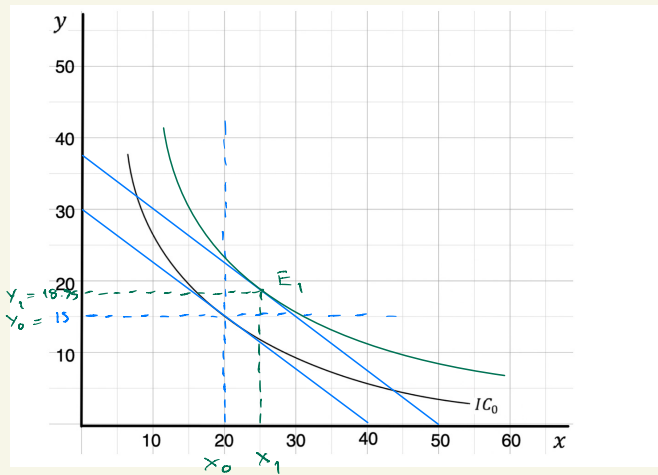
$$\text{From } \frac{M_{u_x}}{M_{u_y}} = \frac{P_x}{P_y}$$

$$\frac{M_{u_x}}{P_x} = \frac{M_{u_y}}{P_y}$$

From the table, we can conclude that Claire and Alex had optimized their choices already.

- Phil and Haley should buy more Apples because it is giving more utility per one unit price.
- Luke should buy more pear because it's giving more utility.

\* 2



A) Draw the budget line and find the equilibrium with the given indifference curve IC in the diagram below.

$$3x + 4y = 120$$

$$\text{at } x = 0, y = \frac{120}{4} = 30$$

$$\text{at } y = 0, x = \frac{120}{3} = 40$$

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.

$$3x + 4y = 150$$

$$\text{when } x = 0, y = \frac{150}{4} = 37.5$$

$$\text{when } y = 0, x = \frac{150}{3} = 50$$

$$\eta_x^I = \frac{\% \Delta X}{\% \Delta I} = 1$$

$$1 = \frac{\% \Delta X}{(150 - 120) / 120}$$

$$1 = \frac{\% \Delta X}{0.25}$$

$$0.25 = \Delta X$$

x increased by 25%

From 20 to  $20 \times 1.25 = 25$  \*

Therefore the equilibrium is  
at (25, 18.75)

C) With the change of equilibrium you found in (B), what will be the Income Elasticity of  $y$ ?

at the new equilibrium  $(x_1, y_1) \rightarrow (25, 18.75)$

$$\eta_{\frac{y}{I}} = \frac{\% \Delta Y}{\% \Delta I} = \frac{(18.75 - 15) / 15}{0.25} = 1 \quad *$$

the income Elasticity of  $y$  is also equal to 1