

#1

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

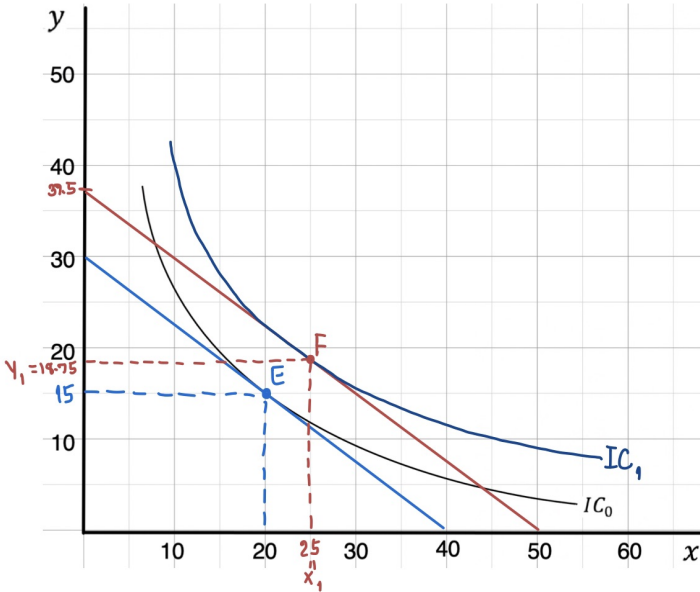
	Marginal Utility of Apples	Marginal Utility of Pears	(\$1) Marginal Utility per dollar of Apples	(\$2) Marginal Utility per dollar of Pears	Total Marginal Utility per dollar
Claire	6	12	$6/1 = 6$	$12/2 = 6$	$\Rightarrow 12$
Phil	6	6	$6/1 = 6$	$6/2 = 3$	$\Rightarrow 9$
Haley	6	3	$6/1 = 6$	$3/2 = 1.5$	$\Rightarrow 7.5$
Alex	3	6	$3/1 = 3$	$6/2 = 3$	$\Rightarrow 6$
Luke	3	12	$3/1 = 3$	$12/2 = 6$	$\Rightarrow 9$

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?

Claire is a person who best optimizing her choice of fruit because her total marginal utility per dollar of two kinds of fruits is the highest, and for other people, they should change their spending by:

- Phil should spend all budget for apples.
- Haley should spend all budget for apples.
- Alex can spend for what he wants.
- Luke should spend all budget for pears.

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



$$3x + 4y = 120 \Leftarrow \text{old}$$

$$\text{when } x = 0, y = \frac{B}{P_y} = \frac{120}{4} = 30$$

$$\text{when } y = 0, x = \frac{B}{P_x} = \frac{120}{3} = 40$$

$$\text{slope} = -\frac{30}{40} = -\frac{3}{4}$$

$$3x + 4y = 150 \Leftarrow \text{new}$$

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

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

$$\text{slope} = -\frac{37.5}{50} = -\frac{3}{4}$$

- 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  $y$ ?

A.)  $3x + 4y = 120$   
 old equilibrium is at  $(20, 15)$   
 $3x + 4y = 150$   
 new equilibrium is at  $(25, 18.75)$

B.)  $\% \Delta I = \frac{150 - 120}{120} = \frac{30}{120} = 25\%$

$$\% \Delta X = \frac{25 - 20}{20} = \frac{5}{20} = 25\%$$

$$\eta_{I}^x = \frac{\% \Delta X}{\% \Delta I} = \frac{25}{25} = 1 > 0$$

$\therefore$  When budget increases, consume more of  $x$ .

C.)  $\% \Delta y = \frac{18.75 - 15}{15} = \frac{3.75}{15} = 25\%$

$$\eta_{I}^y = \frac{\% \Delta y}{\% \Delta I} = \frac{25}{25} = 1 > 0$$

$\therefore$  When budget increases, consume more of  $y$ .