

### Exercise 1.3

1. Let us assume that a “small” country can produce and consume two goods A and B. The labor cost of producing one unit of A and one unit of B is 3 and 2 hours, respectively. The country possesses 120 units of labor. If consumers consume 2 units of A for one unit of B, then find
  - a) the quantities consumed and produced if the price of B is equal to 4, before trade. Also find the price of A and the national income of the country.
  - b) Suppose the international price of B is 6, while the price of A remains constant. Estimate the national income, the quantities consumed and produced in the country, after trade.
  - c) In which sector would it be more profitable for the country to invest in technological innovation saving labor, under conditions described in question (b).

a) Find the quantities consumed and produced if the price of B is equal to 4, before trade. Also find the price of A and the national income of the country.

$$DA=2DB$$

A	B	L	PA/PB
3	2	120	3/2

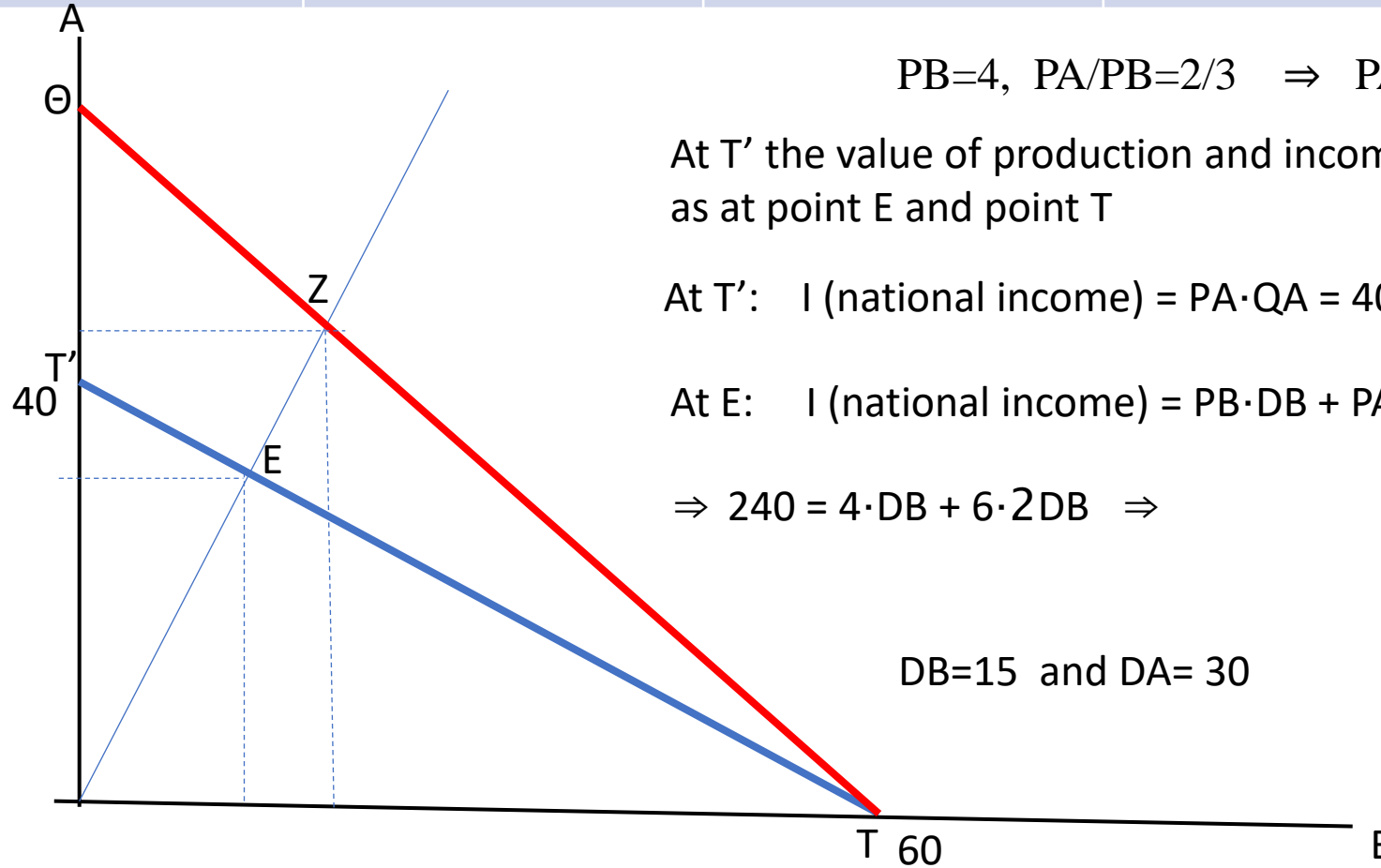
$$PB=4 \Rightarrow PA=?$$

A

a) the quantities consumed and produced if the price of B is equal to 4, before trade. Also find the price of A and the country's level of national income.

A	B	L	PA/PB
3	2	120	3/2

$$DA=2DB$$



$$PB=4, PA/PB=2/3 \Rightarrow PA=6$$

At T' the value of production and income are the same as at point E and point T

$$\text{At T': } I (\text{national income}) = PA \cdot QA = 40 \cdot PA = 40 \cdot 6 = 240$$

$$\text{At E: } I (\text{national income}) = PB \cdot DB + PA \cdot DA = 240$$

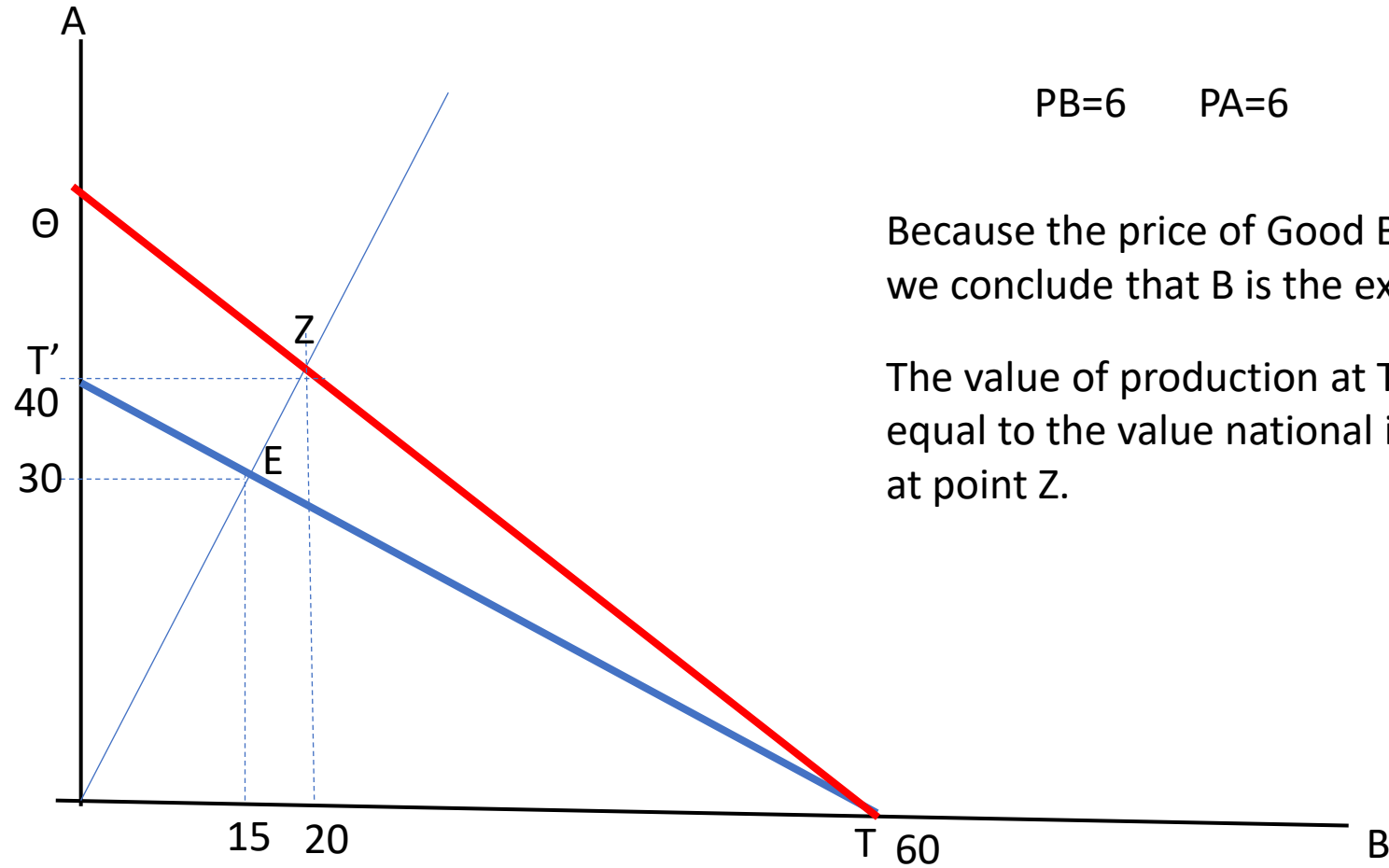
$$\Rightarrow 240 = 4 \cdot DB + 6 \cdot 2DB \Rightarrow$$

$$DB=15 \text{ and } DA=30$$

(b) after international trade:

A	B	L	PB/PA
3	2	120	6/6=1

$$DA=2DB$$



$$DA=2DB$$

$$PB=6 \quad PA=6$$

The value of income at T is equal to the value of income at point Z:

$$\begin{aligned} T: \quad QB \cdot PB &= PA \cdot DA + PB \cdot DB \Rightarrow \\ 60 \cdot 6 &= 6 \cdot 2 \cdot DB + 6 \cdot DB \Rightarrow \\ DB &= 20 \text{ and } DA=40 \end{aligned}$$

N. Income:  $60 \cdot 6=360$  (higher than in the case of autarky)

