

Sum Trade

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There are 2 countries A & B. Each of them produce 2 commodities logs & berries.

Each country has a labour force of 800.

The following table gives production per month for each worker in each country.

Assume productivity is constant & identical for each worker in each country

	Productivity of 1 worker for 1 month	
	Logs	Berries
A	6	18
B	3	12

a) Absolute advantage : Country A has both the products as $6 > 3$ & $18 > 12$

b) Comparative advantage :

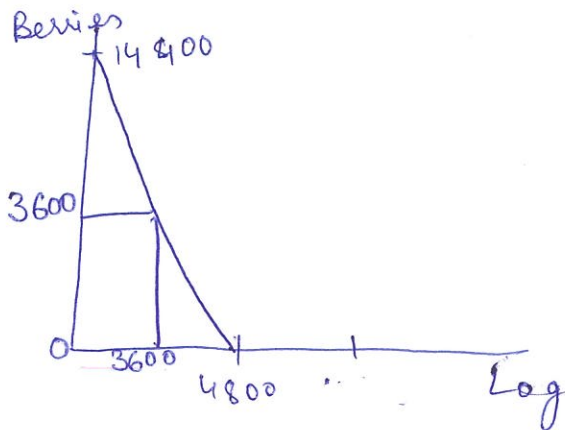
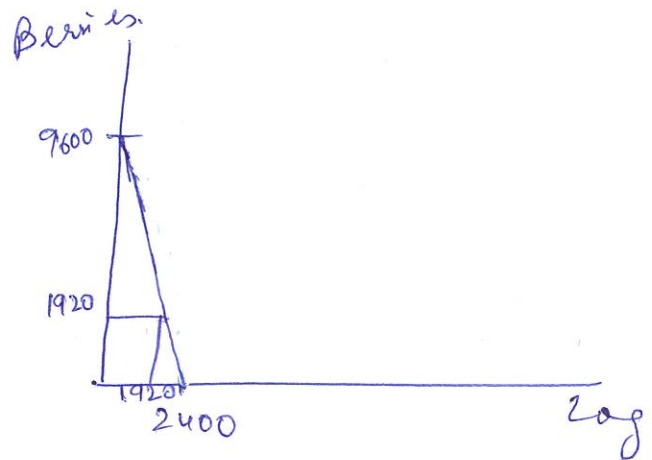
<u>Logs</u>	A :	6 Logs — 18 berries
		1 log — 3 berries
	B :	3 Logs — 12 berries
		1 log — 4 berries

∴ Country A has comparative advantage in production of logs

Berries	A :	18 berries — 6 logs
		1 Berry — $\frac{6}{18} = \frac{1}{3}$ log
	B :	12 Berries — 3 log
		1 berry — $\frac{3}{12} = \frac{1}{4}$ log

∴ Country B has a comparative advantage in production of berries

(2)

c) PPFCountry APPF
Country B

d) No trade — how to allocate labour so that each nation consumes equal amount of both the products

Country A : Production ratio: $6 : 18$
 $1 : 3$

\therefore Labour ratio $3 : 1$

\therefore 600 workers for ~~£~~ log
& 2000 workers for ~~£~~ berries.

\therefore 3600 units of both ^{logs and berries} ~~logs and berries~~ would be produced & consumed.

Country B : Production Ratio: $3 : 12$
 $1 : 4$

\therefore labor ratio $4 : 1$

\therefore 640 workers for logs
& 160 workers for berries

Therefore 1920 units of logs & berries would be produced and consumed.

(3)

e) Show specialization and trade can move both countries beyond their PPF.

Without trade the total world production of each commodity is $3600 + 1920 = 5520$.

With trade: If both specializes according to comparative advantage. Total production of logs for country A is $6 \times 800 = 4800$ and total production berries is $12 \times 800 = 9600$.

Since total production of logs falls compared to pre-trade situation, country B should specialize partially.

Therefore, country A will be exporting log and importing berries. Maximum that country A is willing to pay for one unit of berry is $\frac{1}{3}$ or log.

Minimum that country B is ready to accept by giving one unit of berry is $\frac{1}{4}$.

So terms of trade acceptable for both countries will be "A" for 1 unit of berry such that it lies between $\frac{1}{4}$ to $\frac{1}{3}$.

Since, country B specializes partially let it devote Z amount to log and $800 - Z$ to berries.

∴ Production:

	Country A
Log	4800
Berry	0

	Country B
	3Z
	12 (800 - Z)

(4)

We assume country A consumes equal amount of log and berries after trade.

Let country A gives a unit of log and takes β units of berry from country B. Therefore,

$$4800 - a = \beta \longrightarrow (1)$$

for country B:

$$3Z + a = 12(800 - Z) - \beta \longrightarrow (2)$$

$$3Z + a = 12(800 - Z) - 4800 + a \text{ (from eq. (1))}$$

$$3Z + a = 9600 - 12Z - 4800 + a$$

$$15Z = 4800$$

$$Z = 320$$

\therefore final production:

	Country A	Country B	Total.
log	4800	960	5760
berries	0	5760	5760

Therefore, world production has increased from 5520 to 5760.

(5)

Suppose we take terms of trade as 0.3.

Country A

Get 1 berry for 0.3 Log

Country B

Get 0.3 Log for 1 Berry
or 1 log for $\frac{1}{0.3}$ berry = 3.33 berry

∴ from equation (1)

$$4800 - a = a \times 3.33$$

$$a = 1108.54 \text{ approx} = 1109$$

∴ A will have 3691 of both products; $3691 > 360$

Country B

from equation (2)

$$\text{log} = 960 + a$$

$$\text{i.e. } 960 + 1109 = 2069$$

Berry

$$5760 - 3691 = 2069; 2069 > 1920$$

Other possible outcomes

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	Log	Berry
A	4800 - 1000	0 + 3800
B	960 + 1000	5760 - 3800

②

	Log	Berry
A	4800 - 1100	0 3700
B	960 + 1100	5760 - 3700