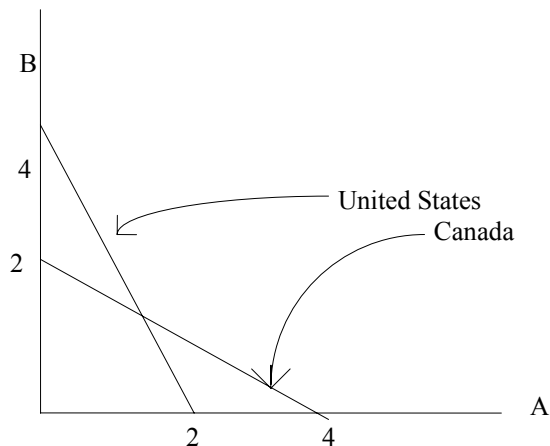


Problem Set #1 Solutions
Econ 2106H, John L. Turner

1)
a)



b) If each country decided that it needed exactly 2 units of good B, and must produce it themselves, then this is mathematically equivalent to each country setting $B=2$. So, the United States, holding $B=2$, has the PPF: $.5A + .25(2) = 1$. Solving for A yields $A=1$.

Similarly, if Canada is holding their production of B at $B=2$, their PPF is:

$.25A + .5(2) = 1$. Solving this for A yields $A=0$. Canada can *only* produce good B.

So the following is a synopsis of total production in the two economies:

	Good A	Good B
United States	1	2
Canada	0	2
Total	1	4

c) If it is agreed that the United States will produce all of the Good B required by the two countries (which is 4), it is clear from both the graph and its production Possibilities Frontier that it can't produce any of good A. If Canada doesn't produce any of good B, however, and concentrates its production on good A, then solving its production possibilities frontier for A yields:

$$.25A + .5(0) = 1$$

which can be solved for $A=4$.

So the following is a synopsis of total production in the two economies with trade:

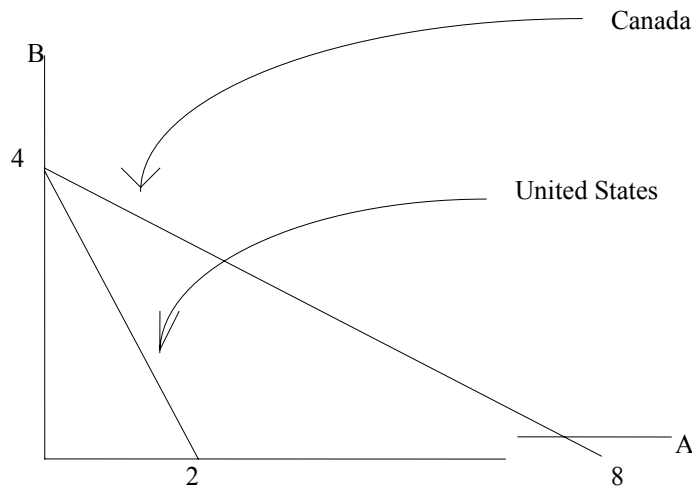
	Good A	Good B
United States	0	4
Canada	4	0
Total	4	4

Since more is produced in aggregate, the countries are both better off with trade than without.

d) Comparative Advantage: The ability to produce something at a lower *opportunity cost* than the individual/firm/country to whom you are being compared. In our example here, the opportunity cost of Canada producing good A is $\frac{1}{2}$ a unit of good B. By comparison, the opportunity cost of the United States producing good A is 2 units of good B. Therefore, Canada has a comparative advantage in producing good A.

2)

a)



b) If each government allocates their resources so that they produce exactly 2 units of good B, then the equations for their PPFs can be solved to yield the amount of A they can produce:

$$\text{U.S PPF: } .5A + .25(2) = 1 \rightarrow A = 1$$

$$\text{Canada PPF: } .25A + .5B = 2 \rightarrow A=4$$

so their production can be expressed...

	Good A	Good B
United States	1	2
Canada	4	2
Total	5	4

c) If the United States produced all of good B (which amounts to four units), an examination of its PPF shows:

$$\text{U.S PPF: } .5A + .25(4) = 1 \rightarrow A = 0$$

Which means that the U.S. must produce good B exclusively.

Since the U.S. is producing all of the required good B, however, this means that Canada needn't produce any of it, and so can use its entire capacity to produce good A.

This means Canada's PPF can now be expressed as:

$$\text{Canada PPF: } .25A + .5(0) = 2 \rightarrow A = 8$$

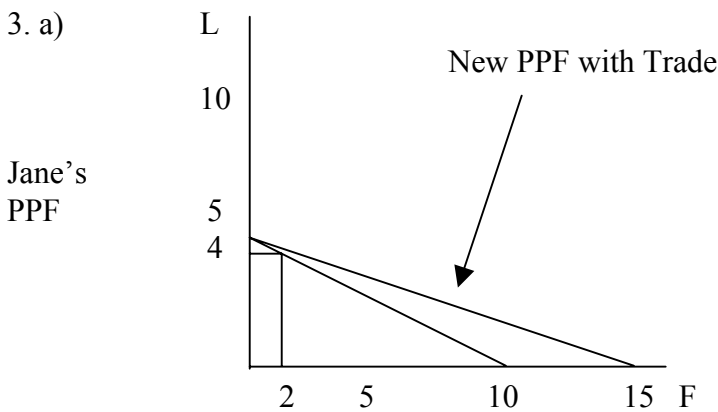
So in this situation, the combined output can be expressed...

	Good A	Good B
United States	0	4
Canada	8	0
Total	8	4

If each country concentrates on producing goods in which it has a comparative advantage, and then trading with other countries, more total goods may be produced, making both countries better off.

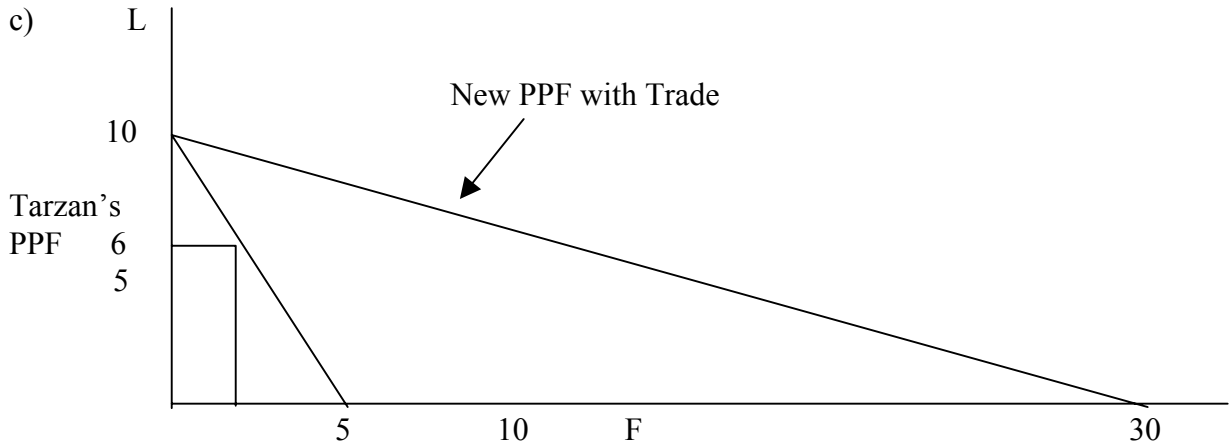
d) Absolute Advantage- The ability to produce something with fewer resources than others use to produce the same thing.

The United States here has, in its production of good B, an opportunity cost of $\frac{1}{2}$ a unit of good A (that is what it is sacrificing in production of good A in order to produce a unit of good B). By comparison, the opportunity cost Canada faces in producing good B is 2 units of good A. Therefore, the United States has a comparative advantage in the production of good B.



Jane consumes at the point $L=4, F=2$. Her opportunity cost of L is 2 units of F.

b) This question may have been slightly confusing, but the idea is that Jane can now produce only L, then trade L for cheap F (it is cheap because the price of L is 3 times the price of F, which is more than the opportunity cost of L from part a). Thus if she produces 5 units of L, then trades $\frac{2}{3}$ of them for 2 units of F, she can increase her consumption of L from 4 to 4.33.

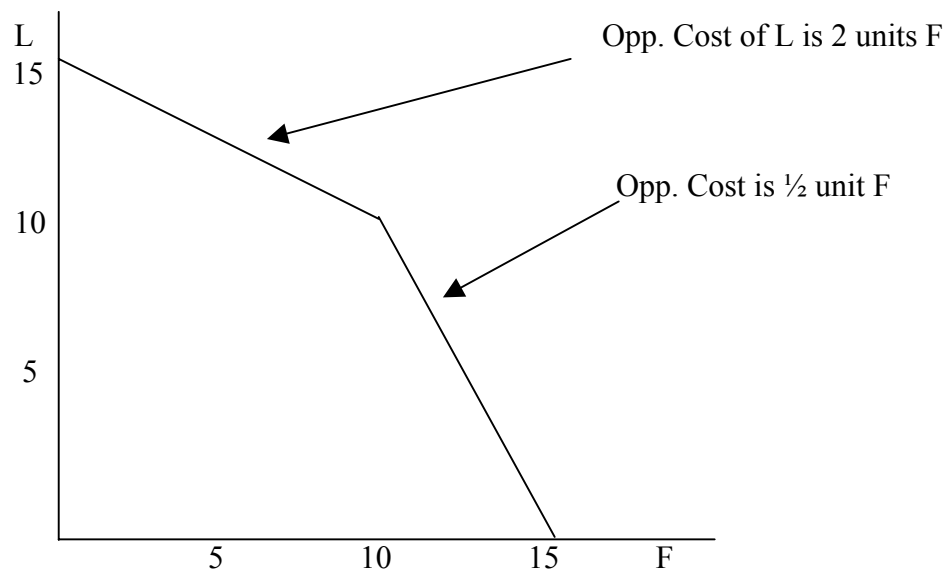


: repeat a) $F=2$, $L=6$. Opportunity cost of L is $1/2$ unit of F

: repeat b) Produce $L=10$, trade $2/3$ units of L for 2 units F , consume $F=2$, $L=9.33$.

d) Jane produces $F=4$, $L=3$, Tarzan produces $F=0$, $L=10$. Total L consumed is 13.

e)



Opportunity cost when $L=8$ is $1/2$ unit of F . Opp. Cost when $L=12$ is 2 units of F .

4.

(a)

	Dr. Turner	Matt Henry
Economics (pages of research per hr.)	100	.01
Knitting (sweaters knitted per hr.)	100	.0005

(b)

(i) United States

(ii) United States should produce wheat and trade with the U.K., which produces cloth.

(iii)

	United States	United Kingdom
Opp. Cost of wheat (in terms of yards of cloth)	7/12 (approximately .58)	3
Opp. Cost of cloth (in terms of bushels of wheat)	12/7 (approximately 1.71)	1/3 (approximately .33)

(iv)

Each country uses 10 hours of labor to produce each good.

	United States	United Kingdom	Total Output
Bushels of Wheat Produced	60	10	70
Yards of Cloth Produced	35	30	65

If in the U.S. 16 hours are devoted to wheat and 4 hours to cloth, while in the U.K. all 20 hours are devoted to cloth.

	United States	United Kingdom	Total Output
Bushels of Wheat Produced	96	0	96
Yards of Cloth Produced	14	60	74

Notice total output of both goods increases when the nations specialize.

C. The range is $[7/12, 3]$.