

# Walker Workbook: Topic 1 - Solutions

**1. Assume there are only two goods, burgers and sodas. If the price of a burger is \$3.20 and the price of a soda is \$.40, what is the opportunity cost of buying a burger? What is the opportunity cost of buying a soda?**

The O.C. of a burger is simply 8 cokes -  $\$3.20/\$.40$

The O.C. of a coke is simply 1/8 burger -  $\$.40/\$3.20$

**2. Using the information given, describe a possible trade between Country 1 and Country 2 that will allow both countries to consume outside of their own PPFs. In your answer, be sure and state: a) which country produces which good, b) the terms of trade, c) the actual quantities to be traded, and d) the resulting consumption combinations for each country. Be precise and to the point.**

In Country 1, the O.C. of producing cars is  $100/50 = 2$  corns per car, which implies that the O.C. of producing corn is .5 cars per corn.

In Country 2, the O.C. of producing cars is  $200/200 = 1$  corn per car, which implies that the O.C. of producing corn is 1 car per corn.

Country 1 has the comparative advantage in producing corn and Country 2 has the comparative advantage in producing cars.

For Country 1, the cost of making corn is .5 cars. They would sell corn for any price above .5 cars. Now, Country 2 could make their own corn at a price of 1 car. So they would be willing to pay any price below that.

For Country 2, the cost of producing cars is 1 corn. They would sell cars for any price above 1 corn. Now, Country 1 could produce their own cars at a price of 2 corn. So they would be willing to pay any price below that.

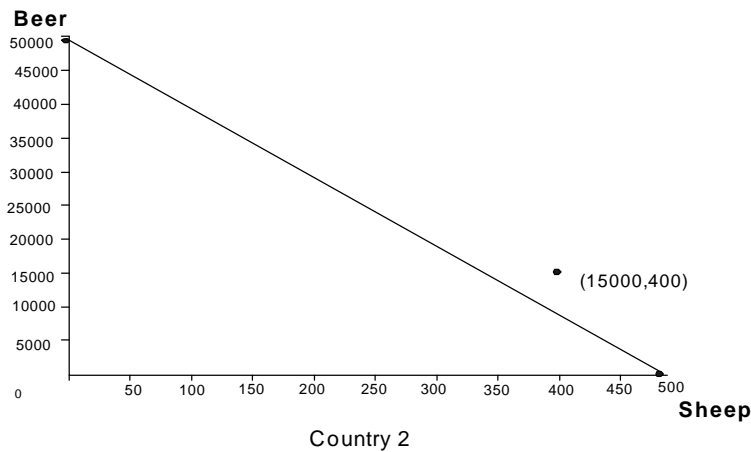
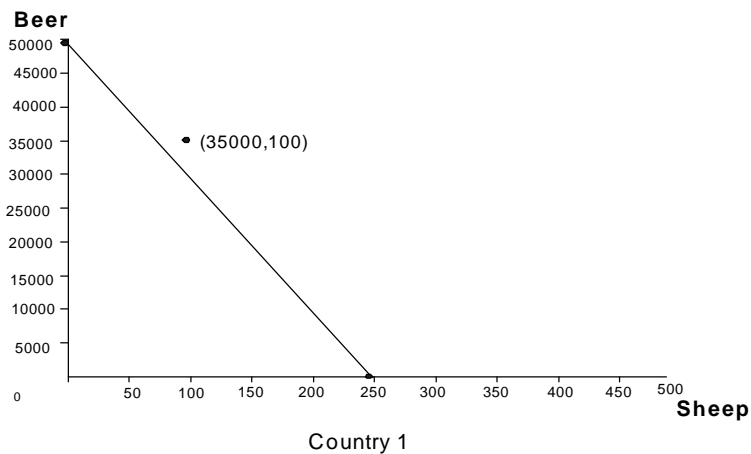
So, assume Country 1 charges Country 2 a price of .75 cars for each corn. That would imply that Country 2 is charging Country 1 a price of 1.33 corn per car (note that  $1.33=1/.75$ ). Both countries would be receiving a price above what it cost them to produce their goods and would be paying a price for the goods they buy that is less than the cost of making those goods.

Finally, assume Country 1 sells 40 corn to Country 2 at a price of .75 cars per corn. So Country 2 would get 40 corn and pay 30 cars in return. Given this trade, Country 1 ends up with a consumption point of 60 corn ( $100-40$ ) and 30 cars. Country 2 ends up with a consumption point of 40 corn and 170 cars. Both of these consumption points lie outside of the PPFs of each country.

**3. Assume Country 1 can produce sheep, with a constant opportunity cost of 200 beers for every sheep it produces. What does this imply about the opportunity cost of producing beer? Show the PPF for this country, assuming the maximum amount of beer it can produce is 50,000 bottles.**

If the O.C. of producing sheep is constant at 200 beers per sheep, then the O.C. of producing beer is constant at  $1/200$  sheep per beer.

**Assume Country 2 can produce sheep, with a constant opportunity cost of 100 beers for every sheep. Show the PPF for this country, assuming the maximum amount of beer it can produce is 50,000 bottles.**



**Consider trade between these two countries. Considering opportunity costs, which country would be likely to produce beer? Which sheep?**

Country 1 has the comparative advantage in producing beer and Country 2 has the comparative advantage in producing sheep.

**Describe one possible combination of beer and sheep they might produce and trade that would allow each country to consume at a point outside its own PPF? What would be the terms of trade in your example?**

For Country 1, the cost of making beer is  $1/200$  sheep. They would sell beer for any price above  $1/200$  sheep. Now, Country 2 could make their own beer at a price of  $1/100$  sheep. So they would be willing to pay any price below that.

For Country 2, the cost of producing sheep is 100 beers. They would sell sheep for any price above 100 beers. Now, Country 1 could produce their own sheep at a price of 200 beers. So they would be willing to pay any price below that.

So, let Country 1 charge Country 2 a price of  $1/150$  sheep for each beer. That would imply that Country 2 is charging Country 1 a price of 150 beers per each sheep. Both countries would be receiving a price above what it cost them to produce their goods and would be paying a price for the goods they buy that is less than the cost of making those goods.

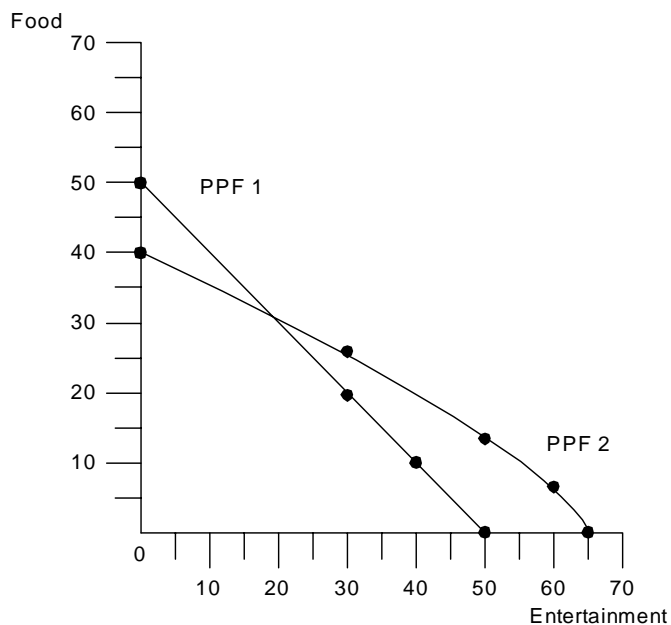
Finally, assume Country 1 sells 15,000 beers to Country 2 at a price of  $1/150$  sheep per beer. So Country 2 would get 15,000 beers and pay 100 sheep in return. Given this trade, Country 1 ends up with a consumption point of 35,000 beers ( $50,000 - 15,000$ ) and 100 sheep. Country 2 ends up with a consumption point of 15,000 beers and 400 sheep. Both of these consumption points lie outside of the PPFs of each country.

Food	Entertainment
50	0
40	10
30	20
20	30
10	40
0	50

4. The table above shows possible combinations of "food" and "entertainment" that are available to a hypothetical consumer. Letting the vertical axis represent units of "Food" and the horizontal axis represent units of "Entertainment," plot the combinations of food and entertainment shown in the above table. Call this graph PPF1.

5. On the same pair of axes used in (2) - using a different colored pencil - plot the combinations of food and entertainment shown in the table below. Call this graph PPF2.

Food	Entertainment
40	0
30	30
20	50
10	60
0	65



**6. What is the interpretation of a single point on PPF1 or PPF2? What is the interpretation of moving down (up) along one of the graphs?**

A single point on a PPF represents one combination of goods that is feasible to produce, utilizing all resources efficiently.

Moving down a PPF implies one is increasing the amount of the good measured on the "X-axis" and less of the good measured on the "Y-axis."

**7. Using the concept of "opportunity costs," what is implied by PPF1 being a straight line and PPF2 being a curved (bowed out) line?**

Because PPF1 is a straight line - it implies constant O.C. per unit.

Because PPF2 is a bowed out line - it implies increasing O.C. per unit.

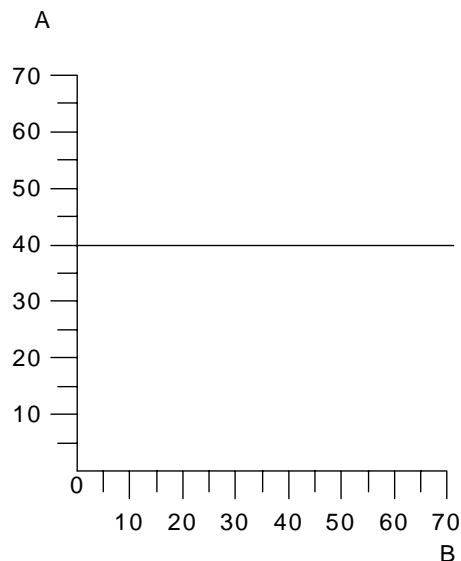
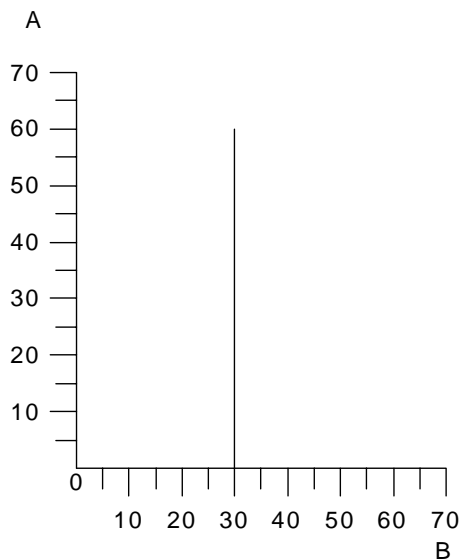
**8. What is the interpretation of the point at which the two graphs intersect?**

The point of intersection simply shows one production combination that is common to both PPFs.

**9. Make up a table and graph of a "production possibilities frontier" that is:**  
a. a straight vertical line  
b. a straight horizontal line

**What would be the economic interpretation of such relationships?**

These PPFs show how one would represent zero O.C. per unit for some good. That is, one can increase the level of one good without having to decrease the level of the other good.

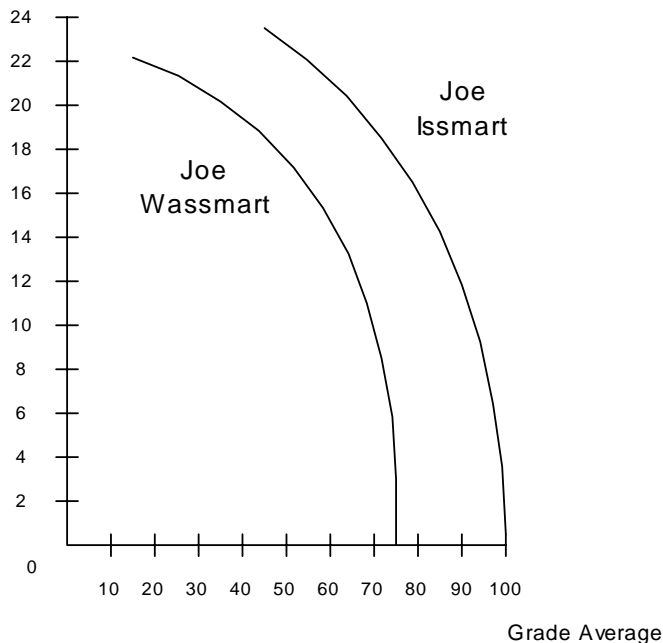


10. Joe Issmart and Joe Wassmart are two students in E201. Joe Issmart is a very smart student with strong math skills. Joe Wassmart is not so smart - too many diet cokes. How would the production possibilities frontier over "grades in E201" and "leisure time" differ for these two students. Would they be expected to intersect? What about the slopes of the graphs?

There is no necessarily correct answer to this question. But, what probably makes sense is that, at a point of consuming all leisure, Joe Issmart would be able to get higher grades than Joe Wassmart. Then moving away from that point, Joe Issmart's PPF would like outside of Joe Wassmart's PPF.

Not sure you can say much about the slopes of the two PPFs.

Leisure Hours



11. Assume the opportunity cost of "coke" in terms of "burgers" is constant and equals .50. What does this imply about the price of a coke relative to the price of a burger?

This implies the price of a coke is 1/2 the price of a burger.

What would be the opportunity cost of a burger in terms of a coke?

The O.C. of a burger would be 2 cokes.

To construct a graph of a "production/consumption possibilities frontier" between cokes and burgers, what additional information would you need to know?

Available resources - in this case - how much money you have to spend over burgers and cokes.

12. The table shown below shows the tradeoff between grades and leisure for a hypothetical student.

Grades	Leisure Time
90	0
85	1
70	2
50	3
25	4

Compute the opportunity cost (per unit) of increasing grades. Why does the opportunity cost depend on "the level" of grades the student is trying to achieve?

O.C. per unit of Grades	Grades	Leisure Time
	90	0
1/5.....	85	1
1/15.....	70	2
1/20.....	50	3
1/25.....	25	4

Note that the O.C. per unit depends on if you are considering increasing grades from 25 to 50, or 50 - 70, or 70 to 85, or 85 to 90.

Now compute the opportunity cost (per unit) of increasing leisure. Why does the opportunity cost depend on "the level" of leisure the student desires?

Grades	Leisure Time	O.C. per unit of Leisure
90	0	
	.....	5/1
85	1	
	.....	15/1
70	2	
	.....	20/1
50	3	
	.....	25/1
25	4	

Note that the O.C. per unit depends on if you are considering increasing leisure from 0 to 1, or 1 to 2, or 2 to 3, or 3 to 4.

13. Why is a PPF dependent upon the given technology and resources available?

It is the technology linked with the available resources that tells us the potential outcome combinations that are feasible.

How would a PPF change, *ceteris paribus*, if there were a sudden decrease in available resources?

A decrease in available resources simply shifts the PPF in towards the origin. Note, it would not have to be a "parallel" shift -- unless we are talking about a PPF over spending income and we reduce the amount of income.