

Handout 1: The PPF and the Gains from Trade

Mankiw Ch 2-3

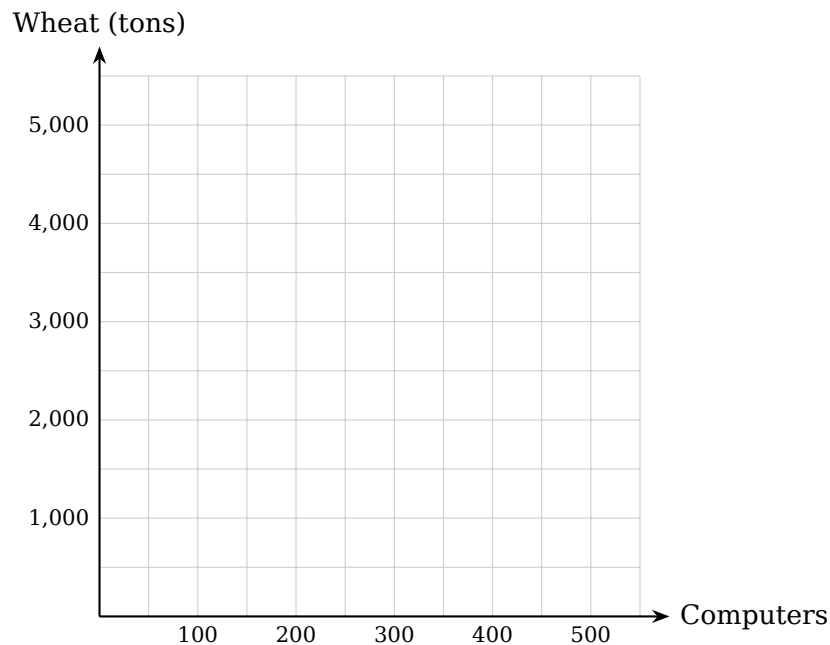
Problem 1. The production possibilities frontier

Two goods, computers and wheat. One input, labor: 50,000 hours a month. One computer takes 100 hours of labor; one ton of wheat takes 10 hours.

a) Complete the table.

Point	Labor hours		Output	
	Computers	Wheat	Computers	Wheat (tons)
A	50,000	0		
B	40,000			
C	25,000			
D	10,000			
E	0			

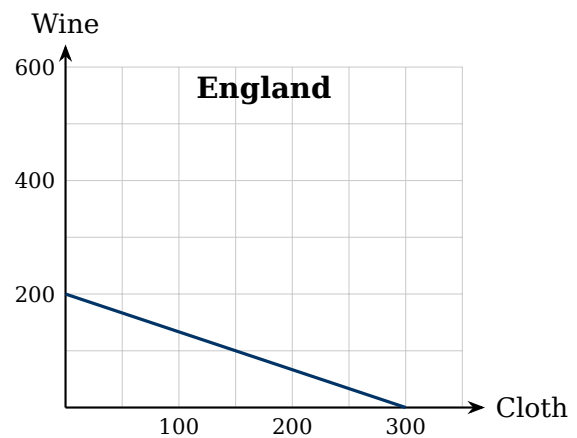
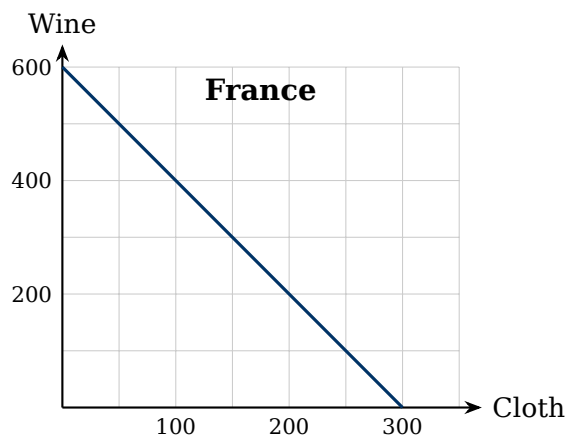
b) Plot the five points and draw the PPF. Then locate F = (100 computers, 3,000 tons) and G = (300 computers, 3,500 tons). How many labor hours does each bundle need? Is each feasible? Efficient?



- c) What is the opportunity cost of one computer? Of one ton of wheat? How does this show up in the graph?
- d) Immigration adds 10,000 hours of labor a month. What happens to the PPF?
- e) Instead, a new technology cuts the labor needed for a computer from 100 hours to 50. What happens to the PPF?

Problem 2. France and England

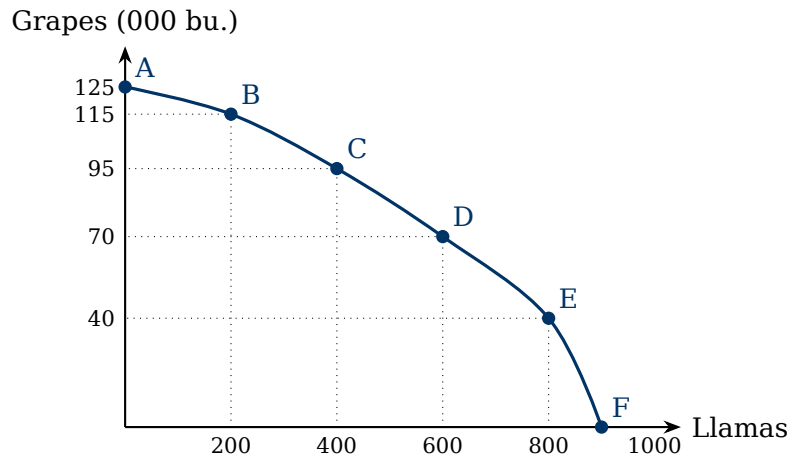
Each country's PPF for cloth and wine is drawn below.



- a) Calculate the opportunity cost of cloth and of wine in each country.
- b) Which country has the lower opportunity cost of cloth? Who should make what?

Problem 3. Grapes and llamas

You bought land in California. Part of it is fertile and excellent for grapes; part is rocky and poor for grapes. Llamas do equally well on any part. Grapes are measured in thousands of bushels.



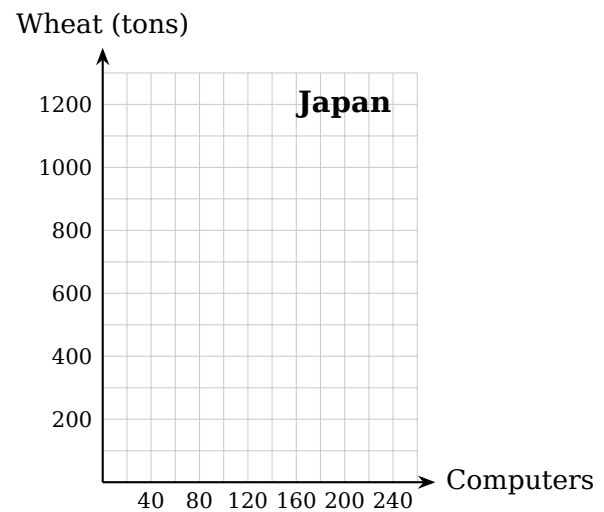
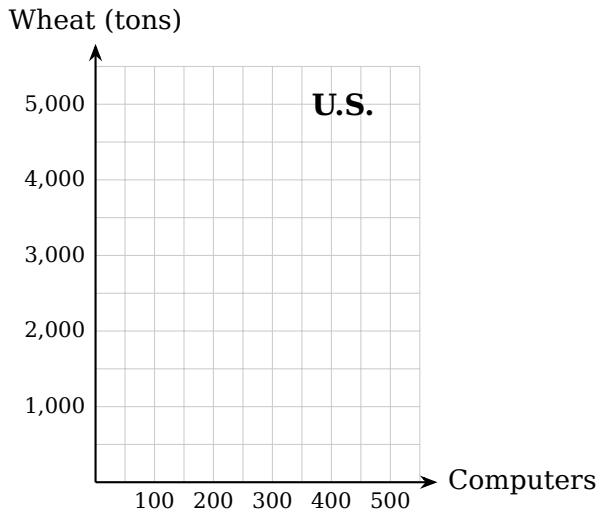
- a) You start at A, growing only grapes. What is the opportunity cost of raising the first 200 llamas? Of the next 200 (B to C)? Of the last 100 (E to F)?

- b) The PPF is bowed outward. Explain why.

Problem 4. The PPF and trade

Two countries, the U.S. and Japan; two goods, computers and wheat; one input, labor. The U.S. has 50,000 hours of labor; a computer takes 100 hours, a ton of wheat 10 hours. Japan has 30,000 hours; a computer takes 125 hours, a ton of wheat 25 hours.

- a) Sketch each country's PPF.



- b) Each country puts half its labor into each good. Find production, which is also consumption, without trade.
- c) The U.S. produces 3,400 tons of wheat. How many computers can it make with the rest of its labor? Mark the point on the PPF.
- d) Japan produces 240 computers. How much wheat can it make with the rest of its labor? Mark the point.
- e) Now the U.S. exports 700 tons of wheat to Japan and imports 110 computers from Japan. Find each country's consumption of both goods, compare it with part (b), and mark the consumption points.

- f) Who has the absolute advantage in each good? The comparative advantage? Between what prices, in tons of wheat per computer, do both countries gain?

Problem 5. Argentina and Brazil

Each country has 10,000 hours of labor. In Argentina a pound of coffee takes 2 hours and a bottle of wine 4 hours. In Brazil a pound of coffee takes 1 hour and a bottle of wine 5 hours.

- a) Which country has the absolute advantage in coffee? In wine?
- b) Which country has the comparative advantage in coffee? In wine?
- c) Between what prices, in pounds of coffee per bottle of wine, would both countries gain from trade?