Economics 101

Homework #2 Answer Key

Spring 2009

1. a. The supply for DVD players shifts left. The equilibrium price increases but the equilibrium quantity decreases.

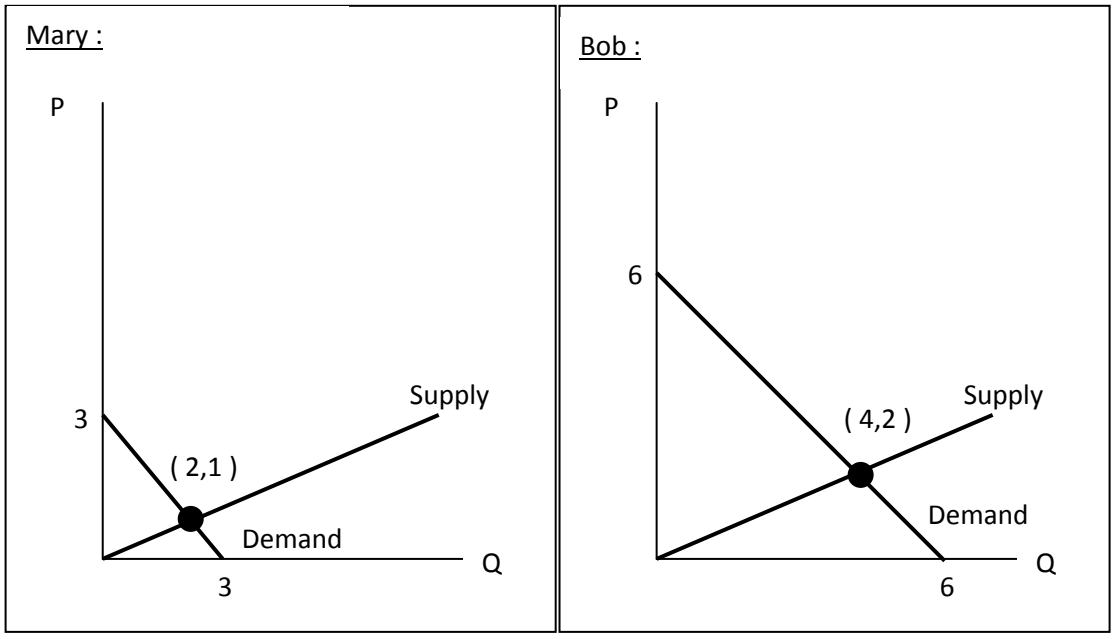
b. The supply for DVD players shifts right. The equilibrium price decreases but the equilibrium quantity increases.

c. The supply for DVD players shifts left. The equilibrium price increases but the equilibrium quantity decreases.

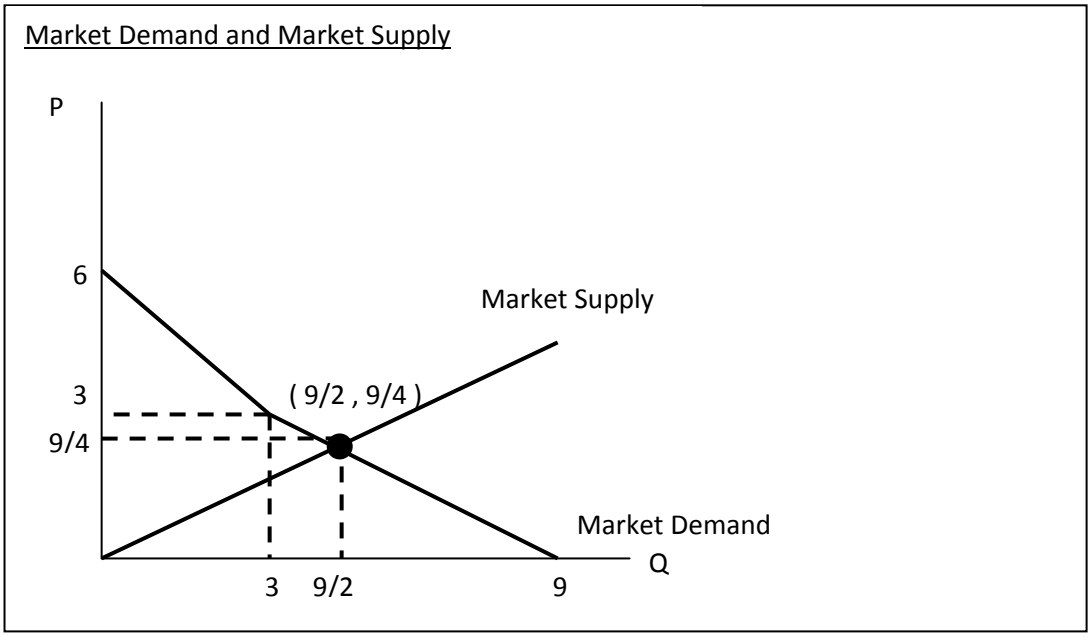
d. The demand for DVD players shifts left. The equilibrium price and quantity decreases.

e. The demand for DVD players shifts right. The equilibrium price and quantity increases.

2. a.



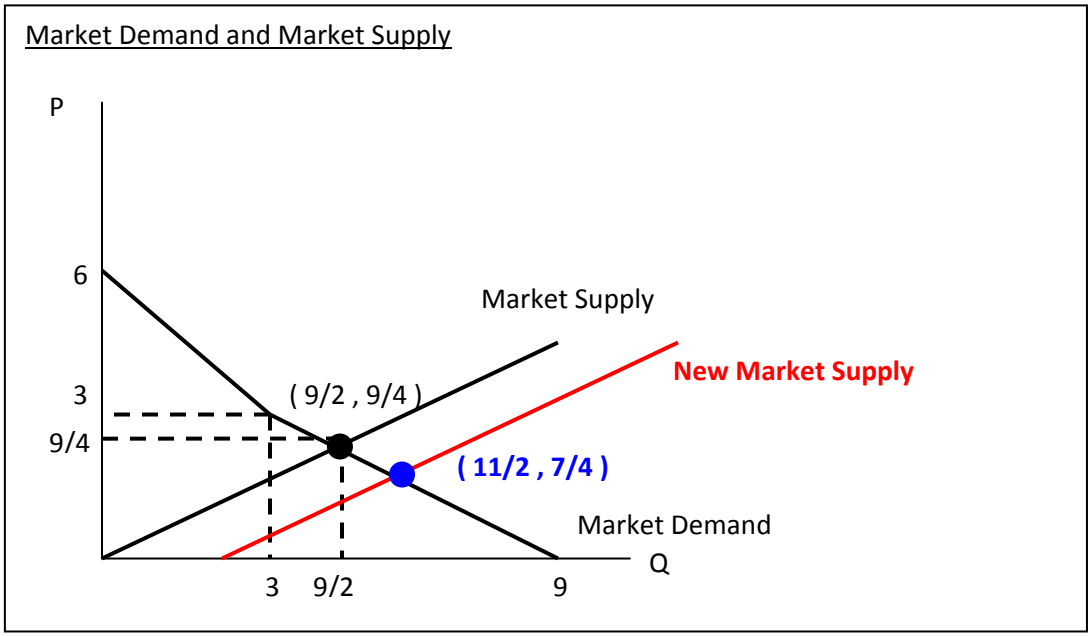
b.



c. Market demand function: Q=6-P for P>3, Q= 9-2P for P≤3.

Equilibrium: P=9/4, Q=9/2.

d. New market supply function: Q=2P+2. Equilibrium: P=7/4, Q=11/2.



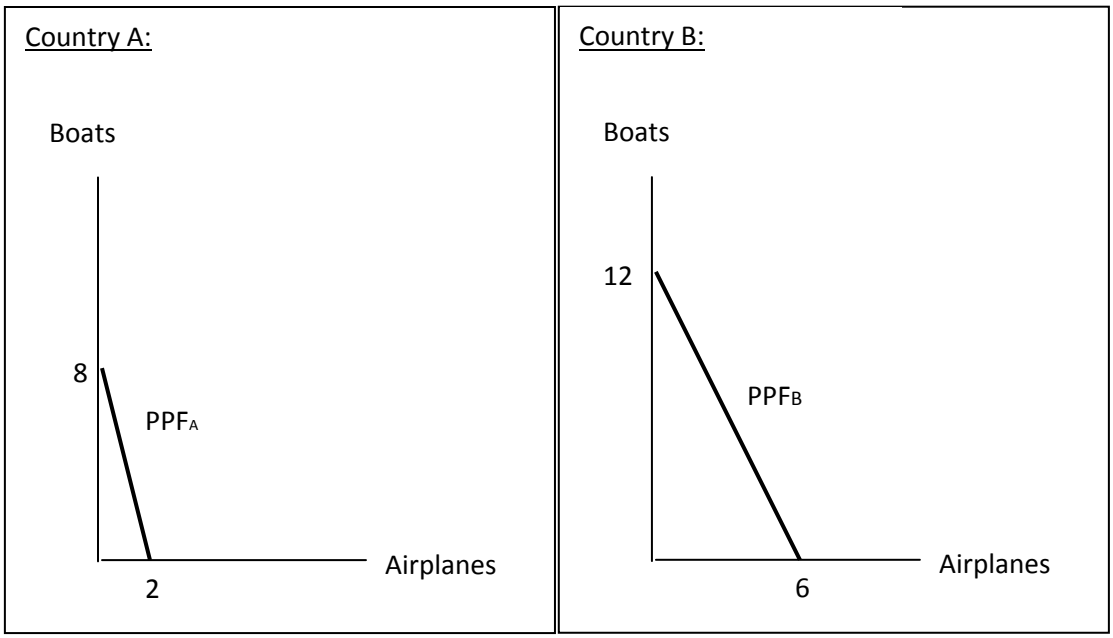
3. a. In Country A, 1 worker can produce either 1/24 of an airplane or 1/6 of a boat.

Country A has 48 workers per day so it can produce: 48/24 = 2 airplanes or 48/6 = 8 boats or some combination of these two goods that lies on the line between these two points.

In Country B, 1 worker can produce either 1/8 of an airplane or 1/4 of a boat.

Country B has 100 workers per day so it can produce: 48/8 = 6 airplanes or 48/4 = 12 boats or some combination of these two goods that lies on the line between these two points.

Use this information to draw the two individual PPF's.



b. Recall: the opportunity cost of the good on the horizontal axis is = –(slope of PPF).

The slope is of the PPF in country A is: -8/2 = -4

So the opportunity cost of producing an airplane in country A is: 4 boats.

The slope is of the PPF in country B is: -12/6 = -2

So the opportunity cost of producing an airplane in country B is: 2 boats.

Recall: the opportunity cost of the good on the vertical axis is the reciprocal of the opportunity cost of other good.

The opportunity cost of producing a boat in country A was 4 boats, so the opportunity cost of a boat is ¼ airplane.

The opportunity cost of producing a boat in country B was 2 boats, so the opportunity cost of a boat is ½ airplane.

c. Country B has the absolute advantage in airplane production, because Country B can produce up to 6 airplanes per day while Country A can only produce a maximum of 2.

Country B has the absolute advantage in boat production, because Country B can produce up to 12 boats per day while Country A can only produce a maximum of 8.

Country B has the comparative advantage in producing airplanes, since the opportunity cost of producing an airplane is lower in country B.

Country A has the comparative advantage in producing boats, since the opportunity cost of producing a boat is lower in country A.

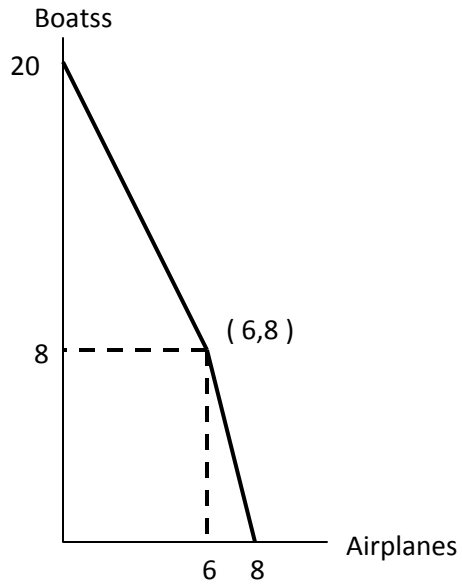
d. Country B will export airplanes, since Country B has the comparative advantage in producing airplanes. Country A will export boats, since Country A has the comparative advantage in producing boats.

Each country will produce the good for which it has the comparative advantage. Country B will specialize in the production of airplanes since that is its comparative advantage. It costs Country B 2 boats to produce an airplane, so it won't trade for anything less than 2 boats. Country A could produce its own airplanes at a cost of 4 boats so it won't pay any more than that. Therefore the price won't be less than 2 boats and it won't be greater than 4 boats.

e. How to derive the combined PPF: If both countries produced only boats, country A would produce 8 boats and country B would produce 12 boats, for a total boat production of 20 boats. Now let's suppose that 1 airplane will be produced, and the rest of goods will be boats. Which country will produce this airplane? Country B will produce the first airplane because it has a comparative advantage in producing airplanes. (Note: It is possible to have the airplane produced by country A, but this point would NOT be efficient and therefore would not be on the $PPF_{combined}$). If a second airplane was produced, which country would manufacture it? Again it is country B, because it has a comparative advantage in producing airplanes. We can continue this argument until we get to the point (6,8). Country B can only produce a maximum of 6 airplanes, so if the 7^{th} and 8^{th} airplanes are produced, they must be manufactured by country A. That's why we get a "kink" at the point (6,8). Note that the upper part of $PPF_{combined}$ is parallel with PPF_B, and the lower part of $PPF_{combined}$ is parallel with PPF_A.

Note: We could have started this argument from the horizontal axis and it would lead us to the same result: if both countries produce only airplanes, they will produce 2+6 = 8 airplanes total. If we start producing boats, country A will be the one who will produce the 1^{st} (2^{nd}, 3^{rd}, etc.) boat, because it has a comparative in producing boats. Country A cannot produce more than 8 boats, so the 9^{st} (10^{nd} , 11^{rd}, etc.) boat must be produced by country B.

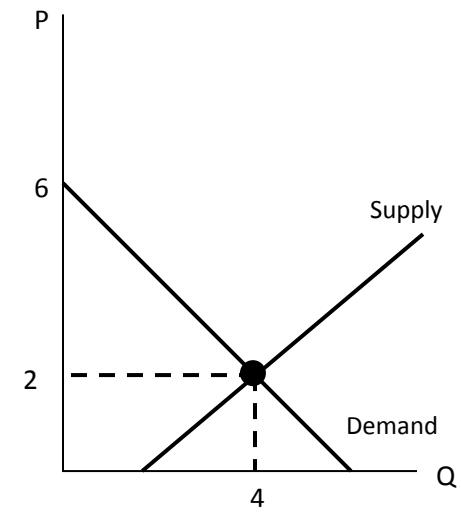
Combined PPF:



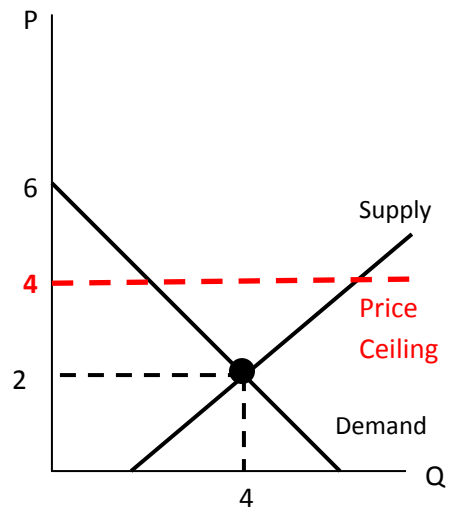
4. a. Equilibrium: P=2, Q=4.

b. Since the price ceiling is above the equilibrium price, there is no effect on the equilibrium. So, the equilibrium is P=2, Q=4, and there is no excess demand or excess supply.

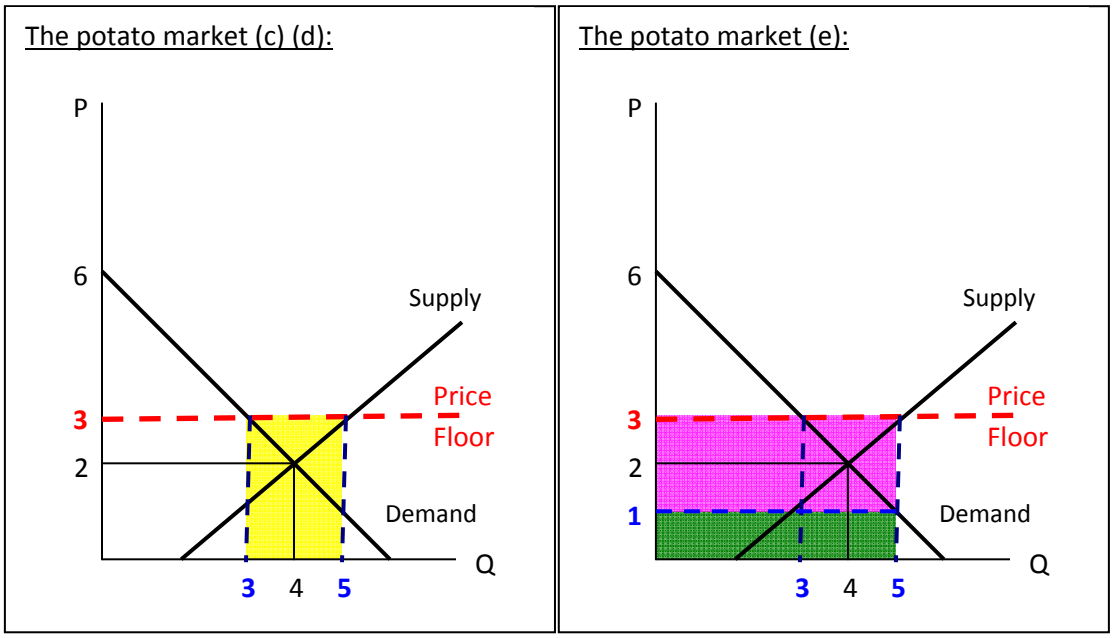
The potato market (a):



The potato market (b):



c. At the price floor, 3 pounds of potatoes will be demanded and 5 pounds of potatoes will be supplied. Therefore, there is an excess supply equal to 2 pounds of potatoes.



d. Yellow is the direct cost of the support program.

The direct cost is 2*3=$6 and the total cost is 6+2*2=$10.

e. Pink is the cost to the government for this subsidy program.

Green is the cost to consumers with this subsidy program.

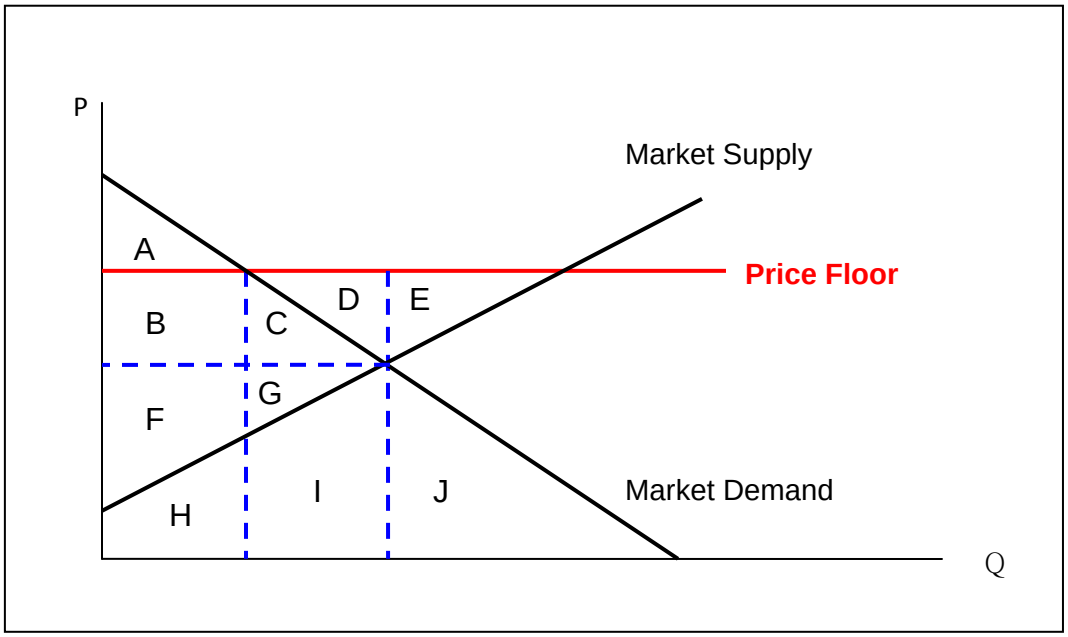
5 pounds of potatoes will be demanded with the subsidy program.

5 pounds of potatoes will be supplied with the subsidy program.

The cost to the government is (3-1)*5=$10.

The cost to consumers is 1*5=$5.

5.



a. Area A, B, and C are the consumer surplus before the price floor.
b. Area F and G are the producer surplus before the price floor.
c. Area A is the consumer surplus after the price floor.
d. Area F and B are the producer surplus after the price floor.
e. Area C and G are the deadweight loss after the price floor.
f. Are B is the area of consumer surplus transferred to producer surplus after the imposition of the price floor.