

Whitman College  
Econ 107  
Exam 1  
February 7, 2003

Write all answers on the exam. Show all of your work. The exam ends at 10:50.

1. The table below shows some points on the production possibilities frontier (PPF) of a hypothetical society.

(a) (5pts) Is the combination of 2 units of shelter and 40 units of food attainable? Explain how you can tell.

(b) (5pts) Is the combination of 0 units of shelter and 44 units of food productively efficient? Explain how you can tell.

(c) (5pts) Define opportunity cost.

(d) (5pts) What is the opportunity cost of producing the third unit of shelter?

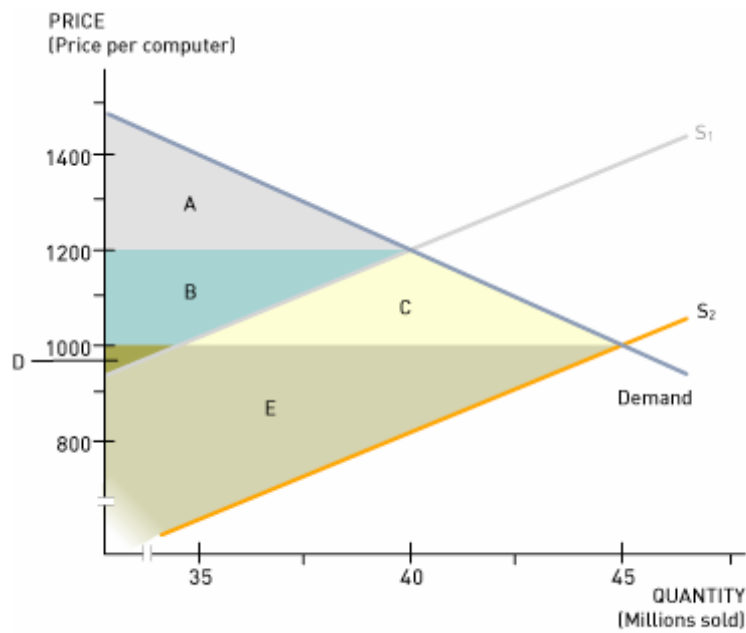
(e) (5pts) Does this PPF exhibit the law of increasing opportunity cost? Explain how you can tell.

(f) (5pts) What causes the law of increasing opportunity cost? Explain.

Shelter	Food
0	44
1	42
2	37
3	29
4	19
5	0

2. (15pts) As of last semester, there were 500 parking spaces available on the campus of Ivy College. The price of a campus parking permit was \$40, and the quantity demanded equaled the quantity supplied at this price. This semester, however, the number of parking spaces has increased by 10%. The college administration estimates that the magnitude of the price elasticity of demand for parking spaces is 0.5. By how much would the price of a parking permit have to change in order to make the quantity supplied of parking spaces equal the quantity demanded? In your answer, specify the direction of the change and the percentage of the change in the price.

3. Assume that the market for personal computers (PCs) is perfectly competitive. Suppose that a reduction in the cost of producing PCs causes the rightward shift in the supply curve shown in the graph below. The demand curve for PCs does not shift. Use this graph to answer questions (a)- (g) on the next page.



- (a) (3pts) Which of the following describes this rightward shift in the supply curve?
- (i) an increase in supply
  - (ii) a decrease in supply
  - (iii) neither an increase nor a decrease in supply
- (b) (3pts) Which of the following describes what happens to demand?
- (i) an increase in demand
  - (ii) an increase in quantity demanded
  - (ii) both an increase in demand and an increase in quantity demanded
- (c) (2pts) Which area (or areas) on the graph show the total consumer surplus before the reduction in the cost of producing PCs?
- (d) (2pts) Which area (or areas) on the graph show the total producer surplus before the reduction in the cost of producing PCs?
- (e) (2pts) Which area (or areas) on the graph show the total consumer surplus after the reduction in the cost of producing PCs?
- (f) (2pts) Which area (or areas) on the graph show the total producer surplus after the reduction in the cost of producing PCs?
- (g) (6pts) Suppose that the government had funded applied science research which discovered methods to reduce the cost of producing PCs, which in turn caused the shift in supply of PCs shown on the graph. What area (or areas) on the graph show the benefits to society of this research? Explain your answer.

4. Consider the market for labor services, where the demand for labor is on the part of employers, the supply of labor comes from workers, and the price of labor is the wage. Assume that the labor market is perfectly competitive.

(a) (5pts) Draw a supply and demand diagram for labor. Be sure to label your axes. On your diagram, indicate the equilibrium wage.

(b) (10pts) Suppose that legislation sets the minimum wage above the equilibrium wage. On your graph from part (a), indicate the minimum wage. On your graph, show the quantity of labor demanded and the quantity of labor supplied now that the minimum wage is in effect. On your graph, indicate the number of people who lose jobs because of the minimum wage.

(c) (10pts) If the demand curve for labor were relatively more elastic than in your graph from part (b), how would that effect the number of people who lose jobs due to the minimum wage? Explain, with reference to a supply and demand diagram for labor identical to your graph in part (a), except that the demand curve for labor is relatively more elastic.

(d) (10pts) What factors would make the demand for labor relatively elastic?