NAME: _____

Student ID No.: _____

Economics 441
International Trade Theory
Prof. Alan Deardorff
Final Exam

December 8, 2008

INSTRUCTIONS

1. Please do not open the exam until you are told to do so.

2. **PLACE YOUR NAME AND STUDENT ID NO. ON THE EXAM.**

3. This exam has 60 points and you have approximately 120 minutes to complete the test.

4. Check that you have all 9 pages of the exam, including this cover sheet.

5. Answer all questions on these sheets.

6. Good luck!

1. (10 points) The figures below show the production possibilities of the two countries, *A* and *B*, in a Ricardian model. In an initial equilibrium with free trade, Country *A* is producing at point P_1^A and consuming at point C_1^A, while Country *B* is consuming at point C_1^B. Assume that the countries have identical, homothetic preferences.

   a. Which country is exporting good Y? (A, B, both, or neither) *A*

   b. Draw the point at which Country B is producing in the initial equilibrium, and label it P_1^B.

   c. Suppose now that the labor force in Country A becomes larger, so that it becomes able to produce at the point shown as P_2^A (just there; no higher). Draw into the figures the following:

      i. The new production possibility frontier of Country A

      ii. The new consumption point of Country A and label it C_2^A

      iii. The new production point of Country B and label it P_2^B

   d. As a result of this growth of Country A, which country produces the following (A, B, both, or neither):

      i. More X? *B*

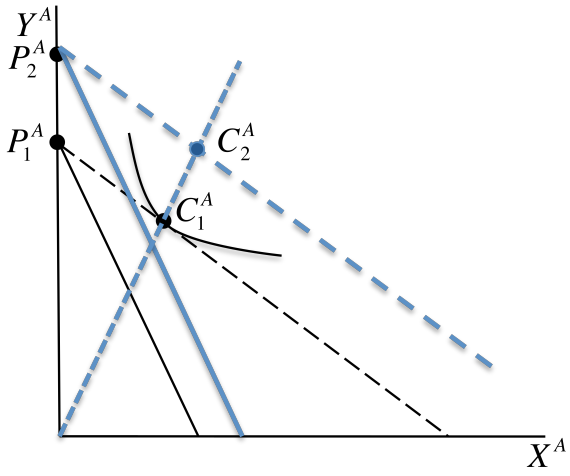
      ii. More Y? *A*

      iii. Less X? *neither*

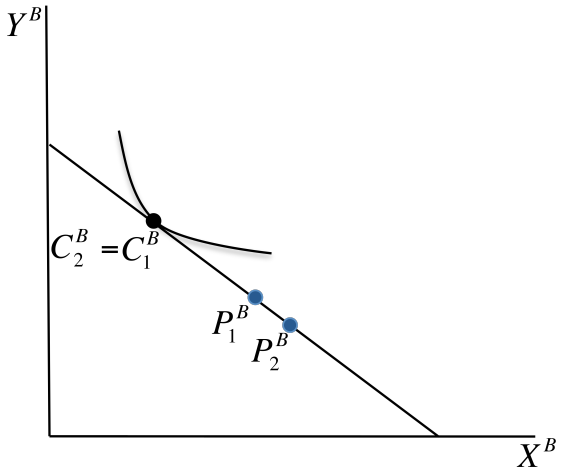
      iv. Less Y? *B*

   e. In terms of welfare per person, which country is made better off as a result of this growth? (A, B, both, or neither) *neither*

Country A



Country B



2. (7 points) In each of the situations described below, which country (A, B, both, or neither) has a comparative advantage in good X?

a. Country A is twice as productive as Country B in producing good X and three times as productive in producing good Y. *B*

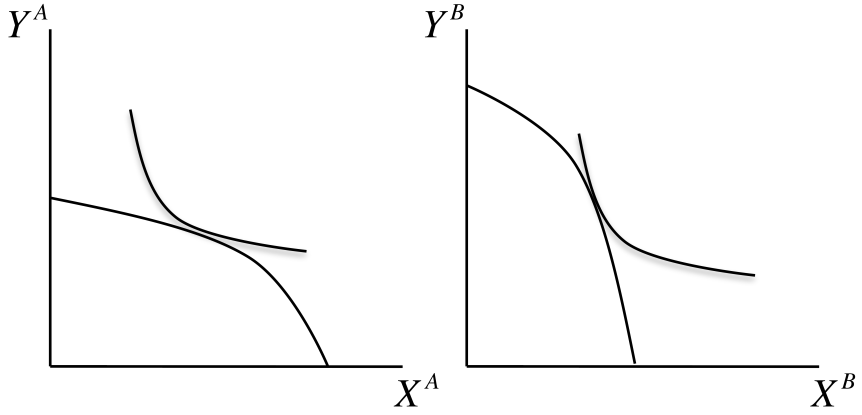
b. Country B uses twice as much labor per unit of good X and three times as much labor per unit of good Y, compared to country A. *B*

c. After starting with identical productivities in both sectors in both countries, Country A's productivity in both sectors doubles, while Country B's productivity remains unchanged. *Neither*

d. Both countries require 10 units of labor per unit of good X. Country B has an absolute advantage, compared to Country A, in producing good Y. *A*

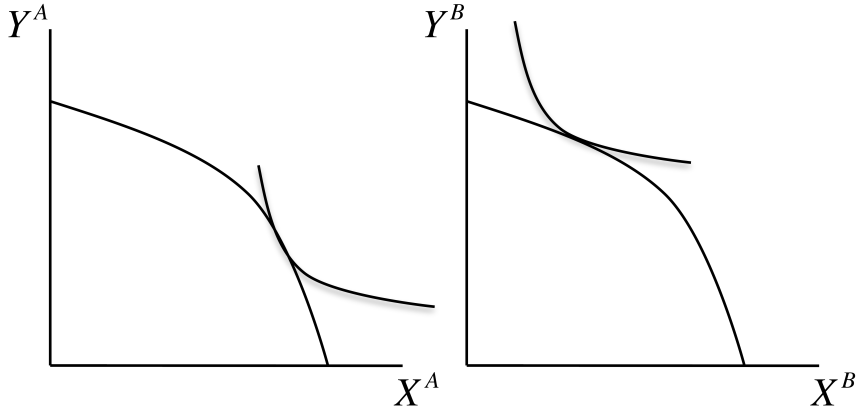
e. Autarky prices are $P_X^A = \$4.00$, $P_Y^A = \$8.00$, $P_X^B = \$2.00$, $P_Y^B = \$1.50$ *A*

f. Production possibilities and preferences appear as follows:



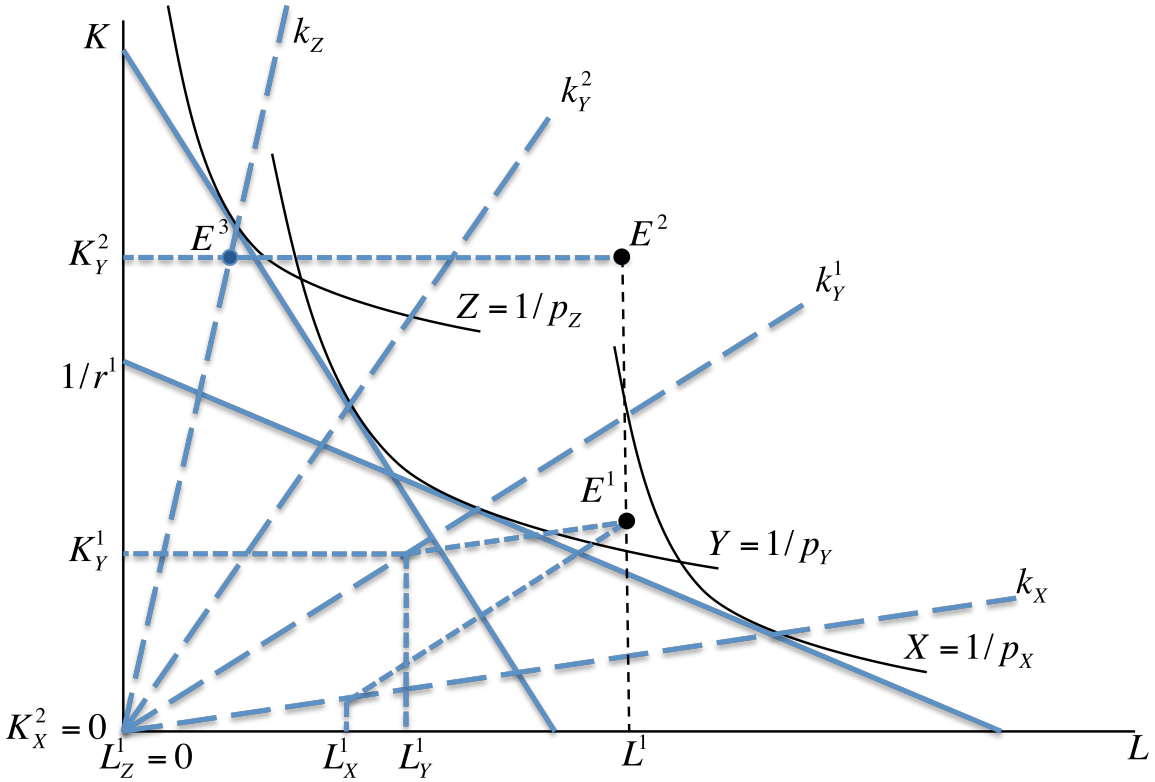
A

g. Production possibilities and preferences appear as follows:



B

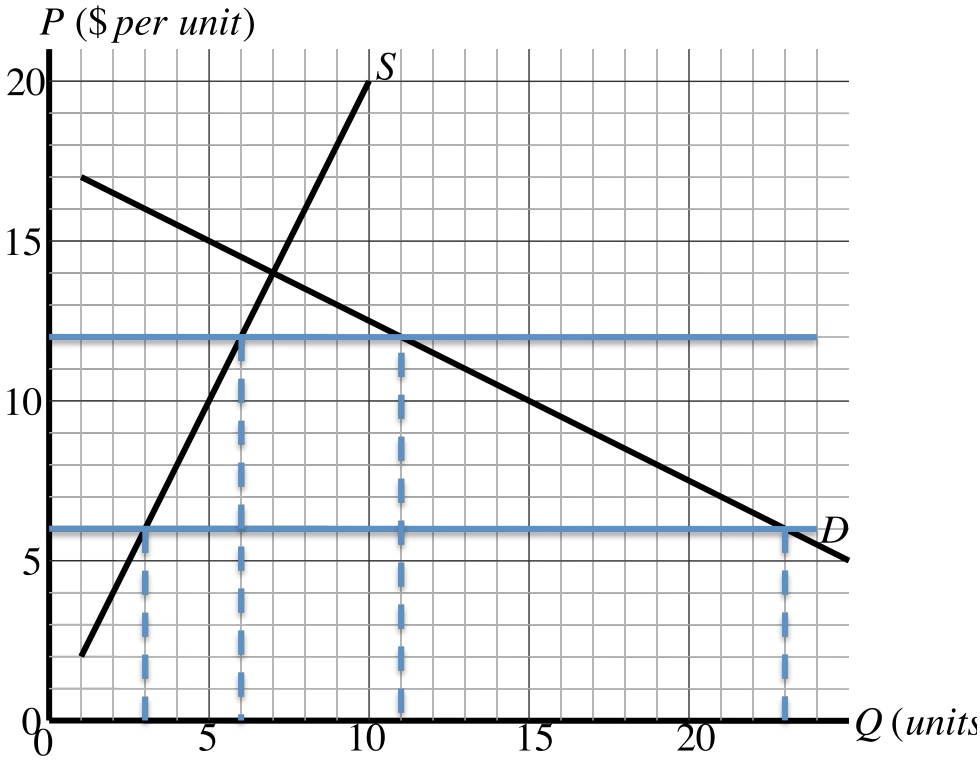
3. (9 points) The figure below shows the unit-value isoquants for three goods, *X*, *Y*, and *Z*, in a small open economy that faces world prices p_X, p_Y, and p_Z respectively. Initially the country's endowments of labor, L^1, and capital, K^1, are given by the point E^1. Add lines and labels to the figure as necessary to identify the following. Be sure to show enough so that we can tell how you got your results.
   a. With the initial endowments E^1:
      i. Labor employed in producing good *X*: L_X^1
      ii. Labor employed in producing good *Y*: L_Y^1
      iii. Labor employed in producing good Z: L_Z^1
      iv. Capital employed in producing good *Y*: K_Y^1
      v. The rental price of capital: r^1
   b. Now suppose that the country's endowment of capital grows, so that its endowment moves to the point shown as E^2. Now identify:
      i. Capital employed in producing good *X*: K_X^2
      ii. Capital employed in producing good *Y*: K_Y^2
   c. Finally, suppose that the country's labor force declines, its capital stock remaining what it was at E^2. Find the new endowment point in the figure at which the country would first produce *only* good *Z*, and label it E^3.
   d. One last question: Is the wage of labor at endowment E^2 higher, lower, or the same as at endowment E^1? *higher*



4. (7 points) The table below shows, in the four columns at the right, four of the models we have studied in the course. In the rows below are stated several properties or results that emerge most clearly from just one of these models. For each row, place a check mark in the column of the model to which it corresponds.

	Small-country, 2-good H-O Model	Small-country Standard Specific Factors Model	Duopoly Model	External Increasing Returns Model
Intraindustry trade			✓	
Rybczynski Theorem	✓			
Factor-price insensitivity	✓			
Increase in a country's labor force (only) causes it to produce more of every good.		✓		
Multiple equilibria				✓
Country may be worse off with free trade than in autarky				✓
Increase in price of a good must benefit owners of capital in that industry		✓		

5. (11 points) The figure shows supply and demand curves for a good within a small country, drawn on a grid so that you can see the prices and quantities. With free trade, the country faces a world price of $6 for the good. It then levies a 100% *ad valorem* tariff. In the figure, draw lines showing the prices and quantities of the good in the country under free trade and with the tariff. Then fill in the table below with the requested numerical quantities and values. (If possible, your answers will be graded based on how you've drawn the figure.)



a. With free trade

Quantity supplied	3
Quantity imported	20

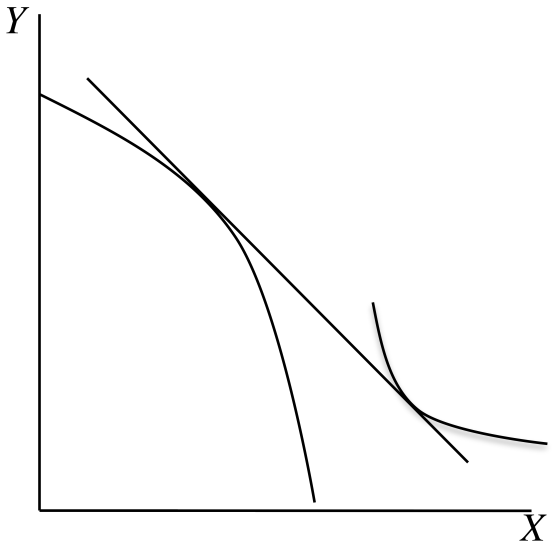
b. With a 100% tariff

Domestic price	$12
Quantity demanded	11
Quantity imported	5
Tariff revenue	$30

c. Welfare effects of moving from free trade to tariff (specify + or – as well as the number)

On suppliers	+$27
On demanders	–$102
On country as a whole	–$45

6. (7 points) Consider the two-good general equilibrium model shown at the right, of a country that, with free trade, imports good *X* and exports good *Y*. Consumer preferences in the country are homothetic. The country now levies an import tariff that is not large enough to eliminate trade entirely. Identify each of the following statements about the effect of this tariff as being: "necessarily true," "necessarily false," or "ambiguous." You are welcome to draw in the figure, but you will be graded only on the answers below.



If the country is <u>small</u>, taking world prices as given:

a. Its output of good *X* increases.
- ✓ necessarily true
- ____ necessarily false
- ____ ambiguous

b. Its output of good *Y* increases
- ____ necessarily true
- ✓ necessarily false
- ____ ambiguous

c. Its consumption of good *X* decreases
- ✓ necessarily true
- ____ necessarily false
- ____ ambiguous

d. Its consumption of good *Y* increases
- ____ necessarily true
- ____ necessarily false
- ✓ ambiguous

e. Its exports of good *Y* decrease
- ✓ necessarily true
- ____ necessarily false
- ____ ambiguous

f. Its welfare (i.e., utility) decreases
- ✓ necessarily true
- ____ necessarily false
- ____ ambiguous

If the country is <u>large</u> enough to affect world prices:

g. Its welfare (i.e., utility) decreases
- ____ necessarily true
- ____ necessarily false
- ✓ ambiguous

7. (6 points) Suppose that a small country initially imports steel. It then levies a specific tariff of $120 per ton of steel and, as a result, its imports of steel decline by 40 tons per year and it collects tariff revenue of $9,600 per year.

   Assume first that the country's market for steel has a large number of perfectly competitive producers.

   a. What is the dead-weight loss due to this tariff? *$2,400*

   b. How much steel is being imported with the tariff? *80 tons*

   c. If the tariff were replaced by an import quota equal to that same quantity of imports, and if the quota rights were sold by the government in a competitive market, would the country gain, lose, or be unaffected, compared to the tariff case? *Unaffected*

   d. If instead the quota were given away free to foreign exporters, what would be the net welfare effect of the quota on the country, compared to free trade? *A loss of $12,000*

   Suppose instead that the country has only a single producer of steel (and that it is still the case that a $120/ton tariff reduces imports by 40 tons/yr and generates revenue of $9,600/yr).

   e. If, again, the tariff is replaced by a quota equal to the same quantity of imports, how will the domestic price compare to the price under the tariff? I.e., will the price with the quota be higher, lower, or the same? *Higher*

   f. If the quota in (e) is sold as in (c), will the revenue from the sale be higher, lower, or the same as the tariff revenue? *Higher*

8. (3 points) Japan has no domestic producers of silk. If it had no tariffs on silk, it could import silk from Thailand for $7 per yard or it could import it from China for $6 per yard. Suppose initially, however, that it has a tariff of $7 per yard from both countries.

   a. From which country will Japan import silk initially? *China*

   b. If Japan eliminates its silk tariff on imports from Thailand, but not from China, from whom will it now import silk? *Thailand*

   c. Suppose Japan imported 10 yards of silk initially and imports 15 yards of silk after eliminating the tariff against Thailand. Does Japan gain, lose, or remain unaffected by the change? (Extra credit: what is the size of Japan's welfare change?) *Japan gains (+$5)*

*Demanders gain (c+d) = 6*10+6*5/2 = 75. Government loses revenue of (c+e) = 7*10=70. Thus country gains 75-70=5. (Note that quantity of trade diverted equals 10 while quantity of trade created equals 5, which might suggest that trade diversion exceeds trade creation. But the heights of the areas matter too, and in this case outweigh the widths.)*