1. Let's examine a trade agreement between U.S and Mexico. We will examine a simple two goods case, brooms and microchips.

Each country has 10 workers who can produce either microchips or brooms. A worker in U.S can produce 9 microchips a day or 1 broom a day. A worker in Mexico can produce 1 microchip or 9 brooms a day. This can be summarize in the following table:

<table>
<thead>
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<th>Output per worker</th>
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<tbody>
<tr>
<td></td>
<td>U.S.</td>
</tr>
<tr>
<td>Microchips</td>
<td>9</td>
</tr>
<tr>
<td>Brooms</td>
<td>1</td>
</tr>
</tbody>
</table>

a) Draw the production possibilities frontier (PPF) of microchips and brooms for U.S.

b) Draw the production possibilities frontier (PPF) of microchips and brooms for Mexico.

c) Explain how trade can benefit both the U.S and Mexico. Which country will import brooms and which country microchips?

d) Suppose the terms of trade (i.e., prices) are such that one microchip is traded for one broom. Furthermore, suppose each country wants to consume the same amount of brooms and microchips. Find (i) how many microchips and brooms are produced in each country, (ii) the consumption of brooms and microchips in each country, and (iii) the trade between U.S and Mexico.

e) If the profits of the brooms and microchips producers are higher the more they produce, who will oppose and who will support the agreement in the U.S?
2. Mr. Magus, who is very concerned about the agreement (he claims that not only will the owners of the broom factories lose, but also that many workers in the broom industry do not like to produce microchips), has invented a new way to produce brooms. Now a worker in the U.S. can produce 40 brooms a day:

<table>
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<tbody>
<tr>
<td></td>
<td>U.S.</td>
</tr>
<tr>
<td>Microchips</td>
<td>9</td>
</tr>
<tr>
<td>Brooms</td>
<td>40</td>
</tr>
</tbody>
</table>

Mr. Magnus claims that now, since U.S. has absolute advantage in microchips and brooms, trade has no benefits.

a) Explain how trade can benefit both U.S and Mexico, even under these conditions. Which country will import brooms and which country microchips?

b) Suppose the terms of trade are such that one microchip is traded for five brooms, and both countries want to consume the same amount of brooms as microchips. Again find (i) how many microchips and brooms are produced in each country, (ii) the consumption of brooms and microchips in each country, and (iii) the trade between U.S and Mexico.

3. a) If a computer costs $1,000 and the exchange rate between the Japanese yen and the U.S dollar is 121 (121 yen = 1 dollar), what is the price of a computer in yens?

c) If a BMW costs 40,000 euros and the exchange rate between the euro and the dollar is 0.72 (0.72 euros = 1 dollar), what is the price of the BMW in dollars?

4. a) Explain what are a trade surplus and a trade deficit.

b) Look up Table 34.1 of our textbook (pp. 664 in the 10th edition and p. 666 in the 9th edition). This table describes U.S goods and services balance of trade. In which years did the U.S have a trade surplus? In which years did it have a trade deficit?

c) Use your answer to (b) to explain how the U.S became the largest debtor nation in the world.
5. Assume prices and interest rates are fixed. An economy is described by the following equations:

\[ C = 100 + 0.6Y \]
\[ I = 50 \]
\[ G = 50 \]
\[ E = 20 \]
\[ M = 20 + 0.1Y \]

where \( E \) = exports, and \( M \) = imports.

a) Find the equilibrium output, consumption, imports, and the trade deficit.

b) What is the G multiplier?

c) If government spending is increased by 10 to 60, what is the new equilibrium output? What are the new levels of consumption, imports, and the trade deficit?

d) Is the multiplier in an open economy (economy with imports and exports) greater or smaller than the multiplier in a closed economy (economy without imports or exports)? Explain why.