To answer all problems in this worksheet, suppose that the U.S. and Japan each produce cars and TVs using labor as the only input according to the table below:

<table>
<thead>
<tr>
<th>Hours of Labor</th>
<th>Wage Rate per Hour</th>
</tr>
</thead>
<tbody>
<tr>
<td>per car</td>
<td>per TV</td>
</tr>
<tr>
<td>U.S.</td>
<td></td>
</tr>
<tr>
<td>800</td>
<td>200</td>
</tr>
<tr>
<td>Japan</td>
<td></td>
</tr>
<tr>
<td>1200</td>
<td>400</td>
</tr>
<tr>
<td>of Labor</td>
<td>100 yen</td>
</tr>
<tr>
<td>$20</td>
<td></td>
</tr>
</tbody>
</table>

1. Who has the comparative advantage in
   a. TV production? Why?
   b. car production? Why?

2. Suppose the U.S. has 8 million hours of labor per year to allocate between the production of cars and TVs. Draw the PPF for the U.S.

3. Suppose that, of the range of exchange rates for bi-directional trade occurs, it is at the least favorable end for the U.S. Draw the consumption possibilities curve (CPC) for the U.S. given that it specializes in the good that it has the comparative advantage in. What does the CPC look like when the exchange rate is at the most favorable end of the range?

4. How do the PPC and CPC illustrate the "gains from trade"?

5. Suppose that the U.S. and Mexico have a closed economy and allows no imports or exports. Demonstrate how allowing trade in a particular good affects consumers and producers in the importing and exporting country. Also, show that on net, society is made better off.
Answer Key for Worksheet on Gains from Trade

1a. The U.S. has the comparative advantage in TV production because its opportunity cost per TV is 1/4 car, which is less than Japan's opportunity cost of 1/3 car.

b. Japan has the comparative advantage in car production because its opportunity cost per car is 3 TVs, which is less than the U.S. opportunity cost of 4 TVs.

2. The PPC is computed by taking 8 million hours and dividing by the necessary hours per unit of the two commodities (8m/800 per car = 10,000 cars; 8m/200 per TV = 40,000 TVs).

3. The CPC for the exchange rate of $\frac{3}{1}$ is computed as follows. First, the U.S. will specialize and produce 40,000 TVs. For the U.S., the most favorable exchange rate at which bidirectional trade occurs is $\frac{3}{1}$ TVs per car. Thus, if they trade all 40,000 TVs for cars, they can consume 13,333 cars. For the U.S., the least favorable exchange rate is $\frac{4}{1}$ TVs per car (which is identical to their own internal terms of trade). In this case, if they trade all 40,000 TVs, they could consumer 10,000 cars.

4. The fact that the CPC when the exchange rate is $\frac{3}{1}$ TVs per car is further to the right than the PPC indicates that, with trade, the U.S. can consume more than it can produce. If, however, the exchange rate were $\frac{4}{1}$ TVs per car, the U.S. would receive no gains from trade since the PPC and CPC would be identical. At the $\frac{4}{1}$ TVs per car exchange rate, all of the gains from trade accrue to Japan.
5. The example below demonstrates who the winners and losers are when trade is allowed and the U.S. begins importing copper and Mexico exports the copper.

![Copper Market Diagram](image)

copper market (quantities in millions of lbs per year)

**A. U.S.**
1. before trade: \(P=12, \ Q=20\)
2. after trade: \(P=10, \ Q_s=14, \ Q_d=28; \text{imports}\)=14
   i. increase in consumers surplus=48m
   ii. decrease in producers surplus=34m
   iii. net improvement=14m

**B. Mexico**
1. before trade: \(P=7, \ Q=15\)
2. after trade: \(P=10, \ Q_d=12; \ Q_s=26; \text{exports}=14\)
   i. increase in producers surplus=$61.5m
   ii. decrease in consumers surplus=$40.5 m.
   iii. net improvement=$21m.

**C. Results:**
1. consumers in the importing country win.
2. producers in the importing country lose.
3. consumers in the exporting country lose.
4. producers in the exporting country win.
5. on net, gains exceed losses in both countries.