1. Below are some data from the land of milk and honey.

<table>
<thead>
<tr>
<th>Year</th>
<th>Price of Milk</th>
<th>Quantity of Milk</th>
<th>Price of Honey</th>
<th>Quantity of Honey</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>$1</td>
<td>100</td>
<td>$2</td>
<td>50</td>
</tr>
<tr>
<td>2014</td>
<td>$1</td>
<td>200</td>
<td>$2</td>
<td>100</td>
</tr>
<tr>
<td>2015</td>
<td>$2</td>
<td>200</td>
<td>$4</td>
<td>100</td>
</tr>
</tbody>
</table>

**Answer:**

a. Calculating nominal GDP:
2013: ($1 \times 100 ) + ($2 \times 50 ) = $200
2014: ($1 \times 200 ) + ($2 \times 100) = $400
2015: ($2 \times 200 ) + ($4 \times 100 ) = $800

Calculating real GDP (base year 2013):
2013: ($1\times 100 ) + ($2 \times 50 ) = $200
2014: ($1 \times 200 ) + ($2 \times 100) = $400
2015: ($1 \times 200 ) + ($2 \times 100 ) = $400

Calculating the GDP deflator:
2013: ($200/$200) \times 100 = 100
2014: ($400/$400) \times 100 = 100
2015: ($800/$400) \times 100 = 200
b. Percentage change in nominal GDP in 2014
   \[\frac{($400 - $200)}{$200} \times 100 = 100\% .\]

   Percentage change in nominal GDP in 2015
   \[\frac{($800 - $400)}{$400} \times 100 = 100\% .\]

   Percentage change in real GDP in 2014
   \[\frac{($400 - $200)}{$200} \times 100 = 100\% .\]

   Percentage change in real GDP in 2015
   \[\frac{($400 - $400)}{$400} \times 100 = 0\% .\]

   Percentage change in the GDP deflator in 2014
   \[\frac{(100 - 100)}{100} \times 100 = 0\% .\]

   Percentage change in the GDP deflator in 2015
   \[\frac{(200 - 100)}{100} \times 100 = 100\% .\]

   Prices did not change from 2013 to 2014. Thus, the percentage change in the GDP deflator is zero. Likewise, output levels did not change from 2014 to 2015. This means that the percentage change in real GDP is zero.


2. One day, Barry the Barber, Inc., collects $400 for hair-cuts. Over this day, his equipment depreciates in value by $50. Of the remaining $350, Barry sends $30 to the government in sale taxes, takes home $220 in wages, and retains $100 in his business to add new equipment in the future. From the $220 that Barry takes home, he
pays $70 in income taxes. Based on this information, compute Barry’s contribution to the following measures of income.

**Answer:**

a. GDP equals the dollar amount Barry collects, which is $400.

b. NNP = GDP – depreciation = $400 – $50 = $350.


e. Disposable personal income = personal income – personal income tax = $220 – $70 = $150.

3. Suppose that people consume only three goods, as shown in the table.

<table>
<thead>
<tr>
<th></th>
<th>Tennis balls</th>
<th>Golf balls</th>
<th>Bottles of Gatorade</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2014</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Price</td>
<td>$2</td>
<td>$4</td>
<td>$1</td>
</tr>
<tr>
<td>Quantity</td>
<td>100</td>
<td>100</td>
<td>200</td>
</tr>
<tr>
<td><strong>2015</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Price</td>
<td>$2</td>
<td>$6</td>
<td>$2</td>
</tr>
<tr>
<td>Quantity</td>
<td>100</td>
<td>100</td>
<td>200</td>
</tr>
</tbody>
</table>

**Answer:**
a. The percentage change in the price of tennis balls is 
\[
\frac{\$2 - \$2}{\$2} \times 100 = 0\%.
\]
The percentage change in the price of golf balls is 
\[
\frac{\$6 - \$4}{\$4} \times 100 = 50\%.
\]
The percentage change in the price of Gatorade is 
\[
\frac{\$2 - \$1}{\$1} \times 100 = 100\%.
\]

b. The cost of the market basket in 2014 is 
\[
(100 \times \$2) + (100 \times \$4) + (200 \times \$1) = \$800.
\]
The cost of the market basket in 2015 is 
\[
(100 \times \$2) + (100 \times \$6) + (200 \times \$2) = \$1,200.
\]

Using 2014 as the base year, we can compute the CPI in each year:
\[
2014 = \left(\frac{\$800}{\$800}\right) \times 100 = 100
\]
\[
2015 = \left(\frac{\$1,200}{\$800}\right) \times 100 = 150
\]

We can use the CPI values to compute the percentage change in the overall price level:
\[
\frac{(150-100)}{100} \times 100\% = 50\%.
\]

c. This would lower my estimation of the inflation rate because the value of a bottle of Gatorade is now greater than before. The comparison should be made on a per-ounce basis.

d. More flavors enhance consumers' well-being. Thus, this would be considered a change in quality and would also lower my estimate of the inflation rate.
4. Suppose that a borrower and a lender agree on the nominal interest rate to be paid on a loan. Then inflation turns out to be higher than they both expected.

**Answer:**

a. When inflation is higher than was expected, the real interest rate is lower than expected. For example, suppose the market equilibrium has an expected real interest rate of 3% and people expect inflation to be 4%, so the nominal interest rate is 7%. If inflation turns out to be 5%, the real interest rate is 7% minus 5% equals 2%, which is less than the 3% that was expected.

b. Because the real interest rate is lower than was expected, the lender loses and the borrower gains. The borrower is repaying the loan with dollars that are worth less than was expected.

c. Homeowners in the 1970s who had fixed-rate mortgages from the 1960s benefited from the unexpected inflation, while the banks that made the mortgage loans were harmed.

5. In the 1990s and the first decade of the 2000s, investors from Asian economies of Japan and China made significant direct and portfolio investments in the United States. At the time, many Americans were unhappy that this investment was from foreigners.

**Answer:**

a. The United States benefited from the Chinese and Japanese investment because it made her capital stock larger, increasing the rate of economic growth. Further more, GNP of the United States
was lower than GDP of the United States because some of the returns on the investments went abroad.

b. It would have been better for Americans to make the investments because GNP would be higher. They would have received all of the returns on the investments, instead of the returns going to China and Japan.