Practice problems for calculation of real GDP, real income, CPI and GDP deflator
~Please let me know if you have any questions. ☺~

1. In 1995 the NGDP = $100 billion and RGDP = $120 billion. Calculate the GDP deflator for this economy in 1995.

2. The nominal income of an employee in Chuckecheese in 1992 was $12,000. The CPI for 1992 (the base year) is 100, and the CPI for 1993 is 115. What would the income of the same employee be in 2003 to keep him at the same purchasing power as in 1992?

3. We have the following data on nominal GDP and the real GDP for 2002 and 2003:

<table>
<thead>
<tr>
<th></th>
<th>2002</th>
<th>2003</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal GDP</td>
<td>$150 billion</td>
<td>$151 billion</td>
</tr>
<tr>
<td>Real GDP (base year 1992)</td>
<td>$148 billion</td>
<td>$146 billion</td>
</tr>
</tbody>
</table>

Calculate the GDP deflator for 2002 and 2003 and also calculate the annual inflation rate in the GDP deflator.


6. The table below presents some recent macro data for the United States.

<table>
<thead>
<tr>
<th></th>
<th>Nominal income for a typical family of four in the U.S.</th>
<th>RGDP per capita</th>
<th>GDP deflator (2000=100)</th>
<th>CPI-all items, All urban consumers (1982-84=100)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>$41,451</td>
<td>$28,448</td>
<td>81.59</td>
<td>134.2</td>
</tr>
<tr>
<td>2000</td>
<td>$62,228</td>
<td>$34,774</td>
<td>100.00</td>
<td>174.6</td>
</tr>
</tbody>
</table>

a) How much was NGDP per capita in the year 2000?
b) Calculate the average annual growth rate in the real income of a typical family of four in the U.S. over the period 1990-2000. Show your work.
c) Calculate the annual inflation rate in the GDP deflator and in the CPI.
7. An economy’s NGDP, RGDP, and GDP deflator data are given as follows (in billions of $)

<table>
<thead>
<tr>
<th></th>
<th>2001</th>
<th>2001</th>
</tr>
</thead>
<tbody>
<tr>
<td>NGDP</td>
<td>12</td>
<td>12.5</td>
</tr>
<tr>
<td>RGDP</td>
<td></td>
<td>10.4</td>
</tr>
<tr>
<td>GDP deflator</td>
<td></td>
<td>118</td>
</tr>
</tbody>
</table>

a) Fill in the blanks and show your work.
b) Calculate the annual rate of growth of GDP from 2001 to 2002.

Answers:
1. GDP deflator = 83.3

2. The employee needs to be earning 15% more to keep him at par with 1992. His/her income in 2003 should be $13,800.

3. GDP deflator in 2002 = 101.35; GDP deflator in 2003 = 103.42; Inflation rate in the GDP deflator = 2.05%.

4. Real income in 2002 = $25,000; Real income in 2003 = $25,000; The %change in real income is = 0%.

5. NDGP for 2002 = $240 billion;

6. a) NGDP = (RGDP/GDP deflator)*100 = $34,774 (in the base year the RGDP is just equal to the NGDP);
b) Real income in 1990 = (Nominal income in 1990 / CPI in 1990) * 100 = $30,887.5
   Real income in 2000 = (Nominal income in 2000 / CPI in 2000) * 100 = $35,640.3
   Growth rate = ($35,640.3 - $30,887.5) / $30,887.5 * 100 = 15.4%
   Average annual growth rate = 15.4% / 10 = 1.54%.
c) Annual inflation rate in the GDP deflator = 22.5% / 10 years = 2.25%.
d) Annual inflation rate in the CPI = 30.1% / 10 years = 3.01%.

7. a) RGDP in 2001 = $10.17 billion;
   GDP deflator for 2002 = 120.19;
b) Annual growth rate of RGDP = 2.26%;