Name KEY Per. ____ Date _____

Unit 2 Practice Problems

1. Complete the following table:

	Year 1	Year 2	Year 3
Gross Domestic Product	4,532	4,804	5,140
Consumption	3,127	3,320	3,544
Investment	589	629	673
Government Purchases	861	913	977
Net Exports	-45	-58	-54

a. What is the largest expenditure component of GDP?

Consumption

b. Does investment include the purchase of stocks and bonds? Why?

No, this is a transfer payment, no new good or service is created

c. Do government purchases include government spending on unemployment checks? Why?

No, transfer payment, nothing new is created

d. What does it mean to say that net exports are negative?

imports > exports, the country brought in a greater value of goods & services than it sent out

2. Suppose the base year in the following table is 2008.

Year	Production of X	Price per Unit of X
2008	20 units	$5
2009	20 units	$10
2010	20 units	$20

a. What is the nominal GDP for:

2008 $100

2009 $200

2010 $400

b. What is the real GDP for:

2008 $100

2009 $100

2010 $100

This lesson was adapted from the 2012 Mankiw Study Guide by David Hakes

Name _____ Per. ____ Date _____

3. Suppose the following table records the total output and prices for an entire economy. Furthermore, suppose the base year in the following table is 2008.

YEAR	PRICE OF SODA	QUANTITY OF SODA	PRICE OF JEANS	QUANTITY OF JEANS
2008	$1.00	200	$10.00	50
2009	$1.00	220	$11.00	50

a. What is the value of nominal GDP in 2008?

$700

b. What is the value of real GDP in 2008?

$700

c. What is the value of nominal GDP in 2009?

$770

d. What is the value of real GDP in 2009?

$720

e. What is the value of the GDP deflator in 2008?

100

f. What is the value of the GDP deflator in 2009?

107

g. From 2008 to 2009, prices rose approximately what percentage?

$\frac{107-100}{100} \times 100 = 7\%$

h. Was the increase in nominal GDP from 2008 to 2009 mostly due to an increase in real output or due to an increase in prices?

nominal increase $= \frac{770-700}{700} \times 100 = 10\%$ prices rose 7%, so it was mostly due to an increase in prices

4. Complete the following table:

YEAR	NOMINAL GDP	REAL GDP	GDP DEFLATOR
1	$100	$100	100
2	$120	$100	120
3	$150	$125	120

a. What is the base year? How can you tell?

Year 1, the GDP price index or deflator = 100

b. From year 1 to year 2, did real output rise or did prices rise? Explain.

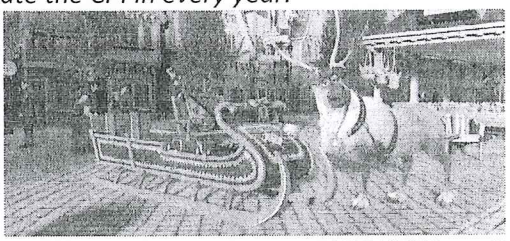
prices rose 20% and real output rose 25%

c. From year 2 to year 3, did real output rise or did prices rise? Explain.

prices stayed the same and real output rose 25%

Name _____ Per. ____ Date _____

5. The following table shows the price and the quantities consumed in the country known as Arendelle. Suppose the base year is 2013. *Also, suppose that 2013 is the year the typical consumption basket was determined, so the quantities consumed during 2013 are the only quantities needed to calculate the CPI in every year.*



YEAR	PRICE OF SLEIGHS	QUANTITY OF SLEIGHS	PRICE OF CARROTS	QUANTITY OF CARROTS	PRICE OF ~~ICE BLOCKS~~ Lettuce	QUANTITY ~~ICE BLOCKS~~ Lettuce
2013	$50	10	$1.00	100	$5	100
2014	$50	12	$1.00	200	$10	50
2015	$60	12	$1.50	250	$20	20

a. What is the value of the CPI in:

2013 100 = $\frac{1100}{1100} \times 100$

2014 145.5 = $\frac{1600}{1100} \times 100$

2015 250 = $\frac{2750}{1100} \times 100$

b. What is the inflation rate in:

2014 45.5 % = $\frac{145-100}{100} \times 100$

2015 71.8 % = $\frac{250-145.5}{145.5} \times 100$

c. What type of bias do you observe in the CPI and corresponding inflation rates you generated above? Explain.

Substitution bias, because as the price of ~~Carrots~~ lettuce increased, the quantity consumed declined significantly

d. If you had a COLA clause in your wage contract based on the CPI calculated above, would your standard of living likely increase, decrease, or stay the same during the years 2013-2015? Why? (A **Cost of Living Adjustment or COLA** is a built in raise in a contract designed to combat inflation)

Increase, the biases of the CPI cause it to overstate inflation

e. Again, suppose you had a COLA clause in your wage contract based on the CPI calculated above. If you personally only consume Carrots (no Sleighs or ~~Ice Blocks~~ lettuce), would your standard of living likely increase, decrease, or stay the same during the years 2013-2015? Why?

Decrease, because the price of Carrots has increased a greater percentage than the CPI

Name _____ Per. ____ Date _____

6. Suppose that you lend your roommate $100 for 1 year at 9 percent nominal interest.
   a. How many dollars of interest will your roommate pay you at the end of the year?

      $9

   b. Suppose at the time you both agreed to the terms of the loan, you both expected the inflation rate to be 5% during the year of the loan. What do you both expect the real interest rate to be on the loan?

      9% - 5% = 4%

   c. Suppose at the end of the year, you are surprised to discover that the actual inflation rate over the year was 8%. What was the actual real interest rate generated by this loan?

      9% - 8% = 1%

   d. In the case described above, actual inflation turned out to be higher than expected. Which of the two of you had the unexpected gain or loss—your roommate (the borrower) or you (the lender)? Why?

      Your roommate (the borrower) gained; you lost because you were paid back dollars of less value than you loaned

   e. What would the real interest rate on the loan have been if the actual inflation rate had turned out to be a whopping 11 percent?

      9% - 11% = -2%

   f. Explain what it means to have a negative real interest rate.

      the negative rate means the lender cannot even break-even on the loan, they lose purchasing power with the re-paid money

7. Suppose there is an increase in the price of imported BMW automobiles. Would this have a larger impact on the CPI or the GDP deflator? Why?

   The CPI because we consume the BMWs in the market basket, but imported BMWs don't count in the GDP

8. Your grandfather quit smoking cigarettes in 1995. When you ask him why he quit, you get a surprising answer. Instead of reciting the health benefits of quitting smoking, he says, "I quit because it was just getting too expensive. I started smoking in 1965 in Vietnam and cigarettes were only $0.45 a pack. The last pack I bought was $2.00 and I just couldn't justify spending more than four times as much on cigarettes than I used to."
   a. In 1965, the CPI was 31.5. In 1995, the CPI was 152.4. While it is commendable that your grandfather quit smoking, what is wrong with his explanation?

      He is only discussing the cost of cigarettes in nominal terms, uncorrected for inflation. It is likely the real cost has not risen as much or even declined.

   b. What is the equivalent cost of a 1965 pack of cigarettes measured in 1995 prices?

      $0.45 × $\left(\frac{152.4}{31.5}\right)$ = $2.18 which is greater than $2.00

   c. What is the equivalent cost of a 1965 pack of cigarettes measured in 1995 prices?

      $2.00 × $\left(\frac{31.5}{152.4}\right)$ = $0.41 which is less than $0.45

   d. Do both methods give the same conclusion about the price of cigarettes? Explain.

      Yes, each measure suggests that, after correcting for inflation, cigarettes were actually more expensive in 1965.

   e. This examples illustrates a concept economists called "money illusion." Why do you think economists might choose the phrase "money illusion" to describe this behavior?

      When people base decisions on values uncorrected for inflation, there may be an illusion that the cost of living has risen.