PROBLEM SET ON MACROECONOMIC CONCEPTS

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Problem 1

An economy produces three goods: cars, computers, and oranges. Quantities and prices per unit for years 2009 and 2010 are as follows:

	2009		2010	
	Quantity	Price	Quantity	Price
Cars	10	$2000	12	$3000
Computers	4	$1000	6	$500
Oranges	1000	$1	1000	$1

A) What is nominal GDP in 2009 and in 2010? By what percentage does nominal GDP change from 2009 to 2010?

B) Using the prices for 2009 as the set of common prices, what is real GDP in 2009 and in 2010? By what percentage does real GDP change from 2009 to 2010?

C) Using the prices for 2010 as the set of common prices, what is real GDP in 2009 and in 2010? By what percentage does real GDP change from 2009 to 2010?

D) Why are the two output growth rates constructed in B) and C) different? Which one is correct? Explain your answer.

E) As in B), use the prices for 2009 as the set of common prices for the purpose of computing real GDP in 2009 and in 2010. Compute the GDP deflator for 2009 and for 2010. Infer the rate of inflation from 2009 to 2010.

F) As in C), use the prices for 2010 as the set of common prices for the purpose of computing real GDP in 2009 and in 2010. Compute the GDP deflator for 2009 and for 2010. Infer the rate of inflation from 2009 to 2010.

G) Why are the two rates of inflation computed in E) and F) different? Which one is correct? Explain your answer.

Problem 2

The Consumer Price Index represents the average price of goods that households consume. Many thousands of goods are included in such an index. Here consumers are represented as buying only pizza and gas as their basket of goods. Here is a representation of the kind of data the Bureau of Economic Analysis collects to construct a consumer price index. In the base year, 2008, both the prices of goods purchased and the quantity of goods purchased are collected. In subsequent years, only prices are collected.

The data: In an average week in 2008, the Bureau of Economic Analysis surveys many consumers and determines that the average consumer purchases 2 pizzas and 6 gallons of gas in a week. Prices change over time. The price per pizza and per gallon in subsequent years are found below.

Year	Price of Pizzas	Price of Gas
2008	$10	$3
2009	$11	$3.30
2010	$11.55	$3.47
2011	$11.55	$3.50
2012	$11.55	$2.50
2013	$11.55	$3.47

A) What is the cost of the consumer price basket in 2008?

B) What is the cost of the consumer price basket in 2009 and in subsequent years?

C) Represent the cost of the consumer price basket as an index number in the years 2008 to 2013. Set the value of the index number equal to 100 in 2008.

D) Calculate the annual rate of inflation using the percent change in the value of the index number between each year from 2009 through 2013.

E) Is there a year where inflation is negative? Why does this happen?

F) What is the source of inflation in the year 2011? How is that different than inflation in the years 2009 and 2010?

G) If I have $100 in 2008. How many baskets of goods can I buy with $100 in 2008?

H) If I have $100 in 2013, how many baskets can I buy with that money in 2013?

I) What is the percentage decline in the purchasing power of my money from 2008 to 2013? How does the percentage decline in the purchasing power of money relate to the change in the price index between 2008 and 2013?

J) From 2009 to 2011, the price of a pizza remains the same. The price of gas rises. How might consumers respond to such a change?

K) Then in 2012, the price of gas falls. What are the implications of such changes in relative prices for the construction of the Consumer Price Index?

L) Suppose the Bureau of Economic Analysis determines that in 2013, the average consumer buys 2 pizzas and 7 gallons of gas in a week. Using the 2013 basket in the years from 2008 to 2013, calculate the Consumer Price Index set equal to 100 in 2013 and moving back in time.

M) Why are the inflation rates slightly different in D) and L)?