Section Question for Homework 1
Economics 101 - Chapters 1-3

1) Consider an economy that only produces and consumes bathing suits (durable good), suntan lotion (nondurable good) and flights to Cancun (service). Use the data below:

	2013	2014
bathing suits:		
price	30$	40$
quantity	100	150
suntan lotion:		
price	6$	7$
quantity	200	300
flights to Cancun		
price	200$	600$
quantity	30	0

Compute the following statistics for 2014, using 2013 as a base year where needed:
a) nominal GDP
b) real GDP
c) GDP deflator
d) CPI

Discuss: Why do the CPI and GDP deflator give different characterizations of how much prices have risen from 2013 to 2014?

Discuss: Which you would recommend as the more accurate reflection of the cost of living in this particular case, and explain your reasoning. (Arguments exist for both choices.)

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2) Consider the following production function: $Y = 9K^{1/3} L^{2/3}$, where the level of capital in the economy is 100 and the level of labor in the economy is 100.

a) Compute the equilibrium real wage and real rental rate on capital.
b) Compute the total payments to labor and that to owners of capital.
c) Show that Euler's theorem holds here, that the sum of total payments to labor and capital equals total production.
d) What fraction of total production goes to paying labor; what fraction toward paying capital? Do you see a shortcut to get these shares by looking at the production function?
e) Suppose that an increase in immigration into the U.S. increases the U.S. labor force. Discuss the effect on the real wage and the real rental price of capital. Would workers currently in the U.S. be happy about the immigration? How about owners of U.S. factories?
f) How does the immigration above affect the fraction of production that goes to paying labor?

3) Some Republicans in Congress wish to cut taxes. Suppose you are a policy analyst working for the Congressional Budget Office, and it is your job to analyze the macroeconomic effects of a permanent tax cut. Suppose you have worked out the following very simplified model to characterize basic features of the U.S. economy:

$$Y = 4K + 5L \qquad K=1000 \text{ and } L= 800$$
$$G = 3000 \qquad T = 3000$$
$$I = 2000 - 6000r \qquad C = 600 + .6(Y\text{-}T)$$

a) First find the equilibrium levels of the interest rate, investment and consumption for the economy described for the equations above. (Assume a closed economy: $Y = C + I + G$).

b) Suppose taxes T are lowered by 10%. Compute the new equilibrium values of the interest rate, consumption and investment. By how much would investment be crowded out by the tax cut?

c) Discuss: what is the logic for why the investment equation above includes the interest rate with a negative sign. Discuss how it might be sensible for consumption to be negatively affected by the interest rate in a way similar to investment. If consumption did behave this way, use your intuition and economic reasoning to make an educated guess about how it would affect the degree to which the tax cut crowds out investment: more, less or the same. Explain your reasoning.

d) Test your guess above by trying the following example: $C = 600 + .6(Y\text{-}T) - 3000r$, where you keep the other equations in the model the same as in part (b) above. Compute the equilibrium value of investment before and after the tax cut, and compare the amount by which investment is crowded out to what you found in part (b).