■ PROBLEMS

1. Given the hypothetical data in the table below, calculate the annual rates of growth in real GDP and real per capita GDP over the period given. Then numbers of real GDP are in billions.

Year	Real GDP	Annual growth in %	Real GDP per capita	Annual growth in %
1	$2,416		$11,785	
2	2,472	_____	11,950	_____
3	2,563	_____	12,213	_____
4	2,632	_____	12,421	_____
5	2,724	_____	12,719	_____
6	2,850	_____	12,948	_____

2. Suppose the real GDP and the population of an economy in seven different years were those shown in the following table.

Year	Population, million	Real GDP, billions of dollars	Per capita real GDP
1	30	$ 9	$ 300
2	60	24	_____
3	90	45	_____
4	120	66	_____
5	150	90	_____
6	180	99	_____
7	210	105	_____

a. How large would the real per capita GDP of the economy be in each of the other six years? Put your figures in the table.
b. What would have been the size of the optimum population of this economy?_____
c. What was the *amount* of growth in real GDP between year 1 and year 2? _____
d. What was the rate of growth in real GDP between year 3 and year 4? _____%

3. The following table gives statistics on the labor force and total employment during year 1 and year 5. Make the computations necessary to complete the table. (Numbers of persons are in thousands.)

	Year 1	Year 5
Labor force	84,889	95,453
Employed	80,796	87,524
Unemployed	_____	_____
Unemployment rate	_____	_____

a. How is it possible that *both* employment and unemployment increased? _____

_____

b. In relative terms, if unemployment increases, employment will decrease. Why? _____

_____

_____

c. Would you say that year 5 was a year of full employment? _____

_____

d. Why is the task of maintaining full employment over the years more than just a problem of finding jobs for those who happen to be unemployed at any given time?

_____

_____

4. Suppose that in year 1 an economy is at full employment, has a potential and actual real GDP of $3000 billion, and has an unemployment rate of 5.5%.
a. Compute the GDP gap in year 1 and enter it in the table that follows.

Year	Potential GDP	Actual GDP	GDP gap
1	$3000	$3000.0	$_____
2	3800	3724.0	_____
3	4125	3712.5	_____

b. The potential and actual real GDPs in years 2 and 3 are also shown in the table. Compute and enter into the table the GDP gaps in these 2 years.

c. In year 2, the actual real GDP is _____% of the potential real GDP. (Hint: Divide the actual real GDP by the potential real GDP and multiply by 100.)

(1) The actual real GDP is _____% less than the potential real GDP.
(2) Using Okun's law, the unemployment rate will rise from 5.5% in year 1 and be _____% in year 2.

d. In year 3 the actual real GDP is _____% of the potential real GDP.

(1) The actual real GDP is _____% less than the potential real GDP.
(2) The unemployment rate, according to Okun's law, will be _____%.

5. The following table shows the price index in the economy at the end of four different years.

Year	Price Index	Rate of inflation
1	100.00	
2	112.00	_____%
3	123.20	_____
4	129.36	_____

a. Compute and enter in the table the rates of inflation in years 2, 3, and 4.
b. Employing the rule of 70, how many years would it take for the price level to double at each of these three inflation rates? _____

_____

c. If nominal income increased by 15% from year 1 to year 2, what was the approximate percentage change in real income? _____
d. If nominal income increased by 7% from year 2 to year 3, what was the approximate percentage change in real income? _____
e. If nominal income was $25,000 in year 2, what was real income that year? _____
f. If nominal income was $25,000 in year 3, what was real income that year? _____
g. If the nominal interest rate was 14% to borrow money from year 1 to year 2, what was the approximate real rate of interest over that period? _____
h. If the nominal interest rate was 8% to borrow money from year 3 to year 4, what was the approximate real rate of interest over that period? _____

6. Indicate in the space below each of the following the most likely effect—beneficial **(B)**, detrimental **(D)**, or indeterminate **(I)**—of unanticipated inflation on these persons:

a. A retired business executive who now lives each month by spending a part of the amount that was saved and deposited in a fixed-rate savings account for a long term. _____
b. A retired private-school teacher who lives on the dividends received from shares of stock owned.

_____

c. A farmer who borrowed $500,000 from a bank at a fixed rate; the loan must be repaid in the next 10 years. _____
d. A retired couple whose sole source of income is the pension they receive from a former employer.

_____

e. A widow whose income consists entirely of interest received from the corporate bonds she owns.

_____

f. A public school teacher. _____
g. A member of a union who works for a firm that produces computers. _____

7. Indicate for each of the following situations the effects of an increase in total spending on *real GDP, nominal GDP,* the *unemployment rate,* and the *price level,* respectively, using the following symbols **A,** little or no effect; **B,** increase; **C,** decrease; and **D,** sharp increase.

a. Depression and widespread unemployment

_____ _____ _____ _____

b. Prosperity, but moderate unemployment

_____ _____ _____ _____

c. Prosperity and full employment

_____ _____ _____ _____