1. Is the following a stock or flow variable?

1. Inventories = a stock variable
2. Change in Inventories = a flow variable
3. Money Supply = a stock variable
4. Change in Money Supply = a flow variable
5. National Income = a flow variable
6. Expenditure = a flow variable
7. Wealth = a stock variable
8. Population = a stock variable
9. Capital = a stock variable
10. Interest = a flow variable

2. What is the difference between GDP and GNP? When looking at the US and China, which country do you expect to have higher GNP? Why?

- GDP [Gross domestic product]

is the total market value of all final goods and services produced by non-citizens and citizens within a given period located within a country's borders.

- GNP [Gross national product]

is the total market value of all final goods and services produced by only country's citizens but both domestically and abroad within a given period

- When looking at the US and China, which country do you expect to have higher GNP? Why?

The U.S. has higher GNP than China because US companies open their factories in other lower wage countries more than open their factories in their country. But China has a lot of factory in their country because China can manufacture products with high quality at a low cost so that makes China has many factories.

3. The canned apple has 5 stages of production as follows. Find the value added of each stage and the GDP value of the canned apple.

Stages of Production	Value of Sales	Value Added
Growing Apple	12	12
Pickling	15	3
Canning	18	3
Shipping	20	2
Retail Sale	22	2
Total value added		22

GDP value of the canned apple = 22

4. What is Transfer Payment? Why is it not included in GDP?

- Transfer Payment is free money from goverment to people which people don't need to exchange for goods and services.

- Transfer Payment is not included in GDP because it doesn't produced goods and services and it doesn't exchanged between the money and goods and services.

5. Why are we interested in Real GDP? Explain with examples. Is there a problem associated with Real GDP?

- We are interested in Real GDP because it measures a country's total economic output, adjusted for price change (inflation/deflation). We can use Real GDP to analyze an economy's purchasing power and growth potential in long-term. Real GDP shows a more accurate of a country's economic performance.

Example

↳

Basket of goods	Pen		Pencil	
	Price	Quantity	Price	Quantity
2017 (↓base year)	10	400	2	1000
2018	11	500	3	1100
2019	12	600	4	1200

year	Real GDP
2017	6,000
2018	7,200
2019	8,400

= Real GDP increases every year so that means country's economy is growing than last year because an increase in real GDP means output increased.

Is there a problem associated with Real GDP?

- The problem associated with Real GDP is the limitations of GDP.
  the limitations of GDP are not reflect all the contents of the economic activities. The main limitations of GDP include non-market activities, the underground economy, negative externalities, and quality of life.

6. Suppose 2018 is the base year. What can we say about Real GDP,Nominal GDP, and GDP Deflator of 2018?

- When 2018 is the base year, then Real GDP of 2018 and Nominal GDP are equal. [Real GDP_{2018} = Nominal GDP_{2018}]
  GDP Deflator of 2018 is 100

7. Explain three limitations of the GDP concept.

1. Non- market activities
   - GDP does not measure goods and services that people make for own consumption, such as cooking dinner.

2. Informal economy
   - This is economy activities which never reported income to the government. Example include black market transactions or illegal goods and services.

3. Inequality
   - Although GDP is often used as a quality of life measurement, there are factors not covered by it These include leisure time, pleasant surroundings, and personal safety.

8. In 2018, Kingdom Asgard made the following transactions. Using the expenditure approach, identify which component of GDP is affected by each transaction, and calculate the 2018 GDP.

- The citizens bought 8 new cars, each worth 50$.
  ↳ Consumption
- The citizens bought 4 new houses, each worth 150$.
  ↳ Investment
- The citizens grew rice for their own consumption.The rice was worth 500$.
  ↳ non-market transaction , not measure non-market transactions in GDP
- The firms bought 6 used machines, each worth 50$.
  ↳ Second hand Products , these are not included in GDP
- The firms bought 8 car parts, each worth 25$.
  ↳ Intermediate goods not included in GDP
- The government bought 4 new computers, each worth 50$.
  ↳ Government spending
- The government paid 1000$ to the poor as welfare payment.
  ↳ Transfer payment not included in GDP
- The citizens bought 10 imported ships, each worth 100$.
  ↳ Import
- The firms sold 4 planes abroad, each worth 200$.
  ↳ Export

- $GDP = C + I + G + (X - M)$

the 2018 $GDP = 400 + 600 + 200 + (800 - 1000)$

The 2018 $GDP = 1000$

9. Suppose that there are three goods in the economy – goods A, B, and C. Calculate Nominal GDP, Real GDP, and GDP Deflator when 2012 is the base year. Also, calculate the annual inflation rate from 2014 to 2015.

year	Price of A	Quantity of A	Price of B	Quantity of B	Price of C	Quantity of C
2012	1	3	2	3	3	3
2013	3	1	4	2	1	4
2014	2	2	3	4	2	1
2015	4	4	1	1	4	2

Year	Nominal GDP	Real GDP	GDP Deflator
2012	(3) + (6) + (9) = 18	(3) + (6) + (9) = 18	100
2013	(3) + (8) + (4) = 15	(1) + (4) + (12) = 17	88.2
2014	(4) + (12) + (2) = 18	(2) + (8) + (3) = 13	138.4
2015	(16) + (1) + (8) = 25	(4) + (2) + (6) = 12	208.3

The annual inflation rate from 2014 to 2015 is

$(208.3 - 138.4)/138.4 = 0.505 = 50.5\%$

10. Using the table below, calculate GNP and NNP.

	Billions of Dollars
GDP	8000
Receipts of factor income from the rest of the world	250
Payments of factor income to the rest of the world	300
Depreciation	900
Indirect taxes minus subsidies	500
Corporate profits minus dividends	500
Social insurance payments	700
Personal interest income received from the government and consumers	300
Transfer payments to persons	1100
Personal taxes	1000

GNP = GDP + Net Foreign Factor Income [NFFI]

GNP = 8000 + (250 - 300) = 7950

NNP = 7950 - 900 = 7050

11. Using the table below, Calculate the following items.

11.1 Gross domestic investment = Net investment + Depreciation
= 784 + 168 = 952

11.2 GDP, using the expenditure approach = C + I + G + (X - M)
= 2,203.2 + 952 + 716.8 + (212.8 - 235.2) = 3,849.6

11.3 GNP [GDP + NFFI]
↳ = 3,849.6 + (35.2 - 68.8) = 3,816

11.4 NNP [GNP - depreciation]
↳ = 3,816 - 168 = 3,648

11.3 National Income, using the income approach

NI = 1,407.7 + 257.6 + 593.6 + 182.2 + 173.9 - 44.8 + 34.1
= 2,604.3

Table 6.5

Depreciation	168.0
Compensation of employees ni	1,407.7
Corporate profits ni	257.6
Dividends	78.4
Exports	212.8
Government purchases	716.8
Imports	235.2
Indirect taxes ni	593.6
Net interest income ni	182.2
Net private domestic investment	784.0
Personal consumption expenditures	2,203.2
Personal interest income	112.0
Receipts of factor income from the rest of the world	35.2
Personal taxes	627.2
Proprietor's income ni	173.9
Payments of factor income to the rest of the world	68.8
Rental income ni	34.1
Social insurance payments	380.8
Subsidies ni	44.8
Transfer payments	504.0

12. In a simple economy, suppose that all income is either compensation of employees or profits. Suppose also that there are no indirect taxes. Calculate GDP from the table below. Show that the expenditure approach and the income approach add up to the same figure.
(Hints: (1) NNP + Depreciation = GNP, (2) NFFI = 0, and (3) NI = NNP)

Consumption	9500
Investment	3000
Depreciation	1750
Profits	2400
Exports	850
Compensation of employees	11500
Government purchases	3200
Direct taxes	1200
Saving	1600
Imports	900

Expenditure approch = $C + I + G + (X - M)$

GDP = $9500 + 3000 + 3200 + (850 - 900)$
= 15,650 #

Income approach

NI = NNP
- NI = 11,500 + 2,400 = 13,900

- GNP = NNP + Depreciation
= 13,900 + 1,750 = 15,650

- GDP = GNP - NFFI
= 15,650 - 0
= 15,650 #