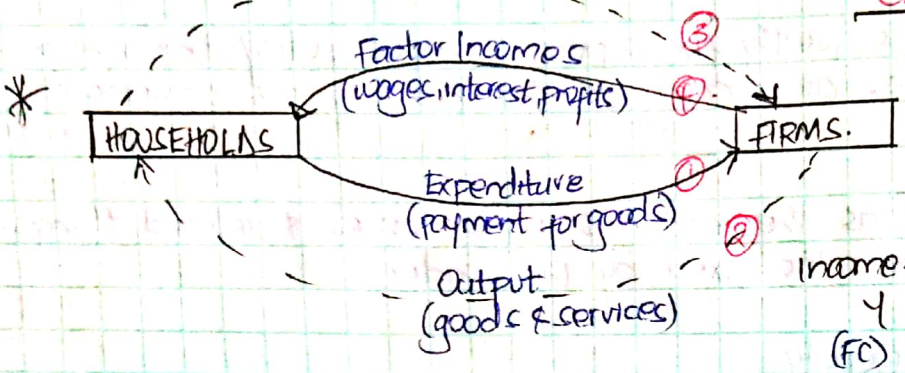
20/09/16.

NATIONAL INCOME ACCOUNTING.

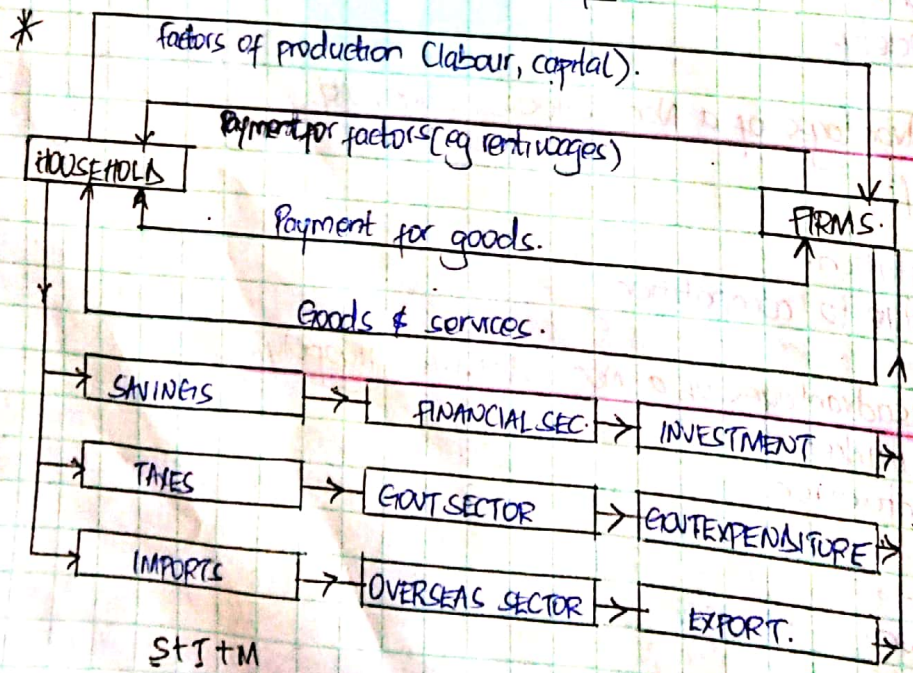
- The National Income is the total value of goods & services produced in a country in a period of 1yr. (Factor services Clabour capital etc).

Circular Flow of Income



Income = Expenditure = Output
Y = E = O.
(FC) (MP) (FC)

- Households supply factor services to firms (arrow 3). & consumers receive the output of goods & services supplied by the firm. (arrow 2)
- Arrow 1 indicates the receipt by firms from the sale of goods & services sold to households whose value is equal to what households spend on them.
- The value of the goods & services supplied can be called the value of the national output (O) & household expenditure (E) will be equal to this output. O = E
- In producing the goods & services, the firms employ factor services. Whatever they spend on factor services goes to the owners of the factors of production (Households) as wages, interest, rent & profits.
- This flow of factor income payment is denoted by arrow 4 as income.
- If you assume that households do not save out of the incomes, the expenditure of households will be equal to what is obtained as factor income.
- It follows that Expenditure = Income = Output



S+T+M
Withdrawals / Leakages

=

I+GE+X.
Injections

METHODS OF COMPUTATION OF NATIONAL INCOME:

1. INCOME METHOD (Net Income Approach).

All receipts by firms on commodities produced & sold are distributed as factor incomes to the various factors of production involved in producing the goods ∴ the summation of all factor incomes will be identical to the total expenditure or total output.

National Income = Employment Income (wages) + Rental Income + Interest Income + Profits.

2. EXPENDITURE APPROACH.

- Nationals may receive their incomes through either expenditure by private consumers (C), expenditure by firms on capital goods produced ie investments (I), through expenditure by govt consumption (G) & through expenditure by overseas buyers ie exports (X).
- However, imports (M) create income for overseas suppliers & not residents of the home country.

C + I + G + X (− M) = National Expenditure.

3. VALUE ADDED. (Output [Product) METHOD.

- It is obtained by adding together the value of contribution of all individual enterprises in the economy.
- Value added is the value added by each industry to the intermediate products that it has bought from other industries.
- Before passing on the products to the next stage in the production process
- Value added is thus a firm's total revenue less what it has paid to other firms for commodities supplied or services rendered.

NB/ In the Expenditure Method, any changes in unsold stock are included in the national expenditure.

Complications in the Computation of the National Income

1. DEPRECIATION. (CAPITAL CONSUMPTION.

- This refers to the wear & tear that occurs in production.
- Where no allowance is made for depreciation in investment, the resulting national income figures are known as gross.
- When depreciation is deducted, the resulting figure is known as net.

Gross − Depreciation = Net.
GDP − Depreciation = NDP
GNP − Depreciation = NNP.

2. FACTOR COST & MARKET PRICE

- National expenditure is calculated by market price.
- They are in most cases distorted by taxes & subsidies.
- Indirect taxes have the effect of raising prices above what they should be while subsidies lower such prices.
- National Income & National Output are both measured using factor cost ie in terms of the sums paid out to owners of the factors of production.
- It is necessary to convert market prices to factor costs by subtracting indirect taxes & adding subsidies.

− Taxes
+ Subsidies

Market Price = Factor cost + Indirect Taxes - Subsidies

Factor Cost = Market Price - Indirect Taxes + Subsidies

GNP_{MP} - Indirect Taxes + Subsidies = GNP_{FC}
NNP_{MP} - Indirect Taxes + Subsidies = NNP_{FC}
GDP_{FC} + Indirect Taxes - Subsidies = GDP_{MP}
NNP_{FC} + Indirect Taxes - Subsidies = NNP_{MP}

$NNP_{FC} = NNI_{FC} = NI$

NET FACTOR INCOME FROM ABROAD

- Income from productive activities whether it is earned from abroad to should be included in the figure of the National Income
- Earnings within the domestic economy accruing to non-residents in the country should be excluded from the Income.
- Domestic production (GDP) is what is produced within the geographical boundaries of a country on the domestic territory by locals & foreigners.
- National production (GNP) is the production for which residents of the country are responsible.

Net Factor Income from Abroad = Residents' Income - Non-Residents' Income

$NFIFA = NFIP_{FC}$

Domestic Income + Net factor Income from Abroad (NFIFA) = National Income

GDP + NFIFA = GNP
NDP + NFIFA = NNP

GNP < GDP because NFIFA is mostly -ve.

APPRECIATION OF STOCK PRICES.

- If prices were rising, the value of the firm's stock would be rising even if there were no net physical additions to the them to account for stock appreciation.
- It is necessary to make appropriate adjustments.

EQUILIBRIUM INCOME

22/09/2016.

- It is that level of national income that shows no tendancies to change.
- Equilibrium exists when the aggregate demand for the economy's goods & services is equal to total value of goods & services.
- The total value of goods & services is measured by the national income
- The income received is spent either on consumer goods or withdrawn in the form of savings & taxes ie income is either consumed, saved or paid out as taxes
- At equilibrium aggregate demand is equal to national income.

Aggregate demand (Expenditure) = $C + I + G + X - M$.

- Investment, govt. expenditure & exports are known as injections into the flow of National Income.
- Savings, Taxes & Imports are called withdrawals from that flow.
- An injection is an addition to income of domestic firms & households.
- A withdrawal is any income that is not passed through the circular flow.
- Withdrawals reduce expenditure & exert contractionary pressure on the national income.
- Equilibrium level of income is that level of income where injections are equal to withdrawals.

$*\cdot NI = NNI_{FC} = NNP_{FC}$

DISPOSABLE INCOME Y^d

This is the income which households actually have available to spend.

P.I. Personal Income = National Income + Transfer Payments (Grant & Pensions) ∓ Corporate Income taxes (B/s taxes) ∓ Social Security Contributions (NSSF) − Undistributed Profits (Retained Profits).

Disposable Income = Personal Income − Personal Income Taxes.

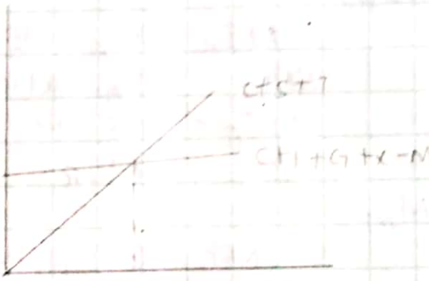
Nov 2015 TC

> NNI_{FC}

$NNI_{FC} = NNP_{FC} = NI$

$\therefore NNP_{FC} = NNP_{MP}$ − Indirect Taxes + Subsidies.

$578.1 - 36.5 = 541.6$ ✓



$NNI_{FC} = NNP_{FC} = NI$

$NNP_{FC} = NNP_{MP} - IT + Sub.$

> NNP_{MP}

$NNP_{MP} = GNP_{MP}$

$NNP_{MP} = GNP_{MP}$ − Depreciation.

$NNP_{MP} = 620.4 - 42.3$

$NNP_{MP} = 578.1$ ✓

$NNP_{MP} = GNP_{MP} - Dep$

> Personal Income.

Personal Income = National Income + Transfer Payments (Grants, Pensions) ∓ Corporate Income taxes ∓ Social Security Contr. − Undistributed Profits.

$PI = 541.6 + 78.6 \mp 18.2 - 0 - 0$

$PI = 602.$ ✓

Disposable Income for country 'X'

Disposable Income = Personal Income − Personal Income Taxes.

Y^d = Personal Income − Person.

$DI = 602 - 56.1$

$DI = 545.9.$ ✓

$S + T + M = I + G + X$

$FC = NI - TS$

$MI = FC + T \dots$

CONSUMPTION FUNCTION.

$C = a + bY$

or

$C = \alpha_0 + \alpha_1 Y$

or

a- autonomous consumption: independence of income consumption that is of income

b- marginal propensity to consume: $MPC = \frac{\Delta C}{\Delta Y}$.

- The consumption function is the relationship expressed in mathematical or diagramatic form btwn planned consumption & other independent variables esp income.
- The major determinants of consumption include:
a) Rates of interest
b) Relative prices
c) Wealth
d) Liquid assets (Money stock).
e) Availability of consumer credit.
f) Attitudes & expectations of consumers.
g) Money illusion ie where consumers focus on the nominal value of money & ignore the real value of money. eg not focusing on factors such as inflation.

May 2012 sb

i) NNI_{FC}.

$NNI_{FC} = NNP_{FC} = NI$.

$NNI_{FC} = NNP_{MP}$ - Indirect Taxes + Subsidies.

$NNI_{FC} = 425 - 42$

$NNI_{FC} = 383$.

$NNI_{FC} = NNP_{FC} = NI$

$NNP_{FC} = NNP_{MP}$ - Indirect Taxes + Subsidies

$NI =$

$NNP_{MP} = NNP_{FC}$ + Indirect Tax - Sub

or GNP_{MP} - Depreciation.

$PI = NI$ + Transfer payment - C.T + - -

ii) NNP_{MP}

$NNP_{MP} = GNP_{MP}$ - Depreciation.

$NNP_{MP} = 480 - 55$

$NNP_{MP} = 425$.

iii) Personal Income.

PI = National + Transfer - Corporate - Social Security - Undistributed
Income Payments Income taxes Contributions Profits.

$PI = 383 + 110 - 30 - 0 - 0$

$PI = 463$.

iv) Disposable Income

$DI = PI - PI\text{taxes}$.

$DI = 463 - 63$

$DI = 400$.

i) Average Propensity to Consume (APC)

This is a fraction of aggregate NI that is devoted to consumption thus if consumption is denoted by c & income by y then:

$$APC = \frac{C}{Y}$$

ii) Average Propensity to Save (APS)

This is a fraction of National Aggregate Income that is devoted to savings thus if S denotes savings then:

$$APS = \frac{S}{Y}$$

In a closed economy (C+I+G), where all income is spent & saved;

$$APC + APS = 1$$

$$\frac{C}{Y} + \frac{S}{Y} = \frac{C+S}{Y} = \frac{Y}{Y} = 1.$$

iii) Marginal Propensity to Save (MPS)

This is a fraction of an increase in income that is saved thus

$$MPS = \frac{\Delta S}{\Delta Y}$$

iv) Marginal Propensity to Consume (MPC)

This is a fraction of an increase in income that is consumed.

$$MPC = \frac{\Delta C}{\Delta Y}$$

$$MPC + MPS = 1$$

$$\frac{\Delta C}{\Delta Y} + \frac{\Delta S}{\Delta Y} = \frac{\Delta C + \Delta S}{\Delta Y} = \frac{\Delta Y}{\Delta Y} = 1$$

SAVINGS FUNCTION:

$Y = C + S$

$C = a + bY$

$Y = a + bY + S$

$Y - bY = a + S$

$Y(1-b) = a + S$

$Y(1-MPC) = a + S$

$Y(MPS) = a + S$

$YMPS = a + S$

$YMPS - a = S$

$S = MPSY - a$

$Y = C + S$, MPC

$Y = a + bY$

$Y = a + bY + S$

$Y - bY = a + S$

$Y(1-b) = a + S$

$Y(1-MPC) = a + S$

$Y(MPS) = a + S$

$MPSY = a + S$

$S = MPSY - a$

Nov 2015 4c

i) The consumption function. at by

$S = -500 - 0.36Y$

$I = 8,000$

$C = a + bY$

$a = -500$

$bY = -0.36Y$

$b = -0.36 = MPS$

MPC + MPS = 1
MPC = 1 - MPS
MPS = 1 - MPC

$b = MPS = 1 - 0.36$

$b = 0.64$

$bY = 0.64Y$ $\quad \therefore C = 500 + 0.64Y$

$Y = C + S$

$C = Y - S$

$C = Y + 500$

ii) The equilibrium level of national income.

LM Function

$S = I$

$-500 + 0.36Y = 8,000$

$0.36Y = 8,000 + 500$

$\frac{0.36Y}{0.36} = \frac{8,500}{0.36}$ $\quad Y = 23,611.11$

0.36 MPC

May 2017 Q 5(d)

26/09/2016.

MULTIPLIER FUNCTION

- Multiplier is a ratio (coefficient of change in GDP to change in autonomous expenditure that brought it about.
- The multiplier can be defined as the co-efficient or ratio relating changes in GDP to change in autonomous expenditure that brought it about
- This is because a change in expenditure, whatever its source, will cause a change in national income that is greater than initial expenditure

$Y = C + S$

$S = I$

$Y = C + I_0$

$C = a + bY$

$Y = a + bY + I_0$

$Y - bY = a + I_0$

$Y(1 - b) = a + I_0$

$Y = \frac{a + I_0}{1 - b}$

$Y = \frac{a + I_0}{1 - MPC}$

$Y = \frac{a + I_0}{MPS}$

$Y = \frac{a}{MPS} + \frac{I_0}{MPS}$

$\frac{I^0}{MPS} = I_0 \times \frac{1}{MPS}$ → Multiplier.

The multiplier is the reciprocal of MPS. The higher the MPC, the higher the multiplier.

Relevance of Multiplier in Third World Countries.

- In order for the multiplier principles to work, the following conditions must be met which do not exist in developing countries,

1. Supply of goods & services must be elastic.
2. There should be sufficient excess capacity in the economy.
3. Supply of raw materials & working capital should be elastic.
4. Workers seeking jobs will be able to find employment & as a result income & employment will increase from a given investment according to the multiplier.

May 2014 TC

i) Equilibrium level of national income.

$Y = C + I + G + X - M$.

$Y = 50 + 0.6(Y-T) + 35 + 25 + 30 + -(8+0.1Y)$.

$Y = 50 + 0.6Y - 0.6T + 90 - 8 - 0.1Y$.

$Y = 140 + 0.6Y - 0.1Y - 0.6T + 82$

$Y = 140 + 0.5Y - 0.6(20) + 82$

$Y = 140 + 0.5Y - 12 + 82$

$Y = 140 + 82 - 12 + 0.5Y$

$Y - 0.5Y = 140 + 82 - 12$

$\frac{0.5Y}{0.5} = \frac{210}{0.5}$

$Y = 240$

$Y = 50 + 0.6(Y-20) + 35 + 25 + 30 - (8+0.1Y)$.

$Y = 50 + 0.6Y - 12 + 35 + 25 + 30 - 8 - 0.1Y$.

$Y = 50 - 12 + 35 + 25 + 30 - 8 + 0.6Y - 0.1Y$.

$Y - 0.5Y = 120$

$\frac{0.5Y}{0.5} = \frac{120}{0.5}$

$Y = 240$

ii) Multiplier.

$\frac{1}{MPS}$ $\quad 0.6 = MPC$

$1 - MPS = MPC$

$1 - MPC = MPS$

$1 - 0.6 = 0.4$

$\frac{1}{0.4} = 2.5$.

iii) Equilibrium level of consumption expenditure.

$C = 50 + 0.6(Y-T)$

$C = 50 + 0.6Y - 0.6T$

$C = 50 + 0.6Y - 0.6(20)$

$C = 50 + 0.6Y - 12$

$C = 38 + 0.6Y$.

$C = 38 + 0.6(240)$

$C = 182$.

$50 + 182 + 35 + 25 + 30 - (8 + 0.1Y)$.

$322 - 8 - 0.1Y$.

$322 - 8 - 0.1Y$

$314 - 0.1(240)$

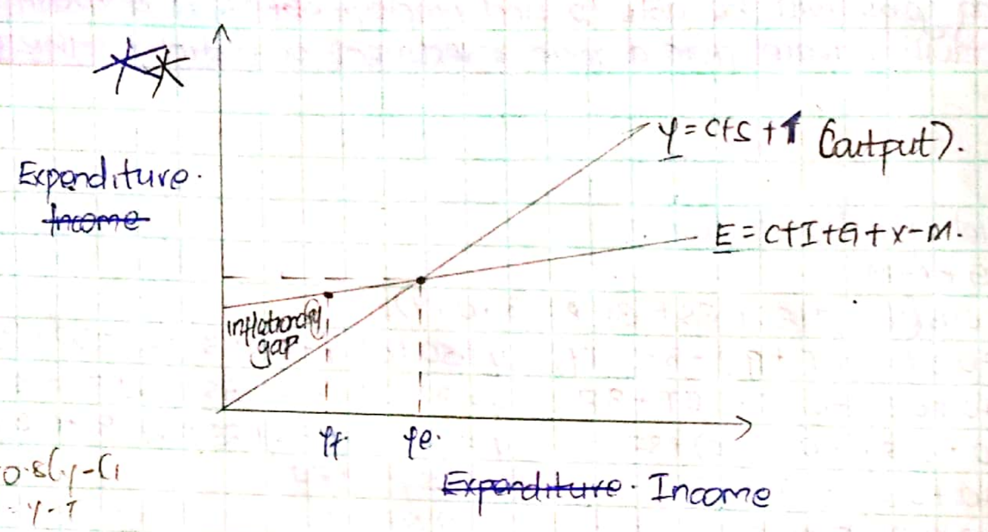
$314 - 24 = 290$.

Acceleration Principle.

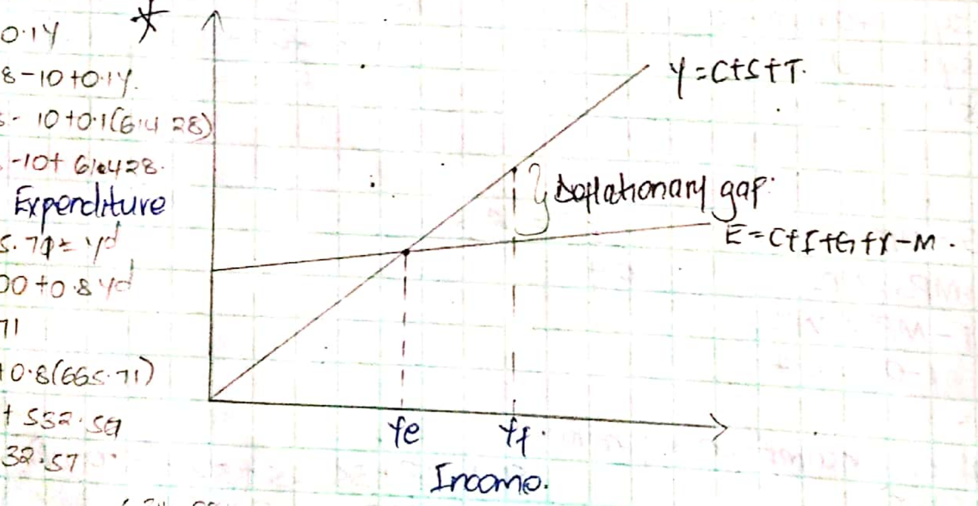
- This is the ratio of induced investment to the autonomous increase in income. thus if the induced investment is denoted by ΔI & the accelerator by a then $a = \frac{\Delta I}{\Delta Y}$.
- The accelerator is the factor by which an increase in income resulting from an initial increase in investment is multiplied to give the induced investment.

May 2017 5(d)

Actual Income & Full Employment Income



100+0.8(Y−C)
Yd = Y−T
Y=614.28
T 10+0.1Y
614.28−10+0.1Y.
614.28 − 10+0.1(614.28)
614.58 −10+ 61.428.
665.71= Yd
C= 100+0.8Yd
Yd = 665.71
100 +0.8(665.71)
100+ 532.59
632.57
534.88



- Full employment income is the national income that could be produced when the countries' factors of production are fully employed.
- This concept is given by the symbol Y_f.
- Actual national income is symbolized by Y_e & can be above or below Y_f.

Inflationary Gap

It is said to exist when the aggregate expenditure exceeds the max attainable level of output with the result that there is an upward pressure on prices.

Scanned with CamScanner

- Appropriate fiscal policies to combate this demand pull inflation would be;
a) reduction in govt spending or
b) increase in taxation: with the objective being to shift up the withdrawal line by the full amount of the inflationary gap.

Deflationary Gap.

- Refers to a situation where aggregate expenditure falls short of that required to produce a level of national income that will ensure full employment.
- A deflationary gap can be treated by;
a) an increase in govt spending or
b) a decrease in taxes.

Dec 2014 TC

Required the equilibrium level of;

a) National Income.

$Y = C + I + G$

$Y = 100 + 0.8Y^d + 50 + 30$

$Y^d = Y + T$

$Y = 100 + 0.8(Y - (10 + 0.1Y)) + 50$

$Y = 100 + 0.8(Y - 10 - 0.1Y) + 80$

$Y = 100 + 0.8(0.9Y - 10) + 80$

$Y = 100 + 0.72Y - 8 + 80$

$Y - 0.72Y = 100 - 8 + 80$

$\frac{0.28Y}{0.28} = \frac{172}{0.28}$

$Y = 614.29$ ✓

ii) Consumption.

$C = 100 + 0.8Y_d^d$

$Y^d = Y + T$

$Y^d = 614.29 + [10 + 0.1(614.29)]$

$Y^d = 614.29 + [10 + 61.429]$

$Y^d = 614.29 + 71.429$

$Y^d = 685.72$

$C = 100 + 0.8(685.72)$

$C = 100 + 548.57$

$C = 648.57$

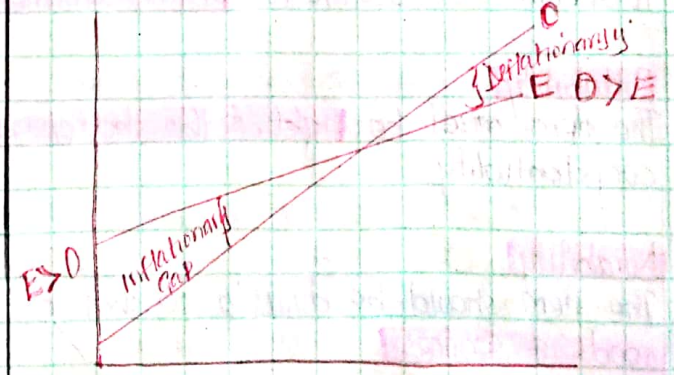
iii) Taxes.

~~$T = 10 + 0.8$~~

$T = 10 + 0.1Y$

$T = 10 + 0.1(614.29)$

$T = 71.429$ ✓



TRADE CYCLES.

- Cyclical fluctuations in the level of economic activity can be observed through the examination of the actual changes in the real national income & employment over a number of years.
- When the economy is booming, there is increased investment, reduction in unemployment & increased incomes.
- During recession & depression, there is reduced investment, increased unemployment & decreased incomes.