Key Formulas in Macroeconomics from www.econclassroom.com

1. GDP = C + I + G + Xn: The expenditure approach to measuring GDP
2. GDP = W + I + R + P: The income approach to measuring GDP
3. Calculating nominal GDP: The quantity of various goods produced in a nation times their current prices, added together.
4. GDP deflator: A price index used to adjust nominal GDP to arrive at real GDP. Called the 'deflator' because nominal GDP will usually over-state the value of a nation's output if there has been inflation.

5. Real GDP: $\dfrac{Nominal\,GDP}{GDP\,deflator} \times 100$

6. GDP Growth rate: $\dfrac{Current\,year's\,GDP - Last\,year's\,GDP}{Last\,year's\,GDP} \times 100$

7. The inflation rate via the CPI: $\dfrac{This\,year's\,CPI - Last\,year's\,CPI}{Last\,year's\,CPI} \times 100$

8. Real interest rate = nominal interest rate − inflation rate.

9. Unemployment Rate $= \dfrac{Number\,of\,Unemployed}{Number\,in\,the\,labor\,force} \times 100$

10. Money Multiplier $= \dfrac{1}{RRR}$

11. Quantity theory of money: MV = PY − a monetarist's view which explains how changes in the money supply will affect the price level assuming the velocity of money and the level of output are fixed.

12. MPC + MPS = 1. Households may consume or save with any change in their income.

13. Spending Multiplier $= \dfrac{1}{1-MPC}\ or\ \dfrac{1}{MPS}$

14. Tax multiplier = -MPCMPS. It tells you how much total spending will result from an initial change in the level of taxation. It is negative because when taxes decrease, spending increases, and vice versa. The tax multiplier will always be smaller than the spending multiplier.

From

GDP = Gross Domestic Product

- Nominal GDP - use current year prices
- Base GDP - use base year prices

Y = C + I + G + NX

- Y = GDP
- C = Consumption
- I = Investment
- G = Government Spending
- NX = Net Exports (Exports - Imports)

GDP Deflator = ((nominal GDP) / (real GDP)) * 100

Percent Change = ((Year 2 - Year 1) / (Year 1)) * 100

U-rate (unemployment rate) = ((# of unemployed) / (labor force)) * 100

Labor force participation rate = ((labor force) / (adult population)) * 100

CPI (Consumer Price Index) = ((cost of basket in current year) / (cost of basket in base year)) * 100

Inflation rate = ((CPI this year - CPI last year) / (CPI last year)) * 100

Amount in today's dollars = (amount in year T dollars) * ((price level today) / (price level in year T))

Real Wage: (W / P) = ($15/hour) / ($5/unit of output) = 3 units output per hour

- 1 / P is the value of $1, measured in goods
- A relative price is the price of one good relative to (divided by) another

Quantity Equation: (M * V) = (P * Y)

- M = money supply
- V = velocity
- P = price
- Y = real GDP

Velocity of Money: V = (P * Y) / M

Fisher Effect: (nominal interest rate) = (inflation rate) + (real interest rate)

Wealth Effect: P rises, C falls

Interest Rate Effect: P rises, I falls

Exchange Rate Effect: P rises, NX falls

Y = Yn + a

- Y = real GDP
- Yn = Natural Rate of Output

- a = the deviation, defined as (actual price level - expected price level)
- When P deviates from the Expected Price, Y deviates from the Natural Rate of Output

Production Function: Y = AF(L, K, H, N)

Private Saving: Y - T - C

Public Saving: T - G

National Saving: (Y - T - C) + (T - G) **or** Y - C - G

Future Value of Money: $FV = PV(1 + r)^N$

- FV = Future Value
- PV = Present Value
- r = interest rate
- N = number of time periods

Present Value of Money: $PV = FV / ((1 + r)^N)$

The Money Multiplier = 1 / R

- R = reserve ratio

The Multiplier Effect: 1 / (1 - MPC)

- MPC = Marginal Propensity to Consume