



Complete each of the following. Show your work.

- Suppose a change in consumer spending causes real GDP to increase by \$200 billion. Calculate the minimum change in consumer spending that could have caused this increase in real GDP if the marginal propensity to consume is 0.75. \$50 billion increase. Spending multiplier = $1 / (1 - 0.75) = 4$. Change in spending = \$200 billion. The minimum change in consumer spending that could have caused the increase in real GDP of \$200 billion is \$50 billion.
- Assume an economy has a negative output gap of \$400 billion and marginal propensity to save is 0.10. Calculate the minimum change in investment spending that could return the economy to full employment. \$40 billion increase. Spending multiplier = $1 / .1 = 10$. Change in investment spending = (Output gap) / Multiplier = \$400 billion / 10 = \$40 billion. Therefore, a minimum increase in investment spending of \$40 billion would be needed to return the economy to full employment.
- Assume an economy has a negative output gap of \$40 billion and marginal propensity to consume is 0.80. Calculate the minimum change in taxes that could return the economy to full employment. \$10 billion decrease. Tax multiplier = $-(1 / .2) - 1 = -4$. The output gap is \$40 billion and an initial tax cut \$10 billion times the multiplier of -4 closes the gap. Therefore, the minimum change in taxes is a decrease of \$10 billion.
- Assume the required reserve ratio is 20% and the central bank sells \$20 billion of bonds. What is the maximum change in the money supply? \$100 billion decrease. The money multiplier is $1 / 0.2 = 5$. The maximum change in the money supply is equal to the change in the monetary base (i.e., the reduction of \$20 billion) multiplied by the money multiplier. Therefore, the maximum change in the money supply is: $-\$20 \text{ billion} \times 5 = -\100 billion .
- If Mr. Clifford deposits \$4,000 cash into a bank and the required reserve ratio is 10%. Calculate the maximum change in the money supply over time. \$36,000 increase. The money multiplier is $1 / 0.1 = 10$. The maximum change in the money supply is equal to the initial change in the money supply of \$3,600 (the initial loan the bank can make after holding 10%) multiplied by the money multiplier. Therefore, the maximum change in the money supply is: $\$3600 \times 10 = \$36,000$.
- If the nominal interest rate is 10% and the actual inflation rate is 12%. Calculate the real interest rate. Real interest rate = -2%. Real interest rate = Nominal interest rate - Inflation rate. Real interest rate = $10\% - 12\%$ so the real interest rate = -2%
- If the real interest rate is 5% and the actual inflation rate is 3%. Calculate the nominal interest rate. Nominal Interest Rate = 8%. Real interest rate = Nominal interest rate - Inflation rate, which means Nominal interest rate = Real interest rate + Inflation rate. Nominal interest rate = $5\% + 3\%$.
- Assume that 46,000 people are employed full-time, 5,000 are employed part-time, 5,000 are frictional unemployment and 4,000 cyclically unemployed. Calculate the unemployment rate. Unemployment rate = 15%. Total labor force = 60,000 (number of people employed and unemployed). Number of unemployed people = 5,000 + 4,000 = 9,000. Unemployment rate = (Number of unemployed people / Total labor force) x 100. Unemployment rate = $(9,000 / 60,000) \times 100$. Unemployment rate = 15%
- Assume that 40,000 people are employed, 5,000 are unemployed, 15,000 are not in the labor market, and 10,000 are not of working age. Calculate the labor force participation rate. Labor force participation rate = 75%. Working age population = 40,000 + 5,000 + 15,000 = 60,000. Labor force = Number of employed + Number of unemployed = 40,000 + 5,000 = 45,000. Labor force participation rate = (Labor force / Working age population) x 100 = $(45,000 / 60,000) \times 100$. Labor force participation rate = 75%
- Use the table with the only two goods produced in the country to calculate the consumer price index for 2023 with 2022 as the base year.

Goods	Quantity	Price in 2022	Price in 2023
Burgers	20	\$5	\$6
Milk	5	\$15	\$18

CPI = 120. Market basket for 2022 is \$175 = (20) x \$5 + (5) x \$15. Market basket for 2023 is \$210 = (20) x \$6 + (5) x \$18. CPI = (Basket in given year / Basket in base year) x 100. CPI = $(\$210 / \$175) \times 100 = 120$
- Calculate the GDP deflator if the Nominal GDP in a country is \$50 billion and the real GDP is \$40. GDP deflator = 125. GDP deflator = (Nominal GDP / Real GDP) x 100. GDP deflator = $(\$50 \text{ billion} / \$40 \text{ billion}) \times 100$ GDP deflator = 1.25 x 100. GDP deflator = 125
- If the GDP deflator is 120 and the Real GDP is \$500 billion, how much is the nominal GDP? Nominal GDP = \$600 billion. Nominal GDP = (GDP deflator / 100) x Real GDP. Nominal GDP = $(120 / 100) \times \$500 \text{ billion}$. Nominal GDP = \$600 billion
- If the GDP deflator is 150 and the Nominal GDP is \$90 billion, how much is the real GDP? Real GDP is \$60 billion. Real GDP = (Nominal GDP / GDP Deflator) x 100. $(\$90 \text{ billion} / 150) \times 100 = \60 billion . The real GDP is \$60 million.