

ECON 256: Midterm Practice Math/Formula Questions

1. Suppose a country has a population of 20 million people and a GDP of 1 billion dollars. What is the GDP per capita of the country?

2. Population by Daily Income (PPP)

Daily Income	Between 0 and 50 cents	Between 50 cents and 1 dollar	Between 1 and 1.5 dollars	Between 1.5 and 2 Dollars	Total Population of Country
Millions of Persons	2	3	5	7	30

Suppose the Poverty Line is \$2/day. What is the Poverty Headcount Ratio (Poverty Rate) in percent?

3. Use the following formula: $\text{Total Growth} = 100 \times \left(\left(\frac{100+r}{100} \right)^N - 1 \right)$. If the growth rate is 10 percent, what will total growth be after 2 years? (Reported as percentage and rounded to nearest integer)

4. Consider the production function $Y = K^{0.5}L^{0.5}$. How much output do we get if $K = 9$ and $L = 4$?
 - A. 6.5
 - B. 5
 - C. 6
 - D. 9

The Dynamics of the Solow Growth Model are determined by the following two equations (I plugged in a savings rate of 10 percent, depreciation rate for capital of 10 percent, TFP=4, a capital share of 0.5):

$$\frac{K_{t+1}}{L_{t+1}} = (1 - 0.10) \frac{K_t}{L_t} + 0.10 \frac{Y_t}{L_t}$$

$$\frac{Y_t}{L_t} = 4 \left(\frac{K_t}{L_t} \right)^{0.5}$$

5. Suppose $\frac{K_0}{L_0} = 9$, what is $\frac{Y_0}{L_0}$? Use the above equations for the Solow Growth Model.

6. Suppose $\frac{K_0}{L_0} = 9$, what is $\frac{K_1}{L_1}$? Use the above equations for the Solow Growth Model.

7. In the Solow Growth Model, steady state output per worker is given by the equation

$$\frac{Y}{L} = A^{\frac{1}{1-\alpha}} \left(\frac{s}{\delta} \right)^{\frac{\alpha}{1-\alpha}}$$

Suppose $s = 0.4$, $\delta = 0.2$, $\alpha = 0.5$, and $A = 5$. What is $\frac{Y}{L}$?

8. The Law of Motion for Capital is

$$K_{t+1} = (1 - \delta)K_t + I_t$$

Suppose $K_0 = 0$, the depreciation rate is 10 percent, and investment each period is always equal to 100. What is K_2 ?