

PRACTICE PROBLEMS 1 – ECON 3311 – Spring 2025

1. Suppose the following table represents the prices and quantities of computers and apples in two different years:

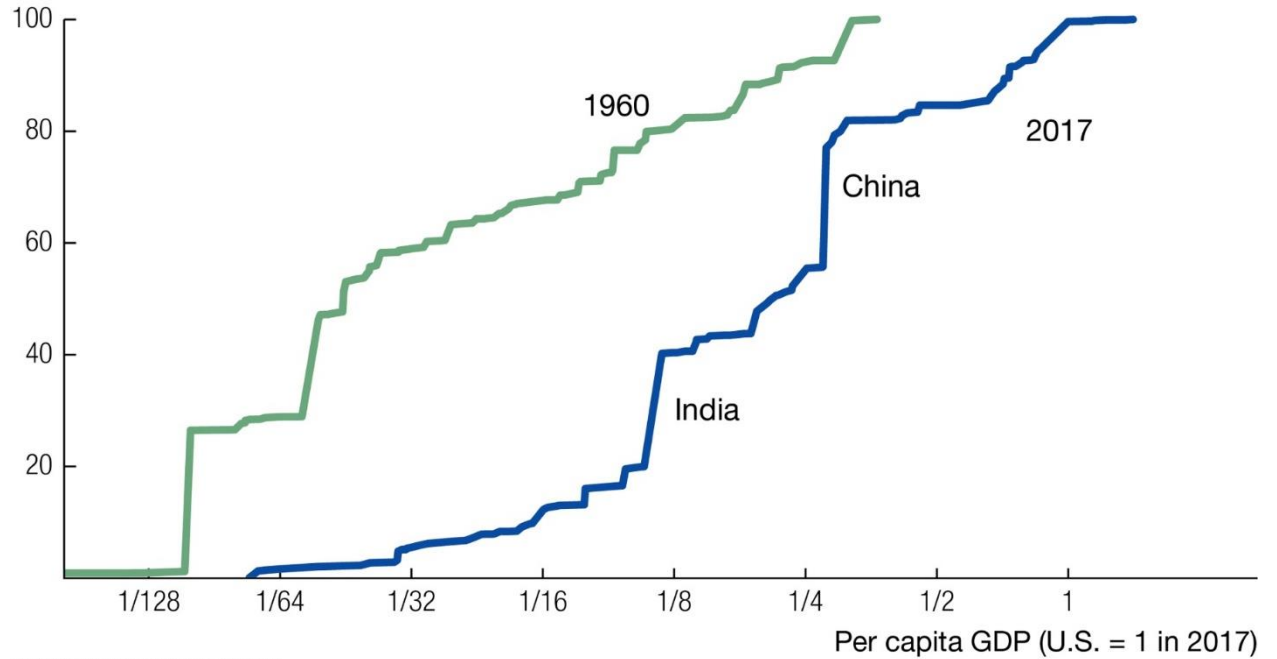
Year	P_{computers}	Q_{computers}	P_{apples}	Q_{apples}
2010	1000	500	2	20,000
2022	1200	700	3	22,000

Compute the overall percent change in GDP using 2010 as the base year and then using 2022 as the base year. Are the differences large using the two measures? Briefly explain why or why not.

2. Why is the consumer price index (CPI) not an accurate measure of the price changes faced by any one particular individual? Briefly explain.

3. We went over the following graph is class:

Share of world population (percent)



a. In general, what happened between 1960 and 2017? Briefly explain.

b. Did only low-income countries improve their GDP per capita between 1960 and 2017 or did higher-income countries increase their GDP per capita as well?

4. We found in our calculations that the marginal product of capital is negatively correlated with K , but positively correlated with Y . What is a brief explanation for this?
5. What is the difference between the marginal product of labor/capital and the returns to scale of the production function? Briefly explain.
6. Suppose that over a certain time period, the growth rate of GDP per capita was -3% and the growth rate of the population was 3%. What can we determine was the growth rate of GDP over this time period? Show your work.
7. Suppose that the marginal product of capital in a particular economy is:
- $$MPK = \frac{1}{3} \frac{Y}{K}$$
- If the production function displays constant returns to scale, what is the production function (assume $A = 1$)?

8. When calculating GDP using the expenditure approach, why are imports deducted? Briefly explain.

9. Suppose that the GDP of France grew by a constant rate from 1989 to 2024. If GDP grew from \$1 trillion to \$2.95 trillion, what was the growth rate over this time period? Does your answer make sense given the rule of 70? Briefly explain.

- 10. Suppose that a production function of the form we used in class displays decreasing returns to scale. If the amount of capital doubles and the amount of labor increases by 50%, which of the following statements is true:**
- a. Output decreases**
 - b. Output may double if the exponent on capital is much greater than that on labor**
 - c. Output increases, but less than doubles**