

# OMG MIDTERM 2 IS ON MONDAY!!!!11

- It is cumulative! The horror!
- Bring the same stuff as last time.
- Same spiel as last time—“know everything.”
- Don’t be your own worst enemy. Be honest with yourself about whether you truly understand something before moving on—just because you got a 10 on the homework doesn’t necessarily mean you’re prepared for the exam. And the exam is more important than the homework.

## Part 1: Growth Stuff

**Problem 1.** Match things.

- a. economic growth
- b. real GDP
- c. average labor productivity
- d. real GDP divided by the population
- e. technological progress
- f. human capital
- g. diminishing returns
  
- i. long-term increases in the aggregate level of output
- ii. the index economists use to represent the aggregate level of
- iii. the amount of output produced by one unit of labor, on average
- iv. real GDP per capita
- v. increase in know-how related to the production of goods and services
- vi. knowledge and skills possessed by a person
- vii. principle that additional capital or labor add less to output than previous ones.

**Problem 2.** The real GDP in a year is  $GDP_1$ , and the following year it is  $GDP_2$ . What is the growth rate between these two years?

**Problem 3.** Match more things.

- a. knowledge capital
  - b. neoclassical theory
  - c. new growth theory
  - d. endogenous technological progress
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- i. total stock of knowledge possessed by the whole society
  - ii. growth theory in which technological progress is exogenous
  - iii. growth theory in which technological progress is endogenous
  - iv. technological progress that happens because of investments in research and development activities

**Problem 4.** *True or False.* One way to increase labor productivity is to increase the amount of capital per worker.

**Problem 5.** *True or False.* One way to increase capital per worker is to encourage saving by households.

**Problem 6.** In a country, the labor force participation rate is 75%, the employment rate is 90%, and the average labor productivity is 40,000 units of output. In this country, the output per capita equals what?

## Problem 7.

population: 100,000,000  
labor force: 80,000,000  
employed: 60,000,000  
real GDP: 2,400,000,000,000

Find the following:

- (a) labor force participation rate
- (b) employment rate
- (c) average labor productivity
- (d) real GDP per capita



Physical and human capital are

- **rivalrous.** Its use by one agent prevents another agent from simultaneously using it.

If a farmer A is currently using this tractor, then farmer B cannot also use the same tractor.

A scientist can work on my project or your project, but not on both at the same time.

- **subject to diminishing returns.** Every additional unit generates less new output than did the previous unit.

Adding another tractor will make the farmer more productive, but not as much as the first tractor did.

Adding another scientist will make your project move more quickly, but it won't speed things up as much as adding the first scientist did.

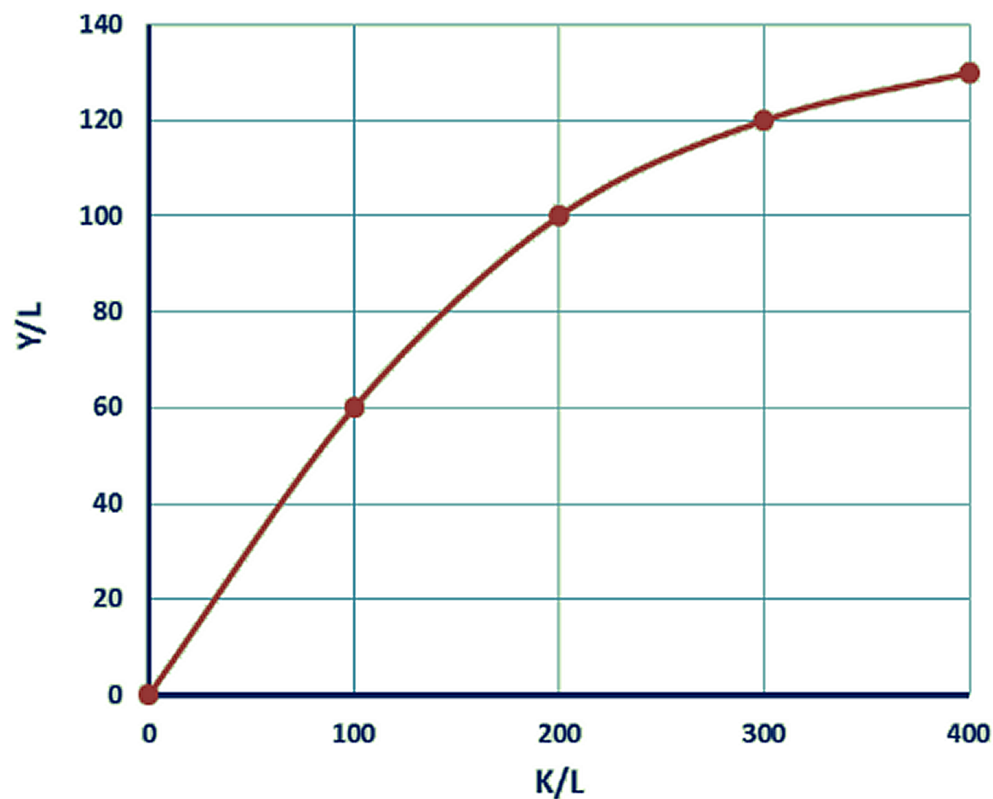
Knowledge capital is

- **non-rivalrous.** Me using one idea does not prevent you from using the very same idea.
- **not subject to diminishing returns.** Me using an idea doesn't make the same idea less useful to someone else.

**Problem 8.** Classical economic theory says that the per-worker production function should exhibit diminishing returns. What would a graph of this look like?

What does the graph look like according to the data? How can we explain this shape?

## Problem 9.



LFPR: 50%

employment rate: 90%

physical capital  $K$ : 300,000

employed people  $L$ : 1,500

What is the average labor productivity? What is GDP per capita?

**Problem 10.** Which of the following are long-run factors of growth?

- (a) capital accumulation
- (b) technological progress
- (c) population growth
- (d) amount of natural resources

## Part 2: Money Stuff

**Problem 11.** Match things again.

- a. store of value
- b. fiat money
- c. medium of exchange
- d. unit of account
- e. commodity money
  
- i. the function of money that refers to money's usefulness as an asset
- ii. type of money that has no intrinsic value, but is still used as a means of payment
- iii. function of money that allows the avoidance of the double coincidence of wants problem associated with the barter system, i.e. facilitates transactions
- iv. function of money that allows prices to be easily expressed according to a standard measure
- v. type of money that has other uses besides serving as money, and thus has intrinsic value

**Problem 12.** Abigail withdraws \$100 from her savings account and deposits it in her checking account. As a result

- (a) M1 remains unchanged, M2 decreases
- (b) M1 remains unchanged, M2 increases
- (c) M1 decreases, M2 remains unchanged
- (d) M1 decreases, M2 decreases
- (e) None of the above

**Problem 13.** Match even more! Do it!

- a. discount loan
  - b. discount rate
  - c. required reserve ratio
  - d. open market operations
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- i. money banks borrow from the Fed
  - ii. the rate of interest charged on loans made by the Fed discount rate
  - iii. a fraction of deposits banks are required not to loan out required reserve ratio
  - iv. the Fed's purchases and sales of government bonds

**Problem 14.** Match match match match? Match match match match.

- a. balance sheet
  - b. required reserves
  - c. excess reserves
  - d. fully loaned out
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- i. statement of assets, liabilities, and net worth
  - ii. minimum amount of cash that banks must hold at all times
  - iii. the amount of cash that banks might hold in excess of what is required by the Fed
  - iv. banks are said to be this when they have no excess reserves



**Problem 15.** The required reserve ratio is 10%. Assume that the bank is fully loaned out. What is the bank's net worth?

Assets		Liabilities and Net Worth	
Reserves	?	Deposits	300,000,000
Treasury Bonds	5,000,000	Borrowing	15,000,000
Loans	350,000,000	Net Worth	?

**Problem 16.** Suppose the Fed purchases \$100 worth of Treasury bonds. Suppose also that the required reserve ratio is 10%. How much deposits will be created in the banking system?