Problem 1. In a country, labor force participation rate is 60 percent, the natural rate of unemployment is 5 percent, and the average labor productivity is 1200 units. Therefore, in this country the real GDP per capita equals _____ units.

Answer 1. Assume that cyclical unemployment is zero.[1]

$$\frac{Y}{Pop} = \frac{Y}{L} \times \frac{L}{LF} \times \frac{LF}{Pop}$$
$$= 1200 \times (1 - 0.05) \times 0.60$$
$$= 684.$$

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[1]Person who asked in discussion > me.

Problem 2. *True or False.* The difference between human capital and knowledge capital is that, human capital is rivalrous but not subject to diminishing returns. Knowledge capital, on the other hand, is non-rivalrous but subject to diminishing returns.

Answer 2: False. Human capital is rivalrous and is also subject to diminishing returns. Knowledge capital is non-rivalrous and is not subject to diminishing returns. Emphasis of constant returns to scale of knowledge capital is one of the major features of new growth theory.

Problem 3.   *True or False.* Comparing the growth performances of pairs of countries like capitalist South Korea and socialist North Korea, capitalist West Germany and socialist East Germany, capitalist Hong Kong and communist China, teaches us about the role of institutions in economic growth.

Answer 3: True.   The idea is that South Korea, West Germany, and Hong Kong all have/had relatively free capitalistic market (and all of the institutions that this would imply) compared to their counterparts, and had more growth because of it.

Problem 4.   Here's some data from a country.

Currency	$10,000.00
Demand deposits	$20,000.00
Savings deposits	$15,000.00
Short-term treasury bonds (maturity less than a year)	$25,000.00
Long-term treasury bonds (maturity more than a year)	$45,000.00
Money market mutual funds deposits owned by individuals	$12,000.00
Money market mutual funds deposits owned by corporations	$56,000.00
Small denomination time deposits (less than $100,000)	$28,000.00
Large denomination time deposits (more than $100,000)	$45,000.00
Corporate bonds	$12,000.00
Corporate stocks	$80,000.00

Find M1 and M2.

Answer 4.

$M1 = \text{Currency} + \text{Demand Deposits} = \$10,000 + \$20,000 = \$30,000$

$M2 = M1 + \text{Savings} + \text{MMMF deposits by individuals} + \text{small denomination time deposits}$

$\quad = \$30,000 + \$15,000 + \$12,000 + \$28,000$

$\quad = \$85,000$

Problem 5.

(a) If Abe transfers $100,000 from his savings account to his checking account, M1 will increase but M2 will remain the same. Do you agree or not?

(b) Susan has $250,000 in a time deposit account. If she transfers $50,000 from that account to her checking account, M1 will increase but M2 will remain the same. Do you agree or not?

(c) If Jack transfers $40,000 from his checking account to his savings account, M1 will decrease but M2 will remain the same. Do you agree or not?

(d) If Carmen transfers $20,000 from his savings account to his money market mutual fund account, both M1 and M2 will remain the same. Do you agree or not?

Answer 5.

(a) **Yep.** The money is in M2 both before and after, so M2 doesn't change. It wasn't in M1 before, however, because savings are not part of M1. So M1 increases.

(b) **Nope.** The time deposit is greater than $100,000, so it doesn't count as part of M2. Therefore when the money is transferred into a checking account, both M1 and M2 increase.

(c) **Yahuh.** The money is in M2 both before and after, so M2 doesn't change. It used to be in M1, but is no longer in M1 because savings accounts aren't part of M1. So M1 falls.

(d) **Oui.** Savings accounts and MMMF accounts are both part of M2, so nothing changes.

Problem 6. The bank sells $6 million worth of treasury bonds to the Fed. Which of the four options that follow the bank balance sheet is the correct balance sheet immediately following this sale (Before the bank loaning out that $6 million or buying treasury bonds with it)? (I can't fit all of those tables here. Sorry!)

Answer 6. First, they're 6 million less in T-bonds. The number of deposits hasn't changed, but the bank now has $6 million more than it had before in reserves. This means the bank now has $6 million more in excess reserves.

Initial Bank Balance Sheet				
Assets			**Liabilities + Net Worth**	
Uses of Funds			Sources of Funds	
Reserves			Deposits	$140,000,000
Required	$14,000,000			
Excess	$13,000,000			
Treasury Bonds	$37,000,000		Borrowing	$18,000,000
Loans	$136,000,000		Net Worth	$42,000,000
Total	**$200,000,000**		**Total**	**$200,000,000**

Bank Balance Sheet				
Assets			**Liabilities + Net Worth**	
Uses of Funds			Sources of Funds	
Reserves			Deposits	$140,000,000
Required	$14,000,000			
Excess	$19,000,000			
Treasury Bonds	$31,000,000		Borrowing	$18,000,000
Loans	$136,000,000		Net Worth	$42,000,000
Total	**$200,000,000**		**Total**	**$200,000,000**

Problem 7. Someone deposits $6 million in the bank. Which of the four options that follow the bank balance sheet is the correct balance sheet immediately following this transaction (Before the bank loaning out that $6 million or buying bonds)?

Answer 7.   Alright, so first of all we can deduce that the required reserve ratio is 140 mil/14 mil = 10%. Since the bank now has 146,000,000, this means that the new number of required reserves is 14.6 million. The bank used to have 14+13=27 mil in total reserves, now it has 33 mil. Therefore it currently has $33 - 14.6 = 18.4$ million excess reserves.

Initial Bank Balance Sheet			
Assets		**Liabilities + Net Worth**	
Uses of Funds		Sources of Funds	
Reserves		Deposits	$140,000,000
Required	$14,000,000		
Excess	$13,000,000		
Treasury Bonds	$37,000,000	Borrowing	$18,000,000
Loans	$136,000,000	Net Worth	$42,000,000
Total	**$200,000,000**	**Total**	**$200,000,000**

Bank Balance Sheet			
Assets		**Liabilities + Net Worth**	
Uses of Funds		Sources of Funds	
Reserves		Deposits	$146,000,000
Required	$14,600,000		
Excess	$18,400,000		
Treasury Bonds	$37,000,000	Borrowing	$18,000,000
Loans	$136,000,000	Net Worth	$42,000,000
Total	**$206,000,000**	**Total**	**$206,000,000**

Problem 8. The required reserve ratio is 10%. If the Fed increases the amount of excess reserves in the banking system by $100,000,000, the maximum potential amount of additional money created in the economy will be _____ dollars.

Answer 8. Money creation is the highest when banks lend out as much as they possible can, i.e. are fully lent out. In this case, the money multiplier is $1/rrr$, which is $1/0.10 = 10$. Therefore the maximum potential increase in the money supply is

$$\$100,000,000 \times \frac{1}{0.10} = \$100,000,000 \times 10 = \$1,000,000,000.$$

Problem 9. The required reserve ratio is 10%, but banks want to hold an additional 2.5% of their deposits as excess reserves. If the Fed increases the amount of excess reserves in the banking system by $100,000,000, the maximum potential amount of additional money created in the economy will be _____ dollars.

Answer 9. The money multiplier depends on the fraction of deposits that are actually loaned out. If the banks hold 2.5% excess reserves, then the money multiplier is $\dfrac{1}{rrr + 0.025}$. So in this case we have

$$\$100,000,000 \times \frac{1}{0.125} = \$100,000,000 \times 8 = \$800,000,000.$$

Problem 10. Currently the required reserve ratio is 10% and there are $100,000,000 of deposits in the banking system. If the Fed reduces the required reserve ratio to 8%, the maximum potential amount of additional loans created in the economy will be ——————— dollars.

Answer 10. The Fed initially has 10,000,000 in required reserves. When the reserve ratio is reduced, they only have to hold on to 8,000,000, so they're going to start loaning out the excess 2,000,000. This 2 million can then undergo the money creation process with a money multiplier of $1/0.08 = 12.5$, so the answer is

$$2,000,000 \times 12.5 = \$25,000,000.$$