Ch.20--Money multiplier

Depository institutions (e.g., banks and credit unions), in order to make profit, create multiple deposits ~~by~~ issuing loans and getting them re-deposited;

Every deposit increases M1(= currency + deposits) and the ratio of M1 to MB (=currency + reserves) is called money multiplier;

Assume borrowers keep a portion of loan in cash and deposit the remainder

Desired currency holding = c*deposits;
Desired reserves = r*deposits
Monetary base = currency holding + reserves
= c*deposits + r*deposits
=deposits (c+r)
Money (M1) = desired currency holding + deposits
=c*deposits + deposits
=deposits (c+1)=deposits (1+c)

Money multiplier=M1/MB=(1+c)/(c+r)

1. The Bank *Z*'s assets and liabilities are as follows:
Reserves $250 million
Loans $1,000 million
Deposits $2,000 million
Total assets $2,500 million

a. Construct the bank' balance sheet. If you are missing any assets call them "other assets"; if you are missing any liabilities call them "other liabilities."
b. Calculate the Bank's reserve ratio
c. If the currency drain ratio is 25%, show first three rounds of the money creation process. Calculate the money multiplier.

a. Banks Balance Sheet

Assets+ ($ million)	Liabilities- ($ million)
Reserves: 250	*Deposits: 2,000*
Loans: 1,000	
Other assets: 1,250	Other liabilities: 500
Total assets: 2,500	Total liabilities: 2,500

b. Reserve ratio = (Reserves/Deposits) = 250/2000= 0.125 = 12.5%

c. Hypothetical money creation process (from an initial loan of $1000); provided that the currency drain, c = 0.25, and r= 0.125

Round	Loan $	Currency (variable X) **c = 0.25**	Deposit (variable Y)	Money;M1 (=currency +deposit)	Reserve (reserve ratio, r = 0.125)	Excess reserve
1	1,000	200	800	1,000	100	700
2	700	140	560	700	70	490
3	490	98	392	490	49	343
4	343					
…	…	…	…	…	…	…
Total				3.33*1000 =3333		

Round 1, X+Y = 1000, and X/Y=0.25 or X=0.25Y
0.25Y+Y=1000 or Y=1000/1.25 = 800; therefore X= 1000-800=200

Money multiplier mm= (1+c)/ (c+r) = (1+0.25)/ (0.25+0.125) = 3.33