How a single bank creates money.

A bank can not create money if the reserve requirement is 100%. If the reserve requirement is less than 100%, the bank can still get in trouble if its reserves fall below the requirement. This is called Adverse Clearing Balances. Let's see how a bank can get into this situation before we turn our attention to how a bank can create money without getting into this trouble.

Assume: 1: $1000 comes into the banking system from the outside-- from a "cave;"
2: the required reserve ratio is 20% or 1/5.

#1

Austin National Bank's initial Balance Sheet:

	Assets	Liabilities
Reserves	$4,000	$20,000 Demand Deposits
Loans	16,000	
	$20,000	$20,000

#2

Austin National Bank's Balance Sheet after the deposit of the $1000 from the cave:

	Assets	Liabilities
Reserves	$5,000	$21,000 Demand Deposits
Loans	16,000	
	$21,000	$21,000

The bank now has $5000 in reserves. It could ask how many demand deposits its $5000 in reserves could support with a reserve requirement of 20%. *(Asking this question, answering it, and acting on it will get this bank in trouble.)* The answer to the question is that it could support $25,000 in demand deposits.

It only has $21,000. This leaves a $4000 difference; by lending money to people the bank could close this difference. (*When banks lend money they create demand deposits and hence money.)* So let's say Joan Modern wants to remodel her kitchen. She applies for the loan at the bank and the bank approves a loan for $4000. Austin National Bank's Balance Sheet looks like this immediately after the loan was made but before the money was spent:

#3

	Assets	Liabilities
Reserves	$5,000	$25,000 Demand Deposits
Loans	$20,000	
	$25,000	$25,000

Note that $4000 has been added to Demand Deposits because of the loan made to Joan Modern. $4000 was also added to the Asset side of the ledger under "Loans". The loan agreement Joan signed is an asset to the bank.

David Smith, the contractor, receives a $4000 check from Joan Modern for remodeling the kitchen. David takes the check and deposits it in the bank in which he keeps his money--Capital National Bank.

Capital National Bank will credit David's account for $4000 and will, of course, add the $4000 to its Reserves. But before it can fully count on those $4000 of additional reserves, it must get the reserves from Joan Modern's bank. So it presents Joan's check to Austin National Bank and asks that is make the check good. To make the check good, Austin National Bank will transfer $4000 of its reserves to Capital National Bank, and it will debit Joan's account by $4000. After these transactions, Austin National Bank's Balance Sheet looks like this:

#4

	Assets	Liabilities
Reserves	$1,000	$21,000 Demand Deposits
Loans	$20,000	
	$21,000	$21,000

As you can now see, Austin National Bank's reserves have dropped to $1000, while it still has $21,000 in outstanding demand deposits. Reserves are less than 5% of demand deposits. They should be at least 20%. This bank is in trouble. After the check cleared for the loan the bank made to Joan Modern, the bank was left with inadequate reserves. The bank has experienced Adverse Clearning Balances.

To avoid Adverse Clearning Balances, the bank should not have asked itself how much in demand deposits its reserves could support. It should have asked how much it had in Excess Reserves, and it should have lent only this amount.

Excess Reserves = Total Actual Reserves - Required Reserves.

If you look back at balance sheet #2, you will see that immediately after the $1000 deposit the bank had $5000 in Total Actual Reserves. It had $21,000 in Demand Deposits. If the Required Reserve Ratio is 20%, as we have assumed, then the bank's Required Reserves are equal to %20 of $21,000, or $4200.

Hence:		
	Total Actual Reserves	= $5000
	- Required Reserves	= $4200
	= Excess Reserves	= $ 800

So, the bank should have lent out only $800, not $4000.

So, let's return to Joan Modern and assume she only wants to buy a new refrigerator for $800. She goes to Austin National Bank, and the bank lends her the money. Austin National Bank's Balance Sheet now looks like this immediately after the loan was made but before the money was spent:

new #3

	Assets	Liabilities
Reserves	$5,000	$21,800
Loans	$16,800	
	$21,800	$21,800

Joan Modern purchases her new refrigerator from Appliance Associates. She writes out an $800 check to pay for it. Appliance Associates deposits the check in its account at Republic Bank of Austin. Republic Bank credits Appliance Associates account for $800 and adds $800 to its Reserves.

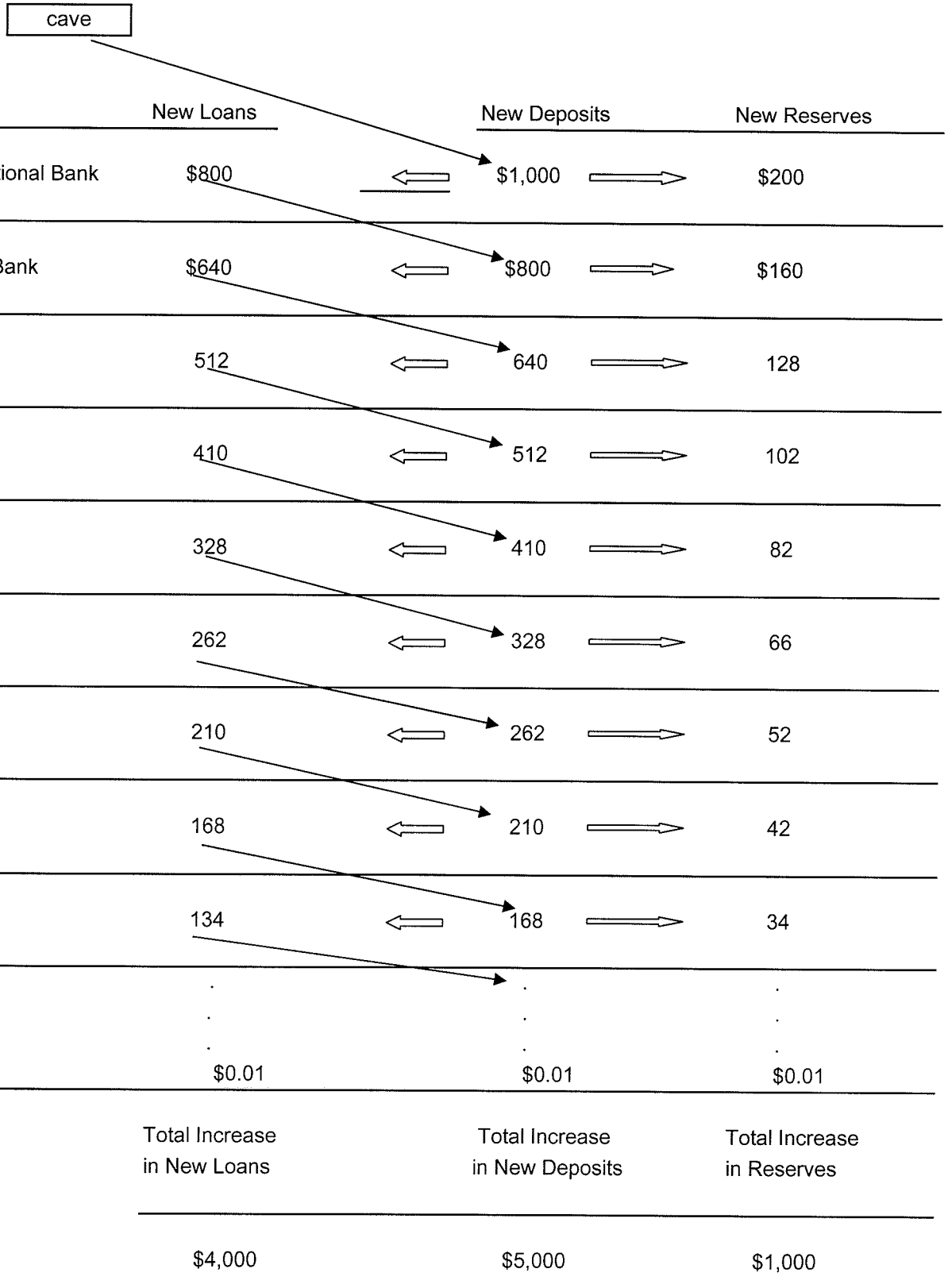
But, before Republic can actually count on these additional reserves they need to get them from Austin National Bank. So, Republic Bank presents Austin National Bank with the $800 check written against it, and asks Austin National Bank to make the check good. Austin National Bank does this by transferring $800 of its reserves to Republic Bank. At the same time Austin National Bank debits Joan Modern's account for $800. After these transactions Austin National Bank's Balance Sheet looks like this:

	Assets	Liabilities
Reserves	$4,200	$21,000
Loans	16,800	
	$21,000	$21,000

Note that the $4200 it has in reserves is exactly 20% of its deposits. The lesson to be learned here is that a bank should only lend out what it has in excess reserves.

How the Banking System Creates Money

Assuming: 1) $1000 comes into the banking system from outside it-- from a "cave",
2) the required reserve ratio is 20%.



Total Increase in New Loans	Total Increase in New Deposits	Total Increase in Reserves
$4,000	$5,000	$1,000

You might recall that this table is quite similar to the Autonomous Spending Multiplier. However, this process is called the Deposit Expansion Multiplier.

$$\text{Deposit Expansion Multiplier} = \frac{\text{Total Increase in Deposits}}{\text{Initial Increase in Deposits}}$$

In the above example,

$$\text{Deposit Expansion Multiplier} = \frac{\$5{,}000}{\$1{,}000} = 5.$$

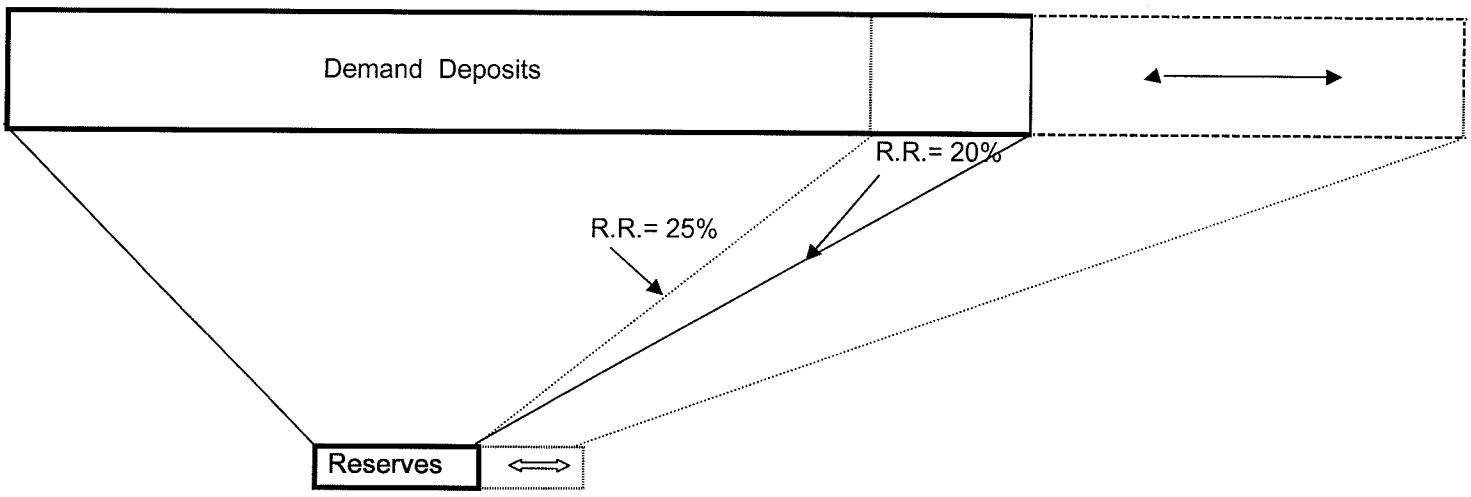
There is a shortcut to figuring out what the Deposit Expansion Multiplier is.

$$\text{Deposit Expansion Multiplier} = \frac{1}{\text{Required Reserve Ratio}}$$

In the above example, Deposit Expansion Multiplier $= \frac{1}{1/5} = 5.$

The only question that remains is: Where is the "cave" in opur economy? The answer is that it is the Federal Reserve System (or Fed). The Fed controls the money supply by regulating the amount of money initially going into the banking system and by taking money out of it (which sets the multiplier process in reverse).

Remember: M1 = currency + demand deposits.



The Fed can increase or decrease demand deposits (and, hence money supply) by increasing or decreasing reserves. The Fed can increase or decrease reserves by buying or selling government bonds and government bills, respectively. Buy to increase; sell to decrease. The Fed can also lend money (reserves) to banks. They can encourage banks to borrow or not to borrow by raising or lowering the discount rate. By lowering the discount rate, banks have an incentive to borrow more money, hence increasing their reserves. Increasing the discount rate would shrink reserves.

The Fed can also increase or decrease demand deposits (and, hence, money supply) by changing the Reserve Ratio (R.R.). The Fed would decrease the Reserve Ratio to increase demand deposits. They would increase the Reserve Ratio to decrease demand deposits.