1. Consider a bank with the following balance sheet:

<table>
<thead>
<tr>
<th>Assets</th>
<th>Liabilities</th>
</tr>
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<tbody>
<tr>
<td>Reserves $100K</td>
<td>Checking Deposits: $1 m.</td>
</tr>
<tr>
<td>Loans $1 m.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Net worth: $_____</td>
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a) What is the bank’s net worth? $100K
b) If the Fed has a reserve requirement ratio of 10%, is this bank in compliance? Explain.
   Yes, because it has exactly 10% of its deposits protected by liquid reserves
c) What is the “leverage ratio” for this bank (i.e. (total assets)/(net worth))? 
   Assets/NW = 11
d) Assume $50K in deposits are suddenly withdrawn
   i) Show how this affects the balance sheet (on both sides)
       Reserves fall by $50K; Deposits fall by $50K
   ii) Is the bank now in compliance with the minimum reserves discussed in (b)?
       If not, explain what the bank must do.
       The bank is NOT in compliance, since its $50K reserves are less than 10% of its $950K deposits. It can restore compliance by borrowing reserves from another bank (or from the Fed), or by selling off loans

2. Suppose in the previous problem (before the withdrawals in part (d)) that 10% of the loan portfolio fails. (For example: 10% of households stop paying their mortgages). These loans are now worthless assets.
    a) Write down the new balance sheet, once these adjustments are made.
       Assets: Reserves $100K, Loans $900K
       Liabilities: Deposits $1m.
       Net Worth: $0
    b) Describe the “perverse incentives” under which the bank’s owners and managers now operate, and the trouble this might lead to.
       The bank is now literally bankrupt. Owners have an incentive to strip the banks assets or to take unreasonable risks. It’s a situation of “heads, we win, tails, someone else loses”
    c) Suppose the federal government bought those “toxic assets”, and paid 70% of the face value (even though the real value is zero).
       i) What is the balance sheet now?
          Assets: Reserves: $170K, Loans, $900K
          Liabilities: Deposits: $1m.
          Net Worth: $70
       ii) Are incentives for the bank manager’s and owners still “perverse”? 
           No: the bank has been restored to positive net worth. Now the owners have something to lose if they should make bad gambles.