1. According to the textbook, the role(s) of capital is to:

   A. provide a cushion against failure risk.
   B. provide funds needed to charter, organize, and operate a bank.
   C. promote public confidence.
   D. All of the options are correct.

2. Under market value accounting methods, Banks
   A. must write down the value of their assets to fully reflect market values.
   B. have a great deal of discretion in timing the write downs of problem loans.
   C. must conform to regulatory write-down schedules.
   D. have an incentive to fully reflect problem assets as they become known.

3. What is the impact on economic capital of a 25 basis point decrease in interest rates if the bank is holding a 20-year, fixed-rate, 11 percent annual coupon bond selling at a par value of $100,000?
   A. A decrease of $250.
   B. An increase of $250.
   C. An increase of $2,024.
   D. A decrease of $1,959.

PV = $102,023.82 FV = 100,000 I = 10.75 N = 20 PMT = 11,000

$\$102{,}023.82 - \$100{,}000 \approx +\$2{,}024.$

4. The Basel capital requirements are based upon the premise that
   A. banks with riskier assets should have higher capital ratios.
   B. banks with riskier assets should have lower capital ratios.
   C. banks with riskier assets should have lower absolute amounts of capital.
   D. banks with riskier assets should have higher absolute amounts of capital.

5. Which of the following is not a category of capital under Basel III?
   A. Tier III capital.
   B. Tier II capital.
   C. Common Equity Tier I.
   D. Total risk-based capital.

6. Which of the following assets is deducted from Common Equity Tier I capital?
   A. Trademarks.
   B. Goodwill.
   C. Patents.
   D. Bank premises.

7. Use the following information

Securities (at par)	$250	Deposits	$975
Loans (at par)	$760	Capital	$35

If problem loans reduce the market value of the loan portfolio by 25 percent, what is the value of regulatory defined (book value) capital?

A. **$35 million.**
B. -$155 million.
C. $7 million.
D. -$7 million.

Loan portfolio × reduction percentage = decrease in market value of loan portfolio
$760 × (–0.25) = –$190
The decrease in the market value of the loan portfolio has no effect on book value, so there is no change in the capital: $35.

8. Use the following information

Cash and Treasury securities	$100 million
Fed Funds Sold	$100 million
Residential Mortgages 1-4 family	$200 million
Commercial Loans	$600 million

Note: The residential mortgages all have a loan-to-value of between 60 and 80 percent.
What is the amount of risk-adjusted assets?

A. $1,000 million.
B. $720 million.
C. $900 million.
D. $600 million.

Asset	**Amount**	**Risk Weight**	
Cash and Treasuries	100	0	0
Fed Fund Sold	100	0.20	20
1-4 family Residential Mortgages (LTV 60%-80%)	200	0.50	100
Commercial Loans	600	1.00	600
Total	1,000	Total Risk Adjusted:	$720

9. Sigma Bank has the following balance sheet in millions of dollars. Unless mentioned otherwise, all assets are associated with corporate customers (not governments or sovereigns). Values are in millions of dollars. Refer to table 20-8 for appropriate risk weights.

Cash	$40	Deposits	$370
Municipal General Obligation Bonds	$60		
Residential Mortgages 1-4 family (80% - 90% LTV)	$100	Perpetual Preferred Stock	$20
Commercial loans BB + rated	$200	Equity	$10
Total Assets	$400		$400

Off balance sheet contingent liabilities (Refer to Table 20-10)

$40 million direct-credit substitute standby letters of credit issued to a U.S. corporation.	(20%)
$40 million commercial letters of credit issued to a corporation	(50%)

Off-balance sheet derivatives (Refer to Table 20-11)

$200 million 10-year interest rate swaps	(4%)
$100 million 2-year forward DM contracts	(1%)

What is the minimum required Tier I and Total risk-based capital for the on-balance-sheet assets in order for the DI to be adequately capitalized?

A. $8 million; $8 million.
B. $16.87 million; $16.87 million.
C. **$17.22 million; $22.96 million.**
D. $22.96 million; $28.70 million.

In order to be adequately capitalized, Tier I capital must be 6.0 percent and Total Risk-based capital is to be 8.0 percent.
Recall that total risk based capital will include the preferred stock as Tier II capital.
Tier I capital = $287 million $\times$ 0.06 = $17.22 million.
Total Risk Based Capital = $287 $\times$ 0.08 = $22.96 million.
Tier 1 capital includes only equity: $10 million.
Total risk-based capital is equity + perpetual preferred: $10 + $20 = $30 million.

10. If the bank expects its ROA to be .45% and the bank does *not* wish to change its dividend payout ratio from 35%, how much new equity capital (as a percent of total assets) must the bank issue to support the growth in assets?
A. 0.2925%
B. 2.935%
C. 0.1075%
D. 1.075%

$$\Delta TA/TA = \frac{ROA(1-DR) + \Delta EC/TA}{EQ/TA}$$

.05 = [.0045*(1-.35) + ΔEC/TA]/.08

.05 *.08= [.002925 + ΔEC/TA]

.004 - .002925 = ΔEC/TA

ΔEC/TA = .001075

11. Calculation question

Third Bank has the following balance sheet (in millions), with the risk weights in parentheses.

Assets		**Liabilities and Equity**	
Cash (0%)	$21	Deposits	$176
OECD interbank deposits (20%)	25	Subordinated debt (5 years)	2
Mortgage loans (50%)	70	Cumulative preferred stock	2
Consumer loans (100%)	70	Equity	5
Reserve for loan losses	(1)		
Total assets	$185	Total liabilities and equity	$185

The cumulative preferred stock is qualifying and perpetual. In addition, the bank has $30 million in performance-related standby letters of credit (SLCs) to a public corporation, $40 million in two-year forward FX contracts that are currently in the money by $1 million, and $300 million in six-year interest rate swaps that are currently out of the money by $2 million. Credit conversion factors follow:

Performance-related standby LCs	50%
1- to 5-year foreign exchange contracts	5%
1- to 5-year interest rate swaps	0.5%
5- to 10-year interest rate swaps	1.5%

a. What are the risk-adjusted on-balance-sheet assets of the bank as defined under the Basel Accord?

Risk-adjusted assets:				
Cash	0 x 21	=	$0	
OECD interbank deposits	0.20 x 25	=	$5	
Mortgage loans	0.50 x 70	=	$35	
Consumer loans	1.00 x 70	=	$70	
Total risk-adjusted assets		=	$110	= $110

b. To be adequately capitalized, what are the CET1, Tier I, and total capital required for both off- and on-balance-sheet assets?

Standby LCs:	$30 x 0.50 x 1.0	=	$15			= $15
Foreign exchange contracts:						
Potential exposure	$40 x 0.05	=	$2			
Current exposure	in the money	=	$0			
Interest rate swaps:						
Potential exposure	$300 x 0.015	=	$4.5			
Current exposure	Out-of-the money	=	$2			
		=	$8.5	x	1.0	= $8.5
Total risk-adjusted on- and off-balance-sheet assets						= $133.50
						x 0.045

c. Disregarding the capital conservation buffer, does the bank have enough capital to meet the Basel requirements? If not, what minimum CET1, additional Tier 1, or total capital does it need to meet the requirement?

No, the bank does not have sufficient total capital to meet the Basel requirements. It needs CET1 capital of $6.0075 million, Tier I capital of $8.01 million, and total capital of $10.68 million. The bank has $5 million of CET1 capital, $7 million of Tier I capital ($5 million CET1 capital and $2 million of additional Tier I capital), and $10 million of total capital ($3 million ($2 million in subordinate debt and $1 million in reserve for loan losses) of Tier II capital).

If the bank issues $1.0075 million in CET1 capital, it will need $0.0025 million in additional Tier I capital, and no Tier II capital. With these additions the bank will have $6.0075 million of CET1 capital, $8.01 million of Tier I capital, and $11.01million of total capital.

A new balance sheet after the issuance of the new required equity is shown below. You will note that the total capital exceeds the minimum of $10.68 million.

New balance sheet:			
Cash	$22.01	Deposits	$176
OECD interbank deposits	25	Subordinated debt (over 5 years)	2
Mortgage loans	70	Cumulative preferred stock	2.0025
Consumer loans	70	Equity	6.0075
Reserve for loan losses	(1)		
Total	$186.01		$186.01

d. Does the bank have enough capital to meet the Basel requirements, including the capital conservation buffer requirement? If not, what minimum CET1, additional Tier 1, or total capital does it need to meet the requirement?

Total risk-adjusted on- and off-balance-sheet assets	= $133.50
	x 0.070
CET1 capital required including capital conservation buffer	$9.345
	x 0.085
Tier I capital required including capital conservation buffer	$11.3475
	x 0.105
Total capital required	= $14.0175

No, the bank does not have sufficient total capital to meet the Basel requirements. It needs CET1 capital of $9.345 million, Tier I capital of $11.3475 million, and total capital of $14.0175 million. The bank has $5 million of CET1 capital, $7 million of Tier I capital, and $10 million of total capital.

If the bank issues $4.345 million in CET1 capital, it will need $0.0025 million in additional Tier I capital, and no Tier II capital. With these additions the banks will have $9.345 million of CET1 capital, $11.345 million of Tier I capital, and $14.345 million of total capital.

A new balance sheet after the issuance of the new required equity is shown below. You will note that the total capital exceeds the minimum of $14.0175 million.

New balance sheet

Cash	$25.34	Deposit	$176
OECD interbank deposit	25	Subordinated debt (over 5 years)	2
Mortgage loans	70	Cumulative Preferred stock	2.22
Consumer Loans	70	Equity	9.34
Reserve for loan losses	(1)		
Total	$189,34		$189.34