Exercises

E11-1. Finding the issue price

(AICPA adapted)

We know that the bonds were priced to yield 8% when the contract interest rate was only 6%. Since the yield is higher than the contract interest rate, we know the bonds were sold at a discount, and we must use the yield to maturity to find interest expense and the price of the bond.

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Face value</td>
<td>$100,000</td>
</tr>
<tr>
<td>Years to maturity</td>
<td>10</td>
</tr>
<tr>
<td>Stated interest rate</td>
<td>6%</td>
</tr>
<tr>
<td>Yield to maturity</td>
<td>8%</td>
</tr>
<tr>
<td>Present value of principal</td>
<td>$45,639</td>
</tr>
<tr>
<td>($100,000 at 4% for 20 periods)</td>
<td></td>
</tr>
<tr>
<td>Interest payments (3% of $100,000)</td>
<td>3,000</td>
</tr>
<tr>
<td>Present value of interest payments</td>
<td>$40,771</td>
</tr>
<tr>
<td>(Annuity of $3,000 for 20 periods at 4%)</td>
<td></td>
</tr>
<tr>
<td>Bond selling price 7/1/01</td>
<td>$86,410</td>
</tr>
<tr>
<td>(Present value of the bond)</td>
<td></td>
</tr>
</tbody>
</table>

E11-2. Market price following a change in interest rate

Now we’ve moved one year closer to the maturity date. So, two aspects of the calculation in E11-1 will have changed: The yield to maturity is now 10% (or 5% per period), and there are 18 periods to maturity.
Present value of principal  
($100,000 at 5% for 18 periods) $41,552

Present value of interest payments  
(Annuity of $3,000 for 18 periods at 5%) 35,069

Bond market price 7/1/02  
(Present value of the bond) $76,621

**E11-3 Finding the Discount at Issuance**

To find the amount of amortization on July 1, 2001 we need to know the book value of the bond on that date. Since this is the first interest date, the book value is the same as the selling price, which is the face value less any discount (or plus any premium). With this knowledge we can find the interest payable and the interest expense using the market and stated interest rates respectively, as is done below.

| Market Rate | 14% |
| Contract Rate | 12% |
| Face Value | $500,000 |

Discount ($52,970)

Selling Price of Bond $447,030

Semiannual:

<table>
<thead>
<tr>
<th>Date</th>
<th>Amount (Details)</th>
</tr>
</thead>
<tbody>
<tr>
<td>7/1/01</td>
<td>Interest expense (7% of $447,030) 31,292</td>
</tr>
<tr>
<td>7/1/01</td>
<td>Interest payment (6% of $500,000) 30,000</td>
</tr>
<tr>
<td>7/1/01</td>
<td>Amortization $1,292</td>
</tr>
</tbody>
</table>
**E11-4. Balance sheet value of a bond**  
(AICPA adapted)

Even though the bonds pay interest only annually on December 31, the June 30 balance sheet would still need to reflect interest accrued since the issue date:

<table>
<thead>
<tr>
<th>DR</th>
<th>Interest expense</th>
<th>$23,475</th>
</tr>
</thead>
<tbody>
<tr>
<td>CR</td>
<td>Interest payable</td>
<td>$22,500</td>
</tr>
<tr>
<td>CR</td>
<td>Bond discount</td>
<td>975</td>
</tr>
</tbody>
</table>

Interest expense is $23,475 = $469,500 \times 10\% \times \frac{1}{2} \text{ year}, interest payable is $22,500 = $500,000 \times 9\% \times \frac{1}{2} \text{ year}, and the amortization is the difference between these two amounts.

The June 30 book value of the bond is $470,475 or the original issue price of $469,500 plus the $975 discount amortization.

**E11-5. Gain or loss at early retirement**  
(AICPA adapted)

The gain on bond retirement can be computed as follows:

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reacquisition price</td>
<td>($1,020,000)</td>
</tr>
<tr>
<td>Face value</td>
<td>1,000,000</td>
</tr>
<tr>
<td>Unamortized premium</td>
<td>78,000</td>
</tr>
<tr>
<td>Book value of bonds 5/1/01</td>
<td>1,078,000</td>
</tr>
<tr>
<td>Gain on retirement of debt</td>
<td>$58,000</td>
</tr>
</tbody>
</table>

The reacquisition price is the cash paid out by Davis to reacquire its bonds. Since it is less than the book value of the bonds, the company realizes a gain on the retirement of its debt.
E11-6. Amortizing a premium
(AICPA adapted)

To find the amount of unamortized premium on June 30, 2002, we first need to find the interest expense for 2002 (6% of the June 30, 2001, book value, 6% of $105,000).

<table>
<thead>
<tr>
<th>Date</th>
<th>Interest Payment</th>
<th>Interest Expense</th>
<th>Premium Amortization</th>
<th>Book Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>6/30/01</td>
<td></td>
<td></td>
<td></td>
<td>105,000</td>
</tr>
<tr>
<td>6/30/02</td>
<td>7,000</td>
<td>6,300</td>
<td>700</td>
<td>104,300</td>
</tr>
</tbody>
</table>

The carrying (or book) value of the bond on June 30, 2002, is $104,300. We know that the face value of the bond is $100,000 and the book value is $104,300; the difference between the face value and book value of the bond must be the unamortized premium. So Webb should report $4,300 of unamortized premium in its June 30, 2002, balance sheet.

E11-7. Loss contingencies
(AICPA adapted)

Brower expects to receive $3.2 million as compensation for the expropriation of its manufacturing plant. The plant has a book value of $5.0 million, so the estimated loss is $1.8 million ($5.0 book value - $3.2 million expropriation proceeds). The journal entry to record the intended expropriation is:

**DR** Estimated loss on expropriation of foreign plant $1,800,000

**CR** Allowance for estimated loss on foreign plant $1,800,000
E11-8. Bonds sold at par

The bonds have a face value of $10 million, mature in 20 periods, pay interest at the rate of 4% per period ($400,000), and are sold at a market yield rate of 4% per period.

Present value of principal
($10 million at 4% for 20 periods) $4,563,869

Present value of interest payment
(Annuity of $400,000 for 20 periods at 4%) 5,436,131

Bond market price 1/1/01
(Present value of the bond) $10,000,000

So, the bonds were issued at par for $10 million. That is easy to see, because the coupon rate and the market yield rate are the same, 4%. And, because the bonds are issued at par, there is no discount or premium to record.

E11-9. Debt-for-equity swap

Requirement 1:
The bonds were originally issued at par for $100 million on January 1, 2001. Because they were issued at par, and no discount or premium was recorded, the book value of the bonds will remain at $100 million until maturity in 10 years.

On January 1, 2004 (three years later), the market yield on the bonds is 14% and their market value is:

Present value of principal
($100 million at 7% for 14 periods) $38,781,724

Present value of interest payment
(Annuity of $5 million for 14 periods at 7%) 43,727,340

Bond market price 1/1/04
(Present value of the bond) $82,509,064
Requirement 2:
If the company retired all of these bonds in exchange for stock of equal market value, the entry would be (ignoring tax effects):

\[
\begin{align*}
\text{DR} & \quad \text{Bonds payable} \quad 100,000,000 \\
\text{CR} & \quad \text{Common stock} \quad 82,509,064 \\
\text{CR} & \quad \text{Gain on retirement of bonds} \quad 17,490,936
\end{align*}
\]

E11-10. Zero coupon bonds

Requirement 1:
These bonds have a face value of $250 million, a zero coupon rate, a market yield rate of 12%, and mature in 20 years. The issue price is:

- Present value of principal
  - ($250 million at 12% for 20 periods) $25,916,691

- Present value of interest payment
  - (Annuity of zero for 20 periods at 12%) 0

- Bond market price 1/1/01
  - (Present value of the bond) $25,916,691

If the quoted interest rate is really 12% semi-annually (6% each period for 40 periods), then the bond issue price would be $24,305,547.

Requirement 2:
How much interest expense would the company record on the bonds in 2001? Well, the bonds don’t pay interest, but an expense would still be recorded:

\[
\text{Expense} = 25,916,691 \times 12\% = 3,110,003
\]

E11-11. Floating rate debt

Requirement 1:
The floating interest rate for 2001, set on January 1 of that year, was 12% or the LIBOR rate of 6% plus 6% additional interest. The 2001 interest payment was $24 million ($12 million every 6 months), or the $200 million borrowed multiplied by the 12% floating rate for the year.

For 2002, the floating rate will be 14%, or a LIBOR rate of 8% plus 6% additional interest. So the company will pay out $28 million ($14 million every 6 months) in interest that year, or $200 million borrowed multiplied by the 14% floating rate for the year.
**Requirement 2:**
The debentures were issued at par for $200 million, so there is no discount or premium to amortize. Interest expense just equals the required cash interest payment: $24 million in 2001 and $28 million in 2002.

**E11-12. Incentives for early debt retirement**

**Requirement 1:**
We must first determine the book value of the bonds on December 31, 2001—almost two years after issuance. That would seem easy because the bonds were issued at par, but there is a catch: The interest payment due that day has not yet been paid, so we must bring the books up to date by first recording accrued interest from July 1 through December 31:

<table>
<thead>
<tr>
<th>DR</th>
<th>Interest expense to December 31</th>
<th>$5,000,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>CR</td>
<td>Interest payable</td>
<td>$5,000,000</td>
</tr>
</tbody>
</table>

$5,000,000 = $125 million × 4%

The total book value (including Interest) of the debt on December 31, 2001, is $130 million, the $125 million borrowed plus the $5 million of interest owed for July 1 through December 31.

The market value of the bonds on December 31, 2001, is: $125 million face value, 8% coupon rate paid semi-annually, 13 years to maturity, and yield of 12%:

Present value of principal
($125 million at 6% for 26 periods) $27,476,254

Present value of interest payment
(Annuity of $5 million for 26 periods at 6%) 65,015,831

Bond present value 12/31/02 $92,492,085

Plus the accrued interest of $5 million gives a total market value of the bond equal to $97,492,085.
The entry to record the debt retirement is:

\[ \begin{align*}
\text{DR} & \quad \text{Bonds payable} \quad $125,000,000 \\
\text{DR} & \quad \text{Accrued interest payable} \quad 5,000,000 \\
\text{CR} & \quad \text{Cash} \quad $97,492,085 \\
\text{CR} & \quad \text{Gain on retirement of debt} \quad 32,507,915 \\
\text{DR} & \quad \text{Tax expense (@ 40\%)} \quad $13,003,166 \\
\text{CR} & \quad \text{Taxes payable} \quad $13,003,166
\end{align*} \]

**Requirement 2:**

There are several reasons a company might want to retire debt early: take advantage of lower interest rates; postpone scheduled principal repayments; eliminate a conversion feature attached to the debt; improve the company’s mix of debt and equity capital; or earnings management using the “paper” gains from debt retirement. However, unless the company is awash in cash, voluntary retirement is unlikely since the debt would have to be replaced at a higher (12\%) interest cost.

**E11-13. Off-balance sheet debt**

Notice that the joint venture (Woodly Partners) borrowed the $200 million, not the two partner companies. Neither partner (Wood or Willie) owns more than 50% of the joint venture’s common stock, so consolidation is not required (see Chapter 16 for the details on this point). The $200 million will show up on the books of the joint venture, but not on the books of Wood or Willie. Both partners will probably provide a footnote description of the joint venture, its borrowing and thus their guarantee of the debt.

**E11-14. Noninterest-bearing loan**

**Requirement 1:**
The present value of this payment stream, discounted at 9\%, is:

\[ \begin{align*}
\text{Present value of $100,000 at delivery} & \quad $100,000 \\
\text{Present value of $200,000 in 1 Year} & \quad 183,486 \\
\text{Present value of $200,000 in 2 Years} & \quad 168,336 \\
\text{Total present value of payment stream} & \quad $451,822
\end{align*} \]

\[ \begin{align*}
$183,436 & = \frac{200,000}{1.09} \\
$168,336 & = \frac{200,000}{(1.09)^2}
\end{align*} \]
Requirement 2:
The purchase would be recorded at its implied cash price of $451,822 as:

| DR Equipment | $451,822 |
| CR Cash      | $100,000 |
| CR Note payable | 351,822 |

Interest expense at 9% per year on the unpaid balance would also be recorded over time.

Requirement 3:
McClelland should purchase from Agri-Products because it has offered the best price.

E11-15. Understanding GAAP hedges

Requirement 1:
A “hedged item” can be (1) an existing asset or liability on the company’s books, (2) a firm commitment, or (3) an anticipated (forecasted) transaction. All of the items listed qualify as hedged items when viewed from the perspective of the company on whose books they are already listed.

(a) Manufacturer’s work-in-process inventory is an existing asset.
(b) Credit card receivables are an existing asset at Sears.
(c) Corn inventory is an existing asset at the cooperative.
(d) Salaries payable are an existing liability at Ford Motor Company.
(e) The three-year note is an existing liability at GM.
(f) The three-year note is an existing liability at Daimler-Chrysler.

Requirement 2:
The qualifying hedge instrument is most often a derivative security, although not all derivatives meet the GAAP rules and some qualifying hedges do not involve derivatives. Insurance contracts, options to purchase real estate, equity and debt securities, and financial guarantee contracts do not qualify as a hedge instrument. Three items (a), (c) and (d) qualify as hedging instruments. Item (b) is an insurance contact and specifically excluded from qualification. Item (e) is a standard real estate rental (lease) contract and does not qualify either.
**Requirement 3:**
Eligible risks for hedge accounting are those that arise from overall changes in the fair value or cash flow of the hedged item, or from changes in benchmark interest rates, commodity prices, foreign currency exchange rates, and the credit-worthiness of the issuing party. Items (b), (c), and (e) qualify as eligible risks.

(a) Alliant Energy’s risk that summer demand will exceed its capacity is not an eligible risk because there is no specific “hedged item”.

(b) Ford’s risk of steel price increases is an eligible risk of changes in the fair value of an anticipated transaction.

(c) American Express’s risk that members won’t pay their bills is an eligible cash flow risk of an existing receivable.

(d) The risk of grain mold is not an eligible risk.

(e) Currency exchange risk is an eligible risk.
Problems
P11-1. Bonds issued at a discount

Requirement 1:
The issuance price of the bonds on July 1, 2001, is equal to the present value of the principal repayment plus the present value of the semi-annual interest payments. Since the bonds pay interest semi-annually, the present value calculations are based on a twenty-period horizon using a market interest rate of 5% (i.e., 10%/2).

Present value of the principal repayment:

\[ \text{Present value} = 15,000,000 \times \text{Present value of } \$1 \text{ to be received in 20 periods at } 5\% \]
\[ = 15,000,000 \times 0.3769 = 5,653,500 \]

Present value of the interest payments:

\[ \text{Present value} = (15,000,000 \times 0.04) \times \text{Present value of an ordinary annuity of } \$1 \text{ to be received for 20 periods at } 5\% \]
\[ = 600,000 \times 12.4622 = 7,477,320 \]

Price of the bonds:

\[ = 5,653,500 + 7,477,320 = 13,130,820 \]

Requirement 2:
The amortization schedule appears below:

<table>
<thead>
<tr>
<th>Date</th>
<th>Interest Expense ((0.05 \times e))</th>
<th>Cash Payment ((\text{Fixed}))</th>
<th>Amortization of Bond Discount ((a - b))</th>
<th>Discount on B/P ((\text{Beginning Balance minus c}))</th>
<th>Carrying Amount (($15,000,000 - \text{minus d}))</th>
</tr>
</thead>
<tbody>
<tr>
<td>7/1/01</td>
<td>$1,869,180.00</td>
<td>$13,130,820.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12/31/01</td>
<td>$656,541.00</td>
<td>$600,000.00</td>
<td>$56,541.00</td>
<td>1,812,639.00</td>
<td>13,187,361.00</td>
</tr>
<tr>
<td>6/30/02</td>
<td>$659,368.05</td>
<td>600,000.00</td>
<td>59,368.05</td>
<td>1,753,270.95</td>
<td>13,246,729.05</td>
</tr>
<tr>
<td>12/31/02</td>
<td>$662,336.45</td>
<td>600,000.00</td>
<td>62,336.45</td>
<td>1,690,934.50</td>
<td>13,309,065.50</td>
</tr>
<tr>
<td>6/30/03</td>
<td>$665,453.28</td>
<td>600,000.00</td>
<td>65,453.28</td>
<td>1,625,481.22</td>
<td>13,374,518.78</td>
</tr>
</tbody>
</table>
Requirement 3:
The journal entries for the first four interest payments are:

12/31/01:
DR Interest expense $656,541.00
CR Cash $600,000.00
CR Discount on bonds payable 56,541.00

6/30/02:
DR Interest expense $659,368.05
CR Cash $600,000.00
CR Discount on bonds payable 59,368.05

12/31/02:
DR Interest expense $662,336.45
CR Cash $600,000.00
CR Discount on bonds payable 62,336.45

6/30/03:
DR Interest expense $665,453.28
CR Cash $600,000.00
CR Discount on bonds payable 65,453.28

Requirement 4:
The balance sheet presentation at 12/31/01 would be:

Bonds payable $15,000,000.00
Less: Discount on bonds payable 1,812,639.00
Carrying amount of bonds payable $13,187,361.00

The balance sheet presentation at 12/31/02 would be:

Bonds payable $15,000,000.00
Less: Discount on bonds payable 1,690,934.50
Carrying amount of bonds payable $13,309,065.50
P11-2. Bonds issued at a premium

**Requirement 1:**
The issuance price of the bonds on January 1, 2002, is equal to the present value of the principal repayment plus the present value of the semi-annual interest payments. Since the bonds pay interest semi-annually, the present value calculations are based on a twenty-period horizon using a market interest rate of 3% (i.e., 6%/2).

Present value of the principal repayment:
\[
= \$25,000,000 \times \text{Present value of$1 to be received in 20 periods at 3%}
\]
\[
= \$25,000,000 \times 0.5537 = \$13,842,500
\]

Present value of the interest payments:
\[
= (\$25,000,000 \times 0.04) \times \text{Present value of an ordinary annuity of$1 to be received for 20 periods at 3%}
\]
\[
= \$1,000,000 \times 14.8775 = \$14,877,500
\]

Price of the bonds:
\[
= \$13,842,500 + \$14,877,500 = \$28,720,000
\]

**Requirement 2:**
The amortization schedule appears below:

<table>
<thead>
<tr>
<th>Date</th>
<th>Interest Expense (0.03 x e)</th>
<th>Cash Payment (Fixed)</th>
<th>Amortization of Bond Premium (b - a)</th>
<th>Premium on B/P (Beginning Balance minus c)</th>
<th>Carrying Amount ($25,000,000 plus d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/1/02</td>
<td></td>
<td></td>
<td></td>
<td>3,720,000.00</td>
<td>28,720,000.00</td>
</tr>
<tr>
<td>6/30/02</td>
<td>$861,600.00</td>
<td>$1,000,000.00</td>
<td>$138,400.00</td>
<td>3,581,600.00</td>
<td>28,581,600.00</td>
</tr>
<tr>
<td>12/31/02</td>
<td>857,448.00</td>
<td>1,000,000.00</td>
<td>142,552.00</td>
<td>3,439,048.00</td>
<td>28,439,048.00</td>
</tr>
<tr>
<td>6/30/03</td>
<td>853,171.44</td>
<td>1,000,000.00</td>
<td>146,828.56</td>
<td>3,292,219.44</td>
<td>28,292,219.44</td>
</tr>
<tr>
<td>12/31/03</td>
<td>848,766.58</td>
<td>1,000,000.00</td>
<td>151,233.42</td>
<td>3,140,986.02</td>
<td>28,140,986.02</td>
</tr>
</tbody>
</table>
**Requirement 3:**
The journal entries for the first four interest payments are:

6/30/02:
- **DR** Interest expense $861,600.00
- **DR** Premium on bonds payable 138,400.00
- **CR** Cash $1,000,000.00

12/31/02:
- **DR** Interest expense $857,448.00
- **DR** Premium on bonds payable 142,552.00
- **CR** Cash $1,000,000.00

6/30/03:
- **DR** Interest expense $853,171.44
- **DR** Premium on bonds payable 146,828.56
- **CR** Cash $1,000,000.00

12/31/03:
- **DR** Interest expense $848,766.58
- **DR** Premium on bonds payable 151,233.42
- **CR** Cash $1,000,000.00

**Requirement 4:**
The balance sheet presentation at 12/31/02 would be:

- Bonds payable $25,000,000.00
- Plus: Premium on bonds payable 3,439,048.00
  **Carrying amount of bonds payable** $28,439,048.00

The balance sheet presentation at 12/31/03 would be:

- Bonds payable $25,000,000.00
- Plus: Premium on bonds payable 3,140,986.02
  **Carrying amount of bonds payable** $28,140,986.02

**P11-3. Understanding the numbers**

The following tables were generated using the bond amortization template.
Alternative A:

| Bond Principal | $500,000 |
| Coupon Interest Rate | 10.0% |
| Market Interest Rate | 9.0% |

### Amortization Table

<table>
<thead>
<tr>
<th>Year</th>
<th>Period</th>
<th>Bond Carrying Amount at Start of Year</th>
<th>Interest Expense</th>
<th>Bond (Premium) Discount Amortization</th>
<th>Premium (Discount) Balance</th>
<th>Bond Carrying Amount at Year End</th>
<th>Cash Interest Payment</th>
<th>Principal Payment</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>1</td>
<td>$545,643</td>
<td>$49,108</td>
<td>($892)</td>
<td>$44,751</td>
<td>$544,751</td>
<td>$50,000</td>
<td>$0</td>
</tr>
<tr>
<td>2003</td>
<td>2</td>
<td>544,751</td>
<td>49,028</td>
<td>(972)</td>
<td>43,778</td>
<td>543,778</td>
<td>50,000</td>
<td>0</td>
</tr>
<tr>
<td>2004</td>
<td>3</td>
<td>543,778</td>
<td>48,940</td>
<td>(1,060)</td>
<td>42,718</td>
<td>542,718</td>
<td>50,000</td>
<td>0</td>
</tr>
<tr>
<td>2005</td>
<td>4</td>
<td>542,718</td>
<td>48,845</td>
<td>(1,155)</td>
<td>41,563</td>
<td>541,563</td>
<td>50,000</td>
<td>0</td>
</tr>
<tr>
<td>2006</td>
<td>5</td>
<td>541,563</td>
<td>48,741</td>
<td>(1,259)</td>
<td>40,303</td>
<td>540,303</td>
<td>50,000</td>
<td>0</td>
</tr>
<tr>
<td>2007</td>
<td>6</td>
<td>540,303</td>
<td>48,627</td>
<td>(1,373)</td>
<td>38,931</td>
<td>538,931</td>
<td>50,000</td>
<td>0</td>
</tr>
<tr>
<td>2008</td>
<td>7</td>
<td>538,931</td>
<td>48,504</td>
<td>(1,496)</td>
<td>37,435</td>
<td>537,435</td>
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<tr>
<td>2009</td>
<td>8</td>
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<td>(1,631)</td>
<td>35,804</td>
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<tr>
<td>2010</td>
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<td>48,222</td>
<td>(1,778)</td>
<td>34,026</td>
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<tr>
<td>2011</td>
<td>10</td>
<td>534,026</td>
<td>48,062</td>
<td>(1,938)</td>
<td>32,088</td>
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<td>0</td>
</tr>
<tr>
<td>2012</td>
<td>11</td>
<td>532,088</td>
<td>47,888</td>
<td>(2,112)</td>
<td>29,976</td>
<td>530,012</td>
<td>50,000</td>
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</tr>
<tr>
<td>2013</td>
<td>12</td>
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<td>47,698</td>
<td>(2,302)</td>
<td>27,674</td>
<td>527,974</td>
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<td>0</td>
</tr>
<tr>
<td>2014</td>
<td>13</td>
<td>527,674</td>
<td>47,491</td>
<td>(2,509)</td>
<td>25,165</td>
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<td>0</td>
</tr>
<tr>
<td>2015</td>
<td>14</td>
<td>525,165</td>
<td>47,265</td>
<td>(2,735)</td>
<td>22,430</td>
<td>522,430</td>
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<tr>
<td>2016</td>
<td>15</td>
<td>522,430</td>
<td>47,019</td>
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<td>19,448</td>
<td>519,448</td>
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<tr>
<td>2017</td>
<td>16</td>
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<td>46,750</td>
<td>(3,250)</td>
<td>16,199</td>
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</tr>
<tr>
<td>2018</td>
<td>17</td>
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<td>46,458</td>
<td>(3,542)</td>
<td>12,656</td>
<td>512,656</td>
<td>50,000</td>
<td>0</td>
</tr>
<tr>
<td>2019</td>
<td>18</td>
<td>512,656</td>
<td>46,139</td>
<td>(3,861)</td>
<td>8,796</td>
<td>508,796</td>
<td>50,000</td>
<td>0</td>
</tr>
<tr>
<td>2020</td>
<td>19</td>
<td>508,796</td>
<td>45,792</td>
<td>(4,208)</td>
<td>4,587</td>
<td>504,587</td>
<td>50,000</td>
<td>0</td>
</tr>
<tr>
<td>2021</td>
<td>20</td>
<td>504,587</td>
<td>45,413</td>
<td>(4,587)</td>
<td>(0)</td>
<td>500,000</td>
<td>50,000</td>
<td>50,000</td>
</tr>
</tbody>
</table>

**Total Interest Expense**  $954,357  
**Total Interest Paid**  $1,000,000  
**Interest Tax Deduction**  $381,743  
**Present Value of Tax Savings**  $176,023
Alternative B:

<table>
<thead>
<tr>
<th>Bond Principal</th>
<th>$700,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coupon Interest Rate</td>
<td>6.0%</td>
</tr>
<tr>
<td>Market Interest Rate</td>
<td>9.0%</td>
</tr>
</tbody>
</table>

### Amortization Table

<table>
<thead>
<tr>
<th>Year</th>
<th>Period</th>
<th>Bond Carrying Amount at Start of Year</th>
<th>Interest Expense</th>
<th>Bond (Premium) Discount Amortization</th>
<th>Bond Carrying Amount at Year End</th>
<th>Cash Interest Payment</th>
<th>Principal Payment</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>1</td>
<td>$508,301</td>
<td>$45,747</td>
<td>$3,747</td>
<td>($187,952)</td>
<td>$512,048</td>
<td>$42,000</td>
</tr>
<tr>
<td>2003</td>
<td>2</td>
<td>512,048</td>
<td>46,084</td>
<td>4,084</td>
<td>(183,868)</td>
<td>516,132</td>
<td>42,000</td>
</tr>
<tr>
<td>2004</td>
<td>3</td>
<td>516,132</td>
<td>46,452</td>
<td>4,452</td>
<td>(179,416)</td>
<td>520,584</td>
<td>42,000</td>
</tr>
<tr>
<td>2005</td>
<td>4</td>
<td>520,584</td>
<td>46,853</td>
<td>4,853</td>
<td>(174,564)</td>
<td>525,436</td>
<td>42,000</td>
</tr>
<tr>
<td>2006</td>
<td>5</td>
<td>525,436</td>
<td>47,289</td>
<td>5,289</td>
<td>(169,274)</td>
<td>530,726</td>
<td>42,000</td>
</tr>
<tr>
<td>2007</td>
<td>6</td>
<td>530,726</td>
<td>47,765</td>
<td>5,765</td>
<td>(163,509)</td>
<td>536,491</td>
<td>42,000</td>
</tr>
<tr>
<td>2008</td>
<td>7</td>
<td>536,491</td>
<td>48,284</td>
<td>6,284</td>
<td>(157,225)</td>
<td>542,775</td>
<td>42,000</td>
</tr>
<tr>
<td>2009</td>
<td>8</td>
<td>542,775</td>
<td>48,850</td>
<td>6,850</td>
<td>(150,375)</td>
<td>549,625</td>
<td>42,000</td>
</tr>
<tr>
<td>2010</td>
<td>9</td>
<td>549,625</td>
<td>49,466</td>
<td>7,466</td>
<td>(142,909)</td>
<td>557,091</td>
<td>42,000</td>
</tr>
<tr>
<td>2011</td>
<td>10</td>
<td>557,091</td>
<td>50,138</td>
<td>8,138</td>
<td>(134,771)</td>
<td>565,229</td>
<td>42,000</td>
</tr>
<tr>
<td>2012</td>
<td>11</td>
<td>565,229</td>
<td>50,871</td>
<td>8,871</td>
<td>(125,900)</td>
<td>574,100</td>
<td>42,000</td>
</tr>
<tr>
<td>2013</td>
<td>12</td>
<td>574,100</td>
<td>51,669</td>
<td>9,669</td>
<td>(116,231)</td>
<td>583,769</td>
<td>42,000</td>
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<td>2014</td>
<td>13</td>
<td>583,769</td>
<td>52,533</td>
<td>10,539</td>
<td>(105,692)</td>
<td>594,308</td>
<td>42,000</td>
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<td>2015</td>
<td>14</td>
<td>594,308</td>
<td>53,488</td>
<td>11,488</td>
<td>(94,204)</td>
<td>605,796</td>
<td>42,000</td>
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<tr>
<td>2016</td>
<td>15</td>
<td>605,796</td>
<td>54,522</td>
<td>12,522</td>
<td>(81,683)</td>
<td>618,317</td>
<td>42,000</td>
</tr>
<tr>
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<td>16</td>
<td>618,317</td>
<td>55,649</td>
<td>13,649</td>
<td>(68,034)</td>
<td>631,966</td>
<td>42,000</td>
</tr>
<tr>
<td>2018</td>
<td>17</td>
<td>631,966</td>
<td>56,877</td>
<td>14,877</td>
<td>(52,157)</td>
<td>646,843</td>
<td>42,000</td>
</tr>
<tr>
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<td>18</td>
<td>646,843</td>
<td>58,216</td>
<td>16,216</td>
<td>(36,941)</td>
<td>663,059</td>
<td>42,000</td>
</tr>
<tr>
<td>2020</td>
<td>19</td>
<td>663,059</td>
<td>59,675</td>
<td>17,675</td>
<td>(19,266)</td>
<td>680,734</td>
<td>42,000</td>
</tr>
<tr>
<td>2021</td>
<td>20</td>
<td>680,734</td>
<td>61,266</td>
<td>19,266</td>
<td>(0)</td>
<td>700,000</td>
<td>42,000</td>
</tr>
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</table>

- **Total Interest Expense**: $1,031,699
- **Total Interest Paid**: $840,000
- **Interest Tax Deduction**: $412,680
- **Present Value of Tax Savings**: $180,861
Alternative C:

<table>
<thead>
<tr>
<th>Bond Principal</th>
<th>$400,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coupon Interest Rate</td>
<td>12.0%</td>
</tr>
<tr>
<td>Market Interest Rate</td>
<td>9.0%</td>
</tr>
</tbody>
</table>

### Amortization Table

<table>
<thead>
<tr>
<th>Year</th>
<th>Period</th>
<th>Bond Carrying Amount at Start of Year</th>
<th>Interest Expense</th>
<th>Bond (Premium) Discount Amortization</th>
<th>Premium (Discount) Balance</th>
<th>Bond Carrying Amount at Year End</th>
<th>Cash Interest Payment</th>
<th>Principal Payment</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
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<td>$509,543</td>
<td>$45,859</td>
<td>(2,141)</td>
<td>$107,401</td>
<td>$507,401</td>
<td>$48,000</td>
<td>$0</td>
</tr>
<tr>
<td>2003</td>
<td>2</td>
<td>$507,401</td>
<td>45,666</td>
<td>(2,334)</td>
<td>105,068</td>
<td>505,068</td>
<td>48,000</td>
<td>0</td>
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<td>3</td>
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<td>(2,544)</td>
<td>102,524</td>
<td>502,524</td>
<td>48,000</td>
<td>0</td>
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<tr>
<td>2005</td>
<td>4</td>
<td>$502,524</td>
<td>45,227</td>
<td>(2,773)</td>
<td>99,751</td>
<td>499,751</td>
<td>48,000</td>
<td>0</td>
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<td>44,978</td>
<td>(3,022)</td>
<td>96,728</td>
<td>496,728</td>
<td>48,000</td>
<td>0</td>
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<td>44,706</td>
<td>(3,294)</td>
<td>93,434</td>
<td>493,434</td>
<td>48,000</td>
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<td>7</td>
<td>$493,434</td>
<td>44,409</td>
<td>(3,591)</td>
<td>89,843</td>
<td>489,843</td>
<td>48,000</td>
<td>0</td>
</tr>
<tr>
<td>2009</td>
<td>8</td>
<td>$489,843</td>
<td>44,086</td>
<td>(3,914)</td>
<td>85,929</td>
<td>485,929</td>
<td>48,000</td>
<td>0</td>
</tr>
<tr>
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<td>9</td>
<td>$485,929</td>
<td>43,734</td>
<td>(4,266)</td>
<td>81,662</td>
<td>481,662</td>
<td>48,000</td>
<td>0</td>
</tr>
<tr>
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<td>10</td>
<td>$481,662</td>
<td>43,350</td>
<td>(4,650)</td>
<td>77,012</td>
<td>477,012</td>
<td>48,000</td>
<td>0</td>
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<td>42,931</td>
<td>(5,069)</td>
<td>71,943</td>
<td>471,943</td>
<td>48,000</td>
<td>0</td>
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<tr>
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<td>12</td>
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<td>(5,525)</td>
<td>66,418</td>
<td>466,418</td>
<td>48,000</td>
<td>0</td>
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<tr>
<td>2014</td>
<td>13</td>
<td>$466,418</td>
<td>41,978</td>
<td>(6,022)</td>
<td>60,395</td>
<td>460,395</td>
<td>48,000</td>
<td>0</td>
</tr>
<tr>
<td>2015</td>
<td>14</td>
<td>$460,395</td>
<td>41,436</td>
<td>(6,564)</td>
<td>53,831</td>
<td>453,831</td>
<td>48,000</td>
<td>0</td>
</tr>
<tr>
<td>2016</td>
<td>15</td>
<td>$453,831</td>
<td>40,845</td>
<td>(7,155)</td>
<td>46,676</td>
<td>446,676</td>
<td>48,000</td>
<td>0</td>
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<tr>
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<td>16</td>
<td>$446,676</td>
<td>40,201</td>
<td>(7,799)</td>
<td>38,877</td>
<td>438,877</td>
<td>48,000</td>
<td>0</td>
</tr>
<tr>
<td>2018</td>
<td>17</td>
<td>$438,877</td>
<td>39,499</td>
<td>(8,501)</td>
<td>30,376</td>
<td>430,376</td>
<td>48,000</td>
<td>0</td>
</tr>
<tr>
<td>2019</td>
<td>18</td>
<td>$430,376</td>
<td>38,734</td>
<td>(9,266)</td>
<td>21,109</td>
<td>421,109</td>
<td>48,000</td>
<td>0</td>
</tr>
<tr>
<td>2020</td>
<td>19</td>
<td>$421,109</td>
<td>37,900</td>
<td>(10,100)</td>
<td>11,009</td>
<td>411,009</td>
<td>48,000</td>
<td>0</td>
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<tr>
<td>2021</td>
<td>20</td>
<td>$411,009</td>
<td>36,991</td>
<td>(11,009)</td>
<td>(0)</td>
<td>400,000</td>
<td>48,000</td>
<td>400,000</td>
</tr>
</tbody>
</table>

**Total Interest Expense**: $850,457  **Total Interest Paid**: $960,000  
**Interest Tax Deduction**: $340,183  
**Present Value of Tax Savings**: $159,553
Requirements 1 through 5:

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Alternative A</th>
<th>Alternative B</th>
<th>Alternative C</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Issue price of each bond</td>
<td>$545,643</td>
<td>$508,301</td>
<td>$509,543</td>
</tr>
<tr>
<td>2) Cash paid out in 2002 (first-year interest)</td>
<td>50,000</td>
<td>42,000</td>
<td>48,000</td>
</tr>
<tr>
<td>3) Interest expense recorded in 2003</td>
<td>49,028</td>
<td>46,084</td>
<td>45,666</td>
</tr>
<tr>
<td>4) Total interest expense recorded in 2003</td>
<td>48,504</td>
<td>48,284</td>
<td>44,409</td>
</tr>
<tr>
<td>5) Total interest expense recorded in 2008</td>
<td>48,504</td>
<td>48,284</td>
<td>44,409</td>
</tr>
<tr>
<td>6) Total cash payments to bondholders:</td>
<td>1,031,699</td>
<td>850,457</td>
<td></td>
</tr>
<tr>
<td>Interest payments</td>
<td>1,000,000</td>
<td>840,000</td>
<td>960,000</td>
</tr>
<tr>
<td>Principal payment</td>
<td>500,000</td>
<td>700,000</td>
<td>400,000</td>
</tr>
<tr>
<td>7) Present value of tax savings on interest</td>
<td>176,023</td>
<td>180,861</td>
<td>159,553</td>
</tr>
</tbody>
</table>

Requirement 6:
All three loans raise enough cash to finance the building expansion, and each loan carries the same market yield rate (9%). That means that Cory's pre-tax cost of capital is the same in each case. But the after-tax cost of capital is not the same because the loans differ in terms of dollars assigned to interest expense and dollars assigned to debt principal, and only interest expense dollars are tax-deductible.

The easiest way to see what Cory should do is to consider the after-tax net present value of the building expansion: $500,000 minus the present value of interest tax deductions from the loan. Since Alternative B has the highest tax savings, it is the least costly way of financing the expansion. Of course, this also means that Alternative B will produce the lowest reported earnings because it has the highest interest expense.

P11-4. Call options as investments

Required entries for 1 through 3:

July 1, 2001:

DR Marketable securities—stock options $200
CR Cash $200

July 31, 2001:

DR Unrealized holding loss on stock options $75
CR Market adjustment—stock options $75
August 31, 2001:

**DR** Market adjustment—stock options $1,950  
**CR** Unrealized holding gain on stock options $1,950

The unrealized holding gains and losses flow directly to income each month.

**Requirement 4:**
The option contracts are “underwater” on July 31, meaning that the $40 exercise price is above the $38 market price for Selmer stock. The options still have value on July 31 because there is some chance Selmer’s stock will rise above $40 before the options expire.

That’s what has happened by August 31. Now the options are “in the money”, meaning that the $40 exercise price is below the $44 market price for Selmer stock.

**Requirement 5:**
If Getz exercises the stock options on September 15, he will turn in the option contracts along with $40 cash per share (the exercise price) and receive 500 shares of Selmer stock. The entry is:

**September 15, 2001:**

**DR** Marketable securities—Selmer stock $22,075  
**CR** Marketable securities—stock options $200  
**CR** Market adjustment—stock options 1,875  
**CR** Cash 20,000

Notice that the Selmer shares are worth $46 each, or $23,000.

**Requirement 6:**
If the option contracts were allowed to expire on September 15 (presumably because the market price of Selmer stock was below $40), the entry is:

**DR** Realized loss on stock options $2,075  
**CR** Marketable securities—stock options $200  
**CR** Market adjustment—stock options 1,875
P11-5. Put options as investments

Required entries for 1 through 3:

March 1, 2001:

\[
\begin{align*}
\text{DR} & \quad \text{Marketable securities—stock options} \quad \$300 \\
\text{CR} & \quad \text{Cash} \quad \$300
\end{align*}
\]

March 31, 2001:

\[
\begin{align*}
\text{DR} & \quad \text{Unrealized holding loss on stock options} \quad \$100 \\
\text{CR} & \quad \text{Market adjustment—stock options} \quad \$100
\end{align*}
\]

April 30, 2001:

\[
\begin{align*}
\text{DR} & \quad \text{Market adjustment—stock options} \quad \$1,900 \\
\text{CR} & \quad \text{Unrealized holding gain on stock options} \quad \$1,900
\end{align*}
\]

The unrealized holding gains and losses flow directly to income each month.

Requirement 4:
The option contracts are “underwater” on March 31, meaning that the $50 exercise price is below the $52 market price for Rugulo stock. (Remember, Kenton bought “put” options—options to sell Rugulo at $50 per share) The options still have value on July 31 because there is some chance Rugolo’s stock will fall below $50 before the options expire.

That’s what has happened by April 30. Now the options are “in the money”, meaning that the $50 exercise (“sell”) price is above the $46 market price for Rugolo stock.

Requirement 5:
If Getz exercises the stock options on May 15, he will buy 500 shares of Rugolo stock at the market price of $42 per share, turn over the stock and the option contracts, and receive $50 cash per share (the exercise price). The entries are:

\[
\begin{align*}
\text{DR} & \quad \text{Marketable securities—Rugolo stock} \quad \$21,000 \\
\text{CR} & \quad \text{Cash} \quad \$21,000
\end{align*}
\]

\[
\begin{align*}
\text{DR} & \quad \text{Cash} \quad \$25,000 \\
\text{CR} & \quad \text{Marketable securities—Rugolo stock} \quad \$21,000 \\
\text{CR} & \quad \text{Marketable securities—stock options} \quad \$300 \\
\text{CR} & \quad \text{Market adjustment—stock options} \quad \$1,800 \\
\text{CR} & \quad \text{Realized gain on stock options} \quad \$1,900
\end{align*}
\]
Requirement 6:
If the option contracts were allowed to expire on May 15 (presumably because the market price of Rugolo stock was above $50), the entry is:

\[
\begin{align*}
\text{DR} & \quad \text{Realized loss on stock options} \quad \$2,100 \\
\text{CR} & \quad \text{Marketable securities—stock options} \quad \$300 \\
\text{CR} & \quad \text{Market adjustment—stock options} \quad 1,800
\end{align*}
\]

P11-6. Early debt retirement

Requirement 1:
The issuance price of the bonds on January 1, 2001, is equal to the present value of the principal repayment plus the present value of the semi-annual interest payments. Since the bonds pay interest semi-annually, the present value calculations are based on a twenty-period horizon using a market interest rate of 5.5% (i.e., 11%/2).

Present value of the principal repayment:

\[
= \$75,000,000 \times \text{Present value of } \$1 \text{ to be received in 20 periods at } 5.5\
\]

\[
= \$75,000,000 \times 0.3427 = \$25,702,500
\]

Present value of the interest payments:

\[
= (\$75,000,000 \times 0.045) \times \text{Present value of an ordinary annuity of } \$1\text{ to be received for 20 periods at } 5.5\
\]

\[
= \$3,375,000 \times 11.9504 = \$40,332,600
\]

Price of the bonds: \(= \$25,702,500 + \$40,332,600 = \$66,035,100\)
Requirement 2:
Appearing below is a partial amortization table for these bonds. The book value of the bonds on January 1, 2003 (i.e., December 31, 2002) is given in the last row of the table.

<table>
<thead>
<tr>
<th>Date</th>
<th>(a) Interest Expense (0.055 × e)</th>
<th>(b) Cash Payment (Fixed)</th>
<th>(c) Amortization of Bond Discount (a-b)</th>
<th>(d) Discount on B/P Balance (Beginning minus c)</th>
<th>(e) Carrying Amount ($75,000,000 minus d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/1/01</td>
<td>$8,964,900.00</td>
<td>$66,035,100.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6/30/01</td>
<td>$3,631,930.50</td>
<td>$3,375,000.00</td>
<td>$256,930.50</td>
<td>8,707,969.50</td>
<td>66,292,030.50</td>
</tr>
<tr>
<td>12/31/01</td>
<td>3,646,061.68</td>
<td>3,375,000.00</td>
<td>271,061.68</td>
<td>8,436,907.82</td>
<td>66,563,092.18</td>
</tr>
<tr>
<td>6/30/02</td>
<td>3,660,970.07</td>
<td>3,375,000.00</td>
<td>285,970.07</td>
<td>8,150,937.75</td>
<td>66,849,062.25</td>
</tr>
<tr>
<td>12/31/02</td>
<td>3,676,698.42</td>
<td>3,375,000.00</td>
<td>301,698.42</td>
<td>7,849,239.33</td>
<td>67,150,760.67</td>
</tr>
</tbody>
</table>

The book value of the bonds on January 1, 2003, is $67,150,760.67.

Requirement 3:
The price of the bonds on January 1, 2003, is equal to the present value of the principal repayment to be received in eight years (i.e., 16 periods) plus the present value of the remaining semi-annual interest payments. Since the bonds have been outstanding for two years and pay interest semi-annually, there are sixteen remaining interest payments to be paid. The present value calculations are based on a sixteen-period horizon using a market interest rate of 5% (i.e., 10%/2).
Present value of the principal repayment:

\[= \frac{75,000,000 \times \text{Present value of } 1 \text{ to be received in 16 periods at } 5\%}{1 - (1 + 0.05)^{-16}} = \frac{75,000,000 \times 0.4581}{1 - (1 + 0.05)^{-16}} = 34,357,500\]

Present value of the interest payments:

\[= \frac{3,375,000 \times \text{Present value of an ordinary annuity of } 1 \text{ to be received in 16 periods at } 5\%}{1 - (1 + 0.05)^{-16}} = \frac{3,375,000 \times 10.8378}{1 - (1 + 0.05)^{-16}} = 36,577,575\]

Price of the bonds on January 1, 2003:

\[= 34,357,500 + 36,577,575 = 70,935,075\]

**Requirement 4:**
If the bonds were retired on January 1, 2003, the journal entry would be:

<table>
<thead>
<tr>
<th>DR</th>
<th>Bonds payable</th>
<th>$75,000,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>DR</td>
<td>Loss on early extinguishment of debt</td>
<td>3,784,314</td>
</tr>
<tr>
<td>CR</td>
<td>Discount on bonds payable</td>
<td>$7,849,239*</td>
</tr>
<tr>
<td>CR</td>
<td>Cash</td>
<td>70,935,075</td>
</tr>
</tbody>
</table>

*Rounded down by $0.33

**P11-7. Partial debt retirement**

**Requirement 1:**
The issuance price of the bonds on July 1, 2002, is equal to the present value of the principal repayment plus the present value of the semi-annual interest payments. Since the bonds pay interest semi-annually, the present value calculations are based on a twenty-period horizon using a market interest rate of 3.5% (i.e., 7%/2).
Present value of the principal repayment:

\[
= 250,000,000 \times \text{Present value of } $1 \text{ to be received in 20 periods at 3.5%} \\
= 250,000,000 \times 0.5026 = 125,650,000
\]

Present value of the interest payments:

\[
= (250,000,000 \times 0.0425) \times \text{Present value of an ordinary annuity of } $1 \text{ to be received for 20 periods at 3.5%} \\
= 10,625,000 \times 14.2124 = 151,006,750
\]

Price of the bonds: \( = 125,650,000 + 151,006,750 = 276,656,750 \)

**Requirement 2:**

Appearing below is a partial amortization table for these bonds.

<table>
<thead>
<tr>
<th>Date</th>
<th>(a) Interest Expense (0.035 x e)</th>
<th>(b) Cash Payment (Fixed)</th>
<th>(c) Amortization of Bond Premium (b-a)</th>
<th>(d) Premium on B/P (Beginning balance minus c)</th>
<th>(e) Carrying Amount ($250,000,000 plus d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>7/1/02</td>
<td>26,656,750.00</td>
<td>276,656,750.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12/31/02</td>
<td>9,682,986.25</td>
<td>10,625,000.00</td>
<td>(942,013.75)</td>
<td>25,714,736.25</td>
<td>275,714,736.25</td>
</tr>
<tr>
<td>6/30/03</td>
<td>9,650,015.77</td>
<td>10,625,000.00</td>
<td>(974,984.23)</td>
<td>24,739,752.02</td>
<td>274,739,752.02</td>
</tr>
<tr>
<td>12/31/03</td>
<td>9,615,891.32</td>
<td>10,625,000.00</td>
<td>(1,009,108.68)</td>
<td>23,730,643.34</td>
<td>273,730,643.34</td>
</tr>
<tr>
<td>6/30/04</td>
<td>9,580,572.52</td>
<td>10,625,000.00</td>
<td>(1,044,427.48)</td>
<td>22,686,215.86</td>
<td>272,686,215.86</td>
</tr>
</tbody>
</table>
Requirement 3:

The journal entries for the first four interest payments are:

12/31/02:

<table>
<thead>
<tr>
<th>Date</th>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DR Interest expense</td>
<td>$9,682,986.25</td>
</tr>
<tr>
<td></td>
<td>DR Premium on bonds payable</td>
<td>942,013.75</td>
</tr>
<tr>
<td></td>
<td>CR Cash</td>
<td>$10,625,000.00</td>
</tr>
</tbody>
</table>

6/30/03:

<table>
<thead>
<tr>
<th>Date</th>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DR Interest expense</td>
<td>$9,650,015.77</td>
</tr>
<tr>
<td></td>
<td>DR Premium on bonds payable</td>
<td>974,984.23</td>
</tr>
<tr>
<td></td>
<td>CR Cash</td>
<td>$10,625,000.00</td>
</tr>
</tbody>
</table>

12/31/03:

<table>
<thead>
<tr>
<th>Date</th>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DR Interest expense</td>
<td>$9,615,891.32</td>
</tr>
<tr>
<td></td>
<td>DR Premium on bonds payable</td>
<td>1,009,108.68</td>
</tr>
<tr>
<td></td>
<td>CR Cash</td>
<td>$10,625,000.00</td>
</tr>
</tbody>
</table>

6/30/04:

<table>
<thead>
<tr>
<th>Date</th>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DR Interest expense</td>
<td>$9,580,572.52</td>
</tr>
<tr>
<td></td>
<td>DR Premium on bonds payable</td>
<td>1,044,427.48</td>
</tr>
<tr>
<td></td>
<td>CR Cash</td>
<td>$10,625,000.00</td>
</tr>
</tbody>
</table>

Requirement 4:

The price of the bonds on July 1, 2004, is equal to the present value of the principal repayment to be received in eight years (i.e., 16 periods) plus the present value of the remaining semi-annual interest payments. Since the bonds have been outstanding for two years and pay interest semi-annually, there are sixteen remaining interest payments to be paid. The present value calculations are based on a sixteen-period horizon using a market interest rate of 4% (i.e., 8%/2).

Present value of the principal repayment:

\[
= \$250,000,000 \times \text{Present value of } $1 \text{ to be received in 16 periods at } 4\%

= \$250,000,000 \times 0.5339 = $133,475,000.00
\]
Present value of the interest payments:

\[
= \$10,625,000 \times \text{Present value of an ordinary annuity of } \$1 \text{ to be received in 16 periods at 4%}
\]

\[
= \$10,625,000 \times 11.6523 = \$123,805,687.50
\]

Price of the bonds on July 1, 2004:

\[
= \$133,475,000.00 + \$123,805,687.50 = \$257,280,687.50
\]

**Requirement 5:**
If 50% of the bonds were retired on July 1, 2004, the journal entry would be:

| DR          | Bonds payable            | $125,000,000 |
| DR          | Premium on bonds payable | 11,343,108* |
| CR          | Cash                     | $128,640,344** |
| CR          | Gain on early extinguishment | 7,702,764 |

For ease of presentation: *Rounded up by $0.07; **Rounded up by $0.25

**P11-8. Chalk Hill: Interest-rate swap as a speculative investment**

Because the swap contract does not qualify for special hedge accounting rules, two aspects of the solution in Exhibit 11-3 will change: (1) interest expense on the company’s variable rate debt will rise or fall with changes in the benchmark interest rate instead of being “fixed” by the swap contract; and (2) changes in the value of the swap contract will flow directly to income rather than to “other comprehensive income”. Here are the revised journal entries:
January 1, 2001:

DR  Cash $10,000,000
    CR  Note Payable $10,000,000

December 31, 2001:

DR  Interest expense $ 750,000
    CR  Interest payable  $ 750,000
DR  Interest payable  $ 750,000
    CR  Cash  $ 750,000
DR  Swap contract  $ 323,000
    CR  Unrealized gain on swap contract  $ 323,000

December 31, 2002:

DR  Interest expense  $ 850,000
    CR  Interest payable  $ 850,000
DR  Interest payable  $ 850,000
    CR  Cash  $ 850,000
DR  Cash  $ 100,000
    CR  Other income –swap contract  $ 100,000
DR  Unrealized loss on swap contract  $ 378,000
    CR  Swap contract  $ 378,000

December 31, 2003:

DR  Interest expense  $ 700,000
    CR  Interest payable  $ 700,000
DR  Interest payable  $ 700,000
    CR  Cash  $ 700,000
DR  Other expense—swap contract  $ 50,000
    CR  Cash  $ 50,000
DR  Swap contract  $ 55,000
    CR  Unrealized gain on swap contract  $ 55,000
DR  Note payable  $10,000,000
    CR  Cash  $10,000,000
Notice how these journal entries produce more volatility in the company’s reported net income.

P11-9. Sears: Reading the Financials

Requirement 1.
There are two correct solutions to this requirement, depending upon how you interpret the company’s “14.6% effective rate” disclosure. If this is the annual effective interest rate then interest expense for the year is found by multiply the beginning book value of the debt by its effective interest rate:

\[
\text{Interest expense} = 182,700,000 \times 14.6\% = 26,674,200
\]

Notice that interest expense is different from the cash interest payment, which can be found by multiplying the debt face value by the stated interest rate:

\[
\text{Interest payment} = 300,000,000 \times 7\% = 21,000,000
\]

The discount amortization is the difference between the expense and cash payment shown above, or $5,674,200 = $26,674,200 minus $21,000,000. The book value change shown on the balance sheet is $5,900,000 (or $118.6 million minus $182.7 million). The discount amortization should equal the change in balance sheet book values, but the two numbers differ here because of rounding in the reported interest rate or in the reported book values.

An alternative solution is based on the notion that disclosed “14.6% effective rate” is meant to be interpreted as meaning a semi-annual effective rate of 7.3%. In this case, we have to build up the annual interest expense from two semi-annual calculations:

1. First semi-annual period

\[
\begin{align*}
\text{Interest expense} &= 182,700,000 \times 7.3\% = 13,337,100 \\
\text{Interest payment} &= 300,000,000 \times 3.5\% = 10,500,000 \\
\text{Discount amortized} &= 2,837,100
\end{align*}
\]

Ending book value of debt (including amortized discount) is now $185,537,100.
2. Second semi-annual period
Interest expense = $185,537,100 \times 7.3\% = $13,544,208
Interest payment = $300,000,000 \times 3.5\% = 10,500,000
Discount amortized = $3,044,208

These semi-annual calculations show total interest expense to be $26,881,308 and the total discount amortization to be $5,881,308.

Requirement 2:
There are two ways to compute interest expense on the zero coupon bonds:

\[
\text{Interest expense} = \$239,200,000 \times 12.0\% = \$28,704,000
\]

Or, since the entire expense is amortized (there’s no cash payment), it is all added to the debt book value. Consequently, interest expense will equal the increase in carrying value of the bonds, or:

\[
\text{Interest expense} = \$267.9 \text{ million} - \$239.2 \text{ million} = \$28.7 \text{ million}
\]

Requirement 3:
The following entry would have been made on December 31, 1992, for the participating mortgages:

| DR | Interest expense | $72.549 |
| CR | Cash | $71.949 |
| CR | Discount on mortgage | $0.600 |

$72.549 = $833.9 \times 8.7\% \text{ and } $0.600 = $834.5 - $833.9

Requirement 4:
The zero coupon bonds do not pay cash interest. $21 million was paid out on the 7% debentures, i.e., $300 million face value times 7%.

P11-10. Reading the Financials

Requirement 1:
Interest expense for 1999 on the 8 1/8% debentures is $147.9 million book value \times 8.40\% \text{ effective interest rate} = $12.4236. The cash interest for 1999 on these debentures is $150 million par value \times 8.125\% \text{ coupon interest} = $12.1875. So, the original discount amortization is $12.4236 - $12.1875 or $0.2361. (Note: Some students may answer this last part of the requirement by referring to the $0.1000 million increase in debenture book value shown in the exhibit. The two numbers--$0.2361 and $0.1000—differ from one another because of rounding errors.)
Requirement 2:
Interest expense for 1999 on the 6.60% notes is $99.0 million book value \times 6.9\% \text{ effective interest rate} = $6.831. The cash interest for 1999 on these notes is $100 million par value \times 6.60\% \text{ coupon interest} = $6.600. So, the original discount amortization is $6.831 - 6.600 = $0.231. (Note: Some students may answer this last part of the requirement by referring to the $0.300 million increase in debenture book value shown in the exhibit. The two numbers--$0.231 and $0.300—differ from one another because of rounding errors.)

Requirement 3:
Since the effective interest rate is not disclosed for some of the company’s debt securities, we will have to use some simplifying assumptions. Here’s one approach for calculating the “weighted-average effective interest rate” on debt in situations like this.

<table>
<thead>
<tr>
<th>Debt instrument outstanding</th>
<th>Book value at 12/31/99</th>
<th>(a) % of total book value</th>
<th>(b) Effective interest rate</th>
<th>(a) x (b) Weighted avg. Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable-rate Industrial Development Bonds</td>
<td>$165.4</td>
<td>15.35%</td>
<td>3.20%</td>
<td>0.491%</td>
</tr>
<tr>
<td>8 1/8% debentures</td>
<td>148.0</td>
<td>13.74%</td>
<td>8.40%</td>
<td>1.156%</td>
</tr>
<tr>
<td>7 1/8% debentures</td>
<td>147.3</td>
<td>13.67%</td>
<td>7.40%</td>
<td>1.012%</td>
</tr>
<tr>
<td>7.35% debentures</td>
<td>146.6</td>
<td>13.79%</td>
<td>7.40%</td>
<td>1.021%</td>
</tr>
<tr>
<td>6.84% debentures</td>
<td>148.4</td>
<td>13.77%</td>
<td>7.00%</td>
<td>0.994%</td>
</tr>
<tr>
<td>7.55% debentures</td>
<td>143.7</td>
<td>13.34%</td>
<td>7.70%</td>
<td>1.027%</td>
</tr>
<tr>
<td>6.60% notes</td>
<td>99.3</td>
<td>9.22%</td>
<td>6.90%</td>
<td>0.636%</td>
</tr>
<tr>
<td>Medium term notes</td>
<td>76.8</td>
<td>7.13%</td>
<td>10.00%</td>
<td>0.713%</td>
</tr>
<tr>
<td>Total</td>
<td>$1,077.5</td>
<td>100.00%</td>
<td></td>
<td>7.017%</td>
</tr>
</tbody>
</table>

No effective interest rate disclosed:
- Capital lease obligations: $287.4
- Other: 3.9

$2,446.3

Book value (not par or face value) is used because book value reflects the company’s actual borrowings. The weighted-average effective interest rate on debt with rates disclosed is 7.017%. Some students may want to assign a lower effective interest rate to the capital lease obligations, and compute a revised (total debt) weighted-average rate. Other students may be comfortable with using 7.017% as a reasonable estimate for the total rate.

Requirement 4:
The debentures are callable at 103\% of face value or $154.5 million ($150 million \times 103\%), so that is the amount of cash the company would pay to debt holders if the bonds were called.

Requirement 5:
The debentures are putable at par, or $150 million, so that is the amount of cash the company would pay to debt holders if the bonds were put.
Requirement 1:
The swap allowed the company to insulate its debt from exchange rate fluctuations. Here is how. The U.S. debt was presumably used to finance the company’s operations in Germany and was to be repaid from DM operating cash flows. Without the swap, Quaker would have to convert its DM cash flows into U.S. dollars every time it made an interest or principal payment on the debt. By swapping the U.S. debt for DM debt, Quaker avoids the need for currency conversion and, thus, reduces its exposure to foreign exchange rate fluctuations.

Requirement 2:
After the company sold its European pet food operations, it no longer had the DM operating cash flows that were to be used to pay the DM swap debt. Lacking a local currency cash flow, it made sense to undo the swap because retaining the DM debt exposed the company to DM exchange rate risk.

Requirement 3:
Foreign exchange forward contracts are agreements to exchange a specified amount of one currency (say, $100 million U.S. dollars) for a specified amount of another currency (say, $700 million Mexican pesos) at some specified date in the future (say, January 15, 2003). The contract locks in an exchange rate and insulates the company from exchange rate fluctuations in the future. Suppose Quaker Oats had to make a $700 million peso payment on January 15, 2003, and the cash for this payment was coming from the company’s U.S. operations. Signing the forward contract now locks in a “$7 peso equals $1 dollar” exchange rate so that the company’s peso payment is no longer subject to exchange rate risk.

Requirement 4:
Commodity options contracts give Quaker the right (but not the obligation) to buy grains at a specified price and date in the future. Commodity futures contracts obligate the company to buy grains at a specified price and date in the future. Both contracts reduce the company’s exposure to commodity price fluctuations because the future purchase price is fixed by contract.

Requirement 5:
An interest rate swap allows Quaker to replace its floating-rate interest payment obligation with a fixed-rate interest payment obligation. Doing so reduces the company’s exposure to changing interest rates in the future. In Quaker’s case, the swap was used to hedge fixed interest rates in anticipation of a new debt issue.
Requirement 6:
An interest rate cap is a contract that limits Quaker’s exposure to rising interest rates. A counterparty (probably a bank) has agreed to be responsible for any interest payments in excess of a specified maximum floating interest rate. To see how this benefits Quaker, suppose the company had issued debt with a floating rate of “LIBOR plus 2%.” If the LIBOR is at 6%, Quaker pays interest at the rate of 8%. If the LIBOR hits 8%, Quaker’s interest rate increases to 10%. By “capping” the rate, Quaker pays all interest up to some maximum rate (say, 9%) and the bank pays any excess over that amount (say, the 1% needed for the total to equal 10%). Quaker effectively transforms its floating-rate debt into fixed-rate debt when the floating rate reaches the cap.

P11-12. Callable bonds

Requirement 1:
Computation of issue price of the bond

\[
\begin{align*}
\text{PV of Interest} &= 13.5903 \times $100k = $1,359,030 \\
\text{PV of principal} &= 0.4564 \times $2 \text{ million} = $912,800 \\
\text{Issue price of bonds} &= \underline{$2,271,830}
\end{align*}
\]

Requirement 2:
Computation of interest expense for 2001

\[
\begin{align*}
\text{Interest expense for first 6 months} &= 4\% \times $2,271,830 = $90,873 \\
\text{Premium on bonds payable} &= $9,127 \\
\text{Cash (5\% \times $2 \text{ million})} &= $100,000
\end{align*}
\]

Carrying value of bonds on 7/1/01 = $2,271,830 - $9,127 = $2,262,703

Interest for second six months = $2,262,703 \times 4\% = $90,508

Total interest expense for 2001 = $90,873 + $90,508 = $181,381
**Requirement 3:**
Adjustment required on cash flow statement using the indirect method.

Premium amortization—first six months:
\[
\$100,000 - \$90,873 = \$9,127
\]

Premium amortization—second six months:
\[
\$100,000 - \$90,508 = \$9,492
\]

Total amount of premium, amortized in 2001
\[
\$18,619
\]

$18,619 is the total amount that would be subtracted from the accrual basis net income to get cash flows from operations. Cash interest expense is more than accrual interest expense when bonds are sold at a premium.

**Requirement 4:**
Savings from exercising the call option rather than an open market purchase:

\[
P_{18/4.5\%} = 12.1600 \times \$100,000 = \$1,216,000
\]

\[
P_{18/4.5\%} = .4528 \times \$2\ million = 905,600
\]

Market price of bond on 1/1/00 $2,121,600

Call price = 102% × $2 million (2,040,000)

Amount saved by exercising call option to retire bonds $81,600

**Requirement 5:**
Entry to record bond retirement:

\[
\text{DR Bonds payable }$2,000,000
\]

\[
\text{DR Premium on bonds payable }253,211
\]

\[
\text{CR Cash (102% \times $2\ million) }$2,040,000
\]

\[
\text{CR Extra gain on bond retirement }213,211
\]

Original premium on bonds issued (see part A) = $271,830

Premium amortized in 1999 = $9,127 + $9,492 = (18,619)

Unamortized premium when bonds are called on 1/1/02 $253,211
P11-13. Working backward from an amortization table

**Requirement 1:**
Compute:

- Discount or premium on the sale
  
  \[
  \text{Premium} = \text{Amount received} \times \text{Face value} = (\$540,554 - \$500,000) = \$40,554
  \]

- Semi-annual stated interest rate: \(\frac{\$25,000}{\$500,000} \times 100 = 5\%\)

- Semi-annual effective interest rate: \(\frac{\$21,622}{\$540,554} \times 100 = 4\%\)

**Requirement 2:**
At the time of issuance, the bondholders exchanged today’s cash flow for tomorrow’s, but with the same present value on a risk-adjusted basis. Consequently, neither the borrower nor the lender made a profit (or loss) at the time of the issuance of bonds. Consequently, no gain or loss should be recorded at that time. The discount/premium merely reflects the difference between the face value and the price of the bonds, a difference that arises because the stated interest rate is not equal to the market yield (effective) rate. Amortizing discounts and premiums over time allows interest expense to be properly recorded at the true cost of borrowing.

**Requirement 3:**
It is the present value of an annuity of $25,000 for the next 5 periods plus the present value of $500,000 to be received at the end of 5 periods, both discounted at the original semi-annual effective rate of 4%.

**Requirement 4:**
New price of the bonds on January 1, 2004, is:

\[
\$478,939 = (\$25,000 \times 4.21236) + (\$500,000 \times 0.74726)
\]

The economic gain that results from the interest rate increase is:

- Book value of the bond = $522,258
- Market value (present value) of debt = 478,939

Economic gain

\[\$43,319\]

Considering just the debt, the company and its shareholders are better off because of the interest rate increase. The economic gain is the reduced present value of debt payments (principal plus interest) at the new higher
interest rate. The cash outflow has a lower present value—indicating bondholders will be receiving a less valuable payment stream.

Of course, things get a bit more complicated when the interest rate increase has a negative impact on the company’s other activities. For example, if the company sells products to customers on an installment payment plan, higher interest rates may lead to lower product sales. In addition, we have presumed that interest rates have increased throughout the economy and not just for this company.

P11-14. How notes affect cash flows

Requirement 1:
Present value of $5 million to be repaid at the end of 4 periods:
\[ = 5 \text{ m} \times 0.76290 = 3,814,500 \]

Present value of $250,000 to be paid at the end of each period:
\[ = 3.38721 \times 250,000 = 846,803 \]

Therefore, total proceeds = $846,803 + $3,814,500 = $4,661,303

Requirement 2:
Bond amortization schedule:

<table>
<thead>
<tr>
<th>Period</th>
<th>Interest Expense</th>
<th>Semi-Annual Payment</th>
<th>Increase in Liability</th>
<th>Net Liability</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td>$4,661,303</td>
</tr>
<tr>
<td>1</td>
<td>$326,291</td>
<td>$250,000</td>
<td>$76,291</td>
<td>4,737,594</td>
</tr>
<tr>
<td>2</td>
<td>331,632</td>
<td>250,000</td>
<td>81,632</td>
<td>4,819,226</td>
</tr>
<tr>
<td>3</td>
<td>337,346</td>
<td>250,000</td>
<td>87,346</td>
<td>4,906,572</td>
</tr>
<tr>
<td>4</td>
<td>343,428*</td>
<td>250,000</td>
<td>93,428</td>
<td>5,000,000</td>
</tr>
</tbody>
</table>

*Rounded down from $343,460 (.07 \times 4,906,572)
Requirement 3:
Journal entries:

Issuance of notes

<table>
<thead>
<tr>
<th>DR</th>
<th>Cash</th>
<th>$4,661,303</th>
</tr>
</thead>
<tbody>
<tr>
<td>DR</td>
<td>Discount on notes payable</td>
<td>338,697</td>
</tr>
<tr>
<td>CR</td>
<td>Notes payable</td>
<td>$5,000,000</td>
</tr>
</tbody>
</table>

Accrual and payment of interest on December 31, 2001

<table>
<thead>
<tr>
<th>DR</th>
<th>Interest expense</th>
<th>$326,291</th>
</tr>
</thead>
<tbody>
<tr>
<td>CR</td>
<td>Cash</td>
<td>$250,000</td>
</tr>
<tr>
<td></td>
<td>Discount on notes payable</td>
<td>76,291</td>
</tr>
</tbody>
</table>

Payment of face value on maturity

<table>
<thead>
<tr>
<th>DR</th>
<th>Notes payable</th>
<th>$5,000,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>CR</td>
<td>Cash</td>
<td>$5,000,000</td>
</tr>
</tbody>
</table>

Requirement 4:
Effects on cash flow statement:

- Issuance of bonds: Financing inflow $4,661,303
- Payment of interest: Operating outflow $250,000
- Payment of face value on maturity:
  - Financing outflow $4,661,303
  - Operating outflow $338,697

Requirement 5:
The price of the bond will be $5,000,000. The company will be worse off because it could have borrowed at a lower rate, but now it is committed to 14% unless the notes are callable or otherwise allow for the liquidation of the liability before maturity with no penalty. The interest rate decline may actually help the company if it can refinance the notes at the new lower rate.
Requirement 1:
Below is a schedule of the bond’s future cash flows\(^1\).

<table>
<thead>
<tr>
<th>Date</th>
<th>Cash Flow</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/1/2002</td>
<td>(200,000)</td>
</tr>
<tr>
<td>1/1/2003</td>
<td>(200,000)</td>
</tr>
<tr>
<td>1/1/2004</td>
<td>(200,000)</td>
</tr>
<tr>
<td>1/1/2005</td>
<td>(200,000)</td>
</tr>
<tr>
<td>1/1/2006</td>
<td>(200,000)</td>
</tr>
</tbody>
</table>

To find the selling price of the bond, we need to find the present value of its future cash flows. We can start by finding the present value of the principal payments. Using the formula for an ordinary annuity\(^2\), we get:

\[
200,000 \times \text{PV of an annuity for 5 years at 6\%} = 200,000 \times 4.2124 = $842,480
\]

Next, we have to find the present value of the interest payments; since the principal is repaid on a yearly basis, interest will also decrease annually. We must find the present value of $1 for each separately.

\(a\) \[50,000 \times \text{PV of $1 at 6\% for 1 year} = 50,000 \times 0.9434 = 47,170\]

\(b\) \[40,000 \times \text{PV of $1 at 6\% for 2 years} = 40,000 \times 0.8900 = 35,600\]

\(c\) \[30,000 \times \text{PV of $1 at 6\% for 3 years} = 30,000 \times 0.8396 = 25,188\]

\(d\) \[20,000 \times \text{PV of $1 at 6\% for 4 years} = 20,000 \times 0.7921 = 15,842\]

\(e\) \[10,000 \times \text{PV of $1 at 6\% for 5 years} = 10,000 \times 0.7473 = 7,473\]

\(^1\) The interest payments are computed in the following table

<table>
<thead>
<tr>
<th>Date</th>
<th>Bond Liability</th>
<th>Interest Payment (5%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/1/2001</td>
<td>1,000,000</td>
<td>50,000</td>
</tr>
<tr>
<td>1/1/2002</td>
<td>800,000</td>
<td>40,000</td>
</tr>
<tr>
<td>1/1/2003</td>
<td>600,000</td>
<td>30,000</td>
</tr>
<tr>
<td>1/1/2004</td>
<td>400,000</td>
<td>20,000</td>
</tr>
<tr>
<td>1/1/2005</td>
<td>200,000</td>
<td>0</td>
</tr>
<tr>
<td>1/1/2006</td>
<td>0</td>
<td>10,000</td>
</tr>
</tbody>
</table>

The interest payment for the year is equal to 5% of the bond liability for that year. The interest is paid at the end of the period (or the beginning of the next period), while the principal is paid at the beginning of the respective period. Therefore, $50,000 is 5% of $1,000,000 and is the interest accrued in the bonds for 2001, not 2002.

\(^2\) Even though the principal is paid at the first of the year, we can use the ordinary annuity formula because the end of the year and the first of the year fall within one day of each other. There is no material difference between using the annuity due formula and discounting it back one year or using the ordinary annuity formula.
Now that we have found the present value of each interest payment, we need only sum the interest payments and the principal payments to find the price of the bond.

\[ \$842,480 + 47,170 + 35,600 + 25,188 + 15,842 + 7,473 = \$973,753 \]

So, the total amount received from issuance of the bonds January 1, 2001, was $973,753.

**Requirement 2:**
Schedule of amortization

<table>
<thead>
<tr>
<th>Date</th>
<th>Interest Payment</th>
<th>Interest Expense</th>
<th>Discount Amortization</th>
<th>Decrease in Bond Liability</th>
<th>Book value</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>$973,753</td>
<td></td>
<td></td>
<td></td>
<td>$973,753</td>
</tr>
<tr>
<td>2002</td>
<td>50,000</td>
<td>58,425</td>
<td>8,425</td>
<td>200,000</td>
<td>782,178</td>
</tr>
<tr>
<td>2003</td>
<td>40,000</td>
<td>46,931</td>
<td>6,931</td>
<td>200,000</td>
<td>589,109</td>
</tr>
<tr>
<td>2004</td>
<td>30,000</td>
<td>35,347</td>
<td>5,347</td>
<td>200,000</td>
<td>394,455</td>
</tr>
<tr>
<td>2005</td>
<td>20,000</td>
<td>23,667</td>
<td>3,667</td>
<td>200,000</td>
<td>198,123</td>
</tr>
<tr>
<td>2006</td>
<td>10,000</td>
<td>11,877</td>
<td>1,877</td>
<td>200,000</td>
<td>(0)</td>
</tr>
</tbody>
</table>

**P11-16. Discount and premium amortization**

**Requirement 1:**
The carrying values of both bonds in each of the two years presented is simply the present value of the principal and interest payments discounted over the remaining life of the bond.

To illustrate, the December 31, 1998, value of $9,653,550 for the 10% bonds due in 2000 can be derived as follows. Note that these bonds pay semi-annual interest of $500,000 and have four periods until they mature.

Present value of the principal repayment:

\[ = \$10,000,000 \times \text{Present value of } \$1 \text{ to be received in 4 periods at 6\%} \]
\[ = \$10,000,000 \times 0.7921 = \$7,921,000 \]

Present value of the interest payments:

\[ = \$500,000 \times \text{Present value of an ordinary annuity of } \$1 \text{ to be received in 4 periods at 6\%} \]
\[ = \$500,000 \times 3.4651 = \$1,732,550 \]
Carrying value of the bonds at December 31, 1998:

\[ = \$7,921,000 + \$1,732,550 = \$9,653,550 \]

In a similar fashion, the December 31, 1999, value of $10,362,950 for the 10% bonds due in 2001 can be derived as follows. Note that these bonds pay semi-annual interest of $500,000 and have four periods until they mature.

Present value of the principal repayment:

\[ = \$10,000,000 \times \text{Present value of } \$1 \text{ to be received in 4 periods at } 4\% \\
= \$10,000,000 \times 0.8548 = \$8,548,000 \]

Present value of the interest payments:

\[ = \$500,000 \times \text{Present value of an ordinary annuity of } \$1 \text{ to be received in 4 periods at } 4\% \\
= \$500,000 \times 3.6299 = \$1,814,950 \]

Carrying value of the bonds at December 31, 1999:

\[ = \$8,548,000 + \$1,814,950 = \$10,362,950 \]

The December 31, 1999 carrying value of the 10% bonds due in 2000 is equal to the present value of the principal repayment to be received in 2 periods plus the present value of the 2 remaining interest payments discounted at the original market rate of 6% (i.e., 12%/2).

Present value of the principal repayment:

\[ = \$10,000,000 \times \text{Present value of } \$1 \text{ to be received in 2 periods at } 6\% \\
= \$10,000,000 \times 0.8900 = \$8,900,000 \]

Present value of the interest payments:

\[ = \$500,000 \times \text{Present value of an ordinary annuity of } \$1 \text{ to be received in 2 periods at } 6\% \\
= \$500,000 \times 1.8334 = \$916,700 \]

Carrying value of the bonds at December 31, 1999:

\[ = \$8,900,000 + \$916,700 = \$9,816,700 \]
The December 31, 1998, carrying value of the 10% bonds due in 2001 is equal to the present value of the principal repayment to be received in 6 periods plus the present value of the 6 remaining interest payments discounted at the original market rate of 4% (i.e., 8%/2).

Present value of the principal repayment:

\[ \text{Present value of the principal repayment:} \]
\[ = \$10,000,000 \times \text{Present value of$1 to be received in 6 periods at 4\%} \]
\[ = \$10,000,000 \times 0.7903 = \$7,903,000 \]

Present value of the interest payments:

\[ \text{Present value of the interest payments:} \]
\[ = \$500,000 \times \text{Present value of an ordinary annuity of$1 to be received in 6 periods at 4\%} \]
\[ = \$500,000 \times 5.2421 = \$2,621,050 \]

Carrying value of the bonds at December 31, 1998:

\[ \text{Carrying value of the bonds at December 31, 1998:} \]
\[ = \$7,903,000 + \$2,621,050 = \$10,524,050 \]

**Requirement 2:**
The amount of interest expense recognized in 1999 on the bonds due in 2000 is equal to the cash interest payment of $1 million ($500,000 on both June 30 and December 31) plus the amortization of the bond discount during 1999. This latter amount is the difference between the carrying value of the bonds at December 31, 1998, and December 31, 1999. Based on the calculations in part 1, this amount is:

\[ \text{Total interest expense:} \]
\[ = \$1,000,000 + \$163,150 = \$1,163,150 \]

11-40
Requirement 3:
The amount of interest expense recognized in 1999 on the bonds due in 2001 is equal to the cash interest payment of $1 million ($500,000 on both June 30 and December 31) minus the amortization of the bond premium during 1999. This latter amount is the difference between the carrying value of the bonds at December 31, 1998, and December 31, 1999. Based on the calculations in part 1, this amount is:

\[ \text{Total interest expense:} \]

\[ = \$1,000,000 - \$161,100 = \$838,900 \]

P11-17. Loss contingencies

Requirement 1:
A loss contingency is an event that results in the possibility of future loss. A primary example of a loss contingency is litigation. Loss contingencies can be disclosed either by recognizing a charge to income and an associated liability or as a footnote disclosure. GAAP provides specific guidelines (SFAS No. 5) about when loss contingencies must be recorded on the books rather than just given footnote disclosure.

Loss contingencies are included in the financial statements because the event will possibly cause future loss. That is, the event has potential economic ramifications for the firm. Conservatism requires that possible liabilities be disclosed in the financial statements while possible gains are not disclosed.

The Exxon and Borden illustrations are examples of loss contingencies. Apparel America’s situation represents a noncontingent, existing liability. A loss contingency meets SFAS No. 5 requirements for recognizing a charge against income and an associated liability when 1) the event represents a probable liability, and 2) the amount of the loss can be reasonably estimated. However, while the Exxon example represents a probable loss, the amount of the loss cannot be reasonably estimated. Therefore, the loss will be disclosed in a footnote.
**Requirement 2:**
Present value of Apparel America’s settlement as of December 1994:
- PV of $150,000 = $150,000
- PV of 5 semi-annual payments at 4.5% = $50,000 \times 4.38998 = 219,499
- PV of final payment in 6 periods at 4.5% = $60,000 \times 0.767896 = 46,074
Present value of settlement = $415,573

Present value of Apparel America’s settlement as of June 30, 1996:
<table>
<thead>
<tr>
<th>Payment date</th>
<th>Amount</th>
<th>Factor</th>
<th>Present value</th>
</tr>
</thead>
<tbody>
<tr>
<td>12/31/96</td>
<td>$50,000</td>
<td>.956938</td>
<td>$47,847</td>
</tr>
<tr>
<td>6/30/97</td>
<td>50,000</td>
<td>.915730</td>
<td>45,787</td>
</tr>
<tr>
<td>12/31/97</td>
<td>60,000</td>
<td>.876296</td>
<td>52,578</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>$146,212</td>
</tr>
</tbody>
</table>

$147,309 would be included in the balance sheet as a liability.

**Requirement 3:**
SFAS no. 5 states that a loss contingency shall be accrued if it is (1) probable and (2) the amount of the loss can be reasonably estimated. Borden's probable loss is $22 million. Another $13 million in losses are "reasonably possible," but SFAS no. 5 does not require reasonably possible losses to be accrued. (see Figure 11.12)

**Requirement 4:**
There are several reasons why Exxon does not report a dollar amount for the loss contingency. First, while a liability clearly exists, a reasonable estimate of the amount of the liability may not be possible. Second, even if Exxon could reasonably estimate the liability, it may be hesitant to disclose the estimate because doing so could harm the company. For example, suppose Exxon estimates the cost of settling the Valdez oil spill at $50 billion. This disclosure could harm Exxon if plaintiffs are willing to settle for $35 billion because then the plaintiffs would know that Exxon was willing to pay higher damages. Incentives exist for Exxon to either disclose an estimate that is considerably smaller than the company’s “true” estimate, or to claim that the loss cannot be reasonably estimated.
**Requirement 5:**
Stock analysts are unlikely to ignore the loss contingency when valuing Exxon. Analysts realize that a significant loss has occurred even if the company does not place a specific dollar amount on the loss. In this situation, analysts will form their own estimate of the loss contingency. Notice that analysts may come up with different estimates of this liability, and, thus, different analysts may have different valuations for Exxon.

**P11-18. Floating-rate debt**

**Requirement 1:**
Journal entry to record the issuance on January 1, 2001:

- **DR** Cash $250,000,000
- **CR** Bonds payable $250,000,000

If the bonds were issued at par, the effective (or market) interest rate must have been equal to the stated rate of “LIBOR + 5.5%”, or 12%, since the LIBOR was 6.5% at the issue date.

**Requirement 2:**
Interest expense for 2001:

Interest rate = LIBOR + 5.5% = 6.50% + 5.50% = 12.0%
Interest expense = 12.0% × $250,000,000 = $30,000,000

- **DR** Interest expense $30,000,000
- **CR** Cash $30,000,000

Interest expense for 2002:

Interest rate = LIBOR + 5.5% = 7.00% + 5.50% = 12.5%
Interest expense = 12.5% × $250,000,000 = $31,250,000

- **DR** Interest expense $31,250,000
- **CR** Cash $31,250,000

Interest expense for 2000:

Interest rate = LIBOR + 5.5% = 5.50% + 5.50% = 11.0%
Interest expense = 11.0% × $250,000,000 = $27,500,000

- **DR** Interest expense $27,500,000
- **CR** Cash $27,500,000
**Requirement 3:**
If the only factor influencing the market value of these bonds is the LIBOR, the bonds will have a market value of $250 million on 12/31/2004. This is because the interest rate on the bonds is reset annually so that the present value of the principal and remaining interest payments always equals $250 million at the new rate.

**P11-19. Unconditional purchase obligations**

**Requirement 1:**
There is no simple way to find the present value of the 10 payments required under the purchase obligation contract except using a spreadsheet or a series of individual calculations. Each payment should be discounted at 9%, and the total present value will equal $208,103,371 (or $217,468,023 when adjusted for mid-year payment).

Here is one such series of calculations:

PV on 12/31/96 of a 6-year deferred annuity of $31 million beginning on 12/31/01 $98,516,072
PV on 12/31/96 of:
$35 million lump sum payment on 12/31/97 32,110,092
$34 million lump sum payment on 12/31/98 28,617,120
$33 million lump sum payment on 12/31/99 25,482,055
$33 million lump sum payment on 12/31/00 23,378,031
Total PV of future payments on 12/31/96 $208,103,370

**Requirement 2:**
The impact of capitalizing unconditional purchase obligations on the debt-to-equity ratio is shown below:

<table>
<thead>
<tr>
<th></th>
<th>$ in millions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>As reported</td>
</tr>
<tr>
<td>Long-term debt</td>
<td>$1,194</td>
</tr>
<tr>
<td>Unconditional purchase obligation</td>
<td>$208</td>
</tr>
<tr>
<td>Total</td>
<td>$1,194</td>
</tr>
<tr>
<td>Divided by shareholder’s equity</td>
<td>$431</td>
</tr>
<tr>
<td>Debt-to-equity ratio</td>
<td>2.77</td>
</tr>
</tbody>
</table>

**Requirement 3:**
Under current GAAP, contracts of this sort are not booked because neither party is viewed as having taken any action—no cash or property has yet been exchanged, there is just a promise to do so in the future. Some companies prefer this approach because it keeps a real economic obligation
(true liability) off of the balance sheet. Off-balance sheet debt may also reduce the probability of debt covenant violations.

**P11-20. Debt-for-debt swaps**

**Requirement 1:**
Since the bonds were originally sold at par, the carrying amount on December 31, 2001, is equal to $5,000,000. If this bond issued were retired in exchange for a bond issue valued at $3,200,000 there would be a pre-tax gain of $1,800,000. The journal entry to record the exchange would be:

| DR  | Bonds payable (old) | $5,000,000 |
| CR  | Bonds payable (new)  | $3,200,000 |
| CR  | Income tax payable (current)* | 630,000 |
| CR  | Gain on debt retirement** | 1,170,000 |

*$630,000 = $1,800,000 \times 0.35$  **$1,170,000 = $1,800,000 \times (1.0 - 0.35)$

**Requirement 2:**
Long-term debt-to-equity ratio after the swap:

$$= \frac{($7,500,000 - $5,000,000 + $3,200,000)/($410,000,000 + $1,170,000)}{= 51.0\%}$$

**Requirement 3:**
The transaction would increase net income by $1,170,000 (see above).

**Requirement 4:**
Other ways to avoid the covenant’s violation include: issue additional common stock, reissue any treasury stock that is being held, make changes to accounting methods (e.g., depreciation of assets, useful lives, salvage values, etc.) that are income increasing, and/or exchange common stock for some outstanding debt.

**P11-21. Zero coupon bonds**

**Requirement 1:**
Price of the debentures = Present value factor × Total maturity value

$$\text{Present value factor} = \frac{1}{(1.0375)^{40}} = 0.229337875 \ldots$$

Price of the debentures = 0.229337875 \ldots \times \$862.5\text{ million} = \$197.804\text{ million}$$

which is very close to the total issue price of $197.806 million
Requirement 2:
The annualized rate of return = (1.0375)^2 - 1.00 = 0.0764 or 7.64%

Requirement 3:
Journal entry at the time of issuance:
- **DR** Cash (financing inflow) $191,872
- **DR** Other assets (issuance costs) 5,934
- **CR** Zero coupon debentures $197,806

At the end of 1990
- **DR** Interest expense (from cash flow statement) $412
- **CR** Zero coupon debentures $412
- **DR** Debt issuance expense $296.70
- **CR** Other assets ($5,934 amortized over 20 years) $296.70

During 1991
- **DR** Interest expense (from cash flow statement) $15,002
- **CR** Zero coupon debentures $15,002
- **DR** Debt issuance expense $296.70
- **CR** Other assets $296.70

During 1992
- **DR** Interest expense (from statement) $15,746
- **CR** Zero coupon debentures $15,746
- **DR** Debt issuance expense $296.70
- **CR** Other assets $296.70

During 1993
- **DR** Interest expense (from statement) $14,912
- **CR** Zero coupon debentures $14,912
- **DR** Debt issuance expense $296.70
- **CR** Other assets $296.70
- **DR** Zero coupon debentures (from statement) $243,878
- **CR** Cash (financing outflow) $243,878
- **DR** Extraordinary item (write-off of debt issuance costs) $1,426.20
- **CR** Other assets $1,426.20
An alternative classification of cash flows:

- At the time of issuance:
  - Financing inflow $197,806
  - Operating outflow 5,934

- At the time of redemption:
  - Financing outflow $197,806
  - Operating outflow 46,072

Requirement 4:
Treatment of debt issuance costs: The company did not expense these costs at the time of issuance, but instead capitalized the amount creating an asset. This asset is then being amortized (charged to income) over the life of the debt. The company’s approach is consistent with Concept Statement No. 6 in that debt issuance costs are being spread over the life of the debt, just like a discount would be. However, most companies amortize debt issuance costs on a straight-line basis, which is inconsistent with the effective interest amortization of the discount.
P11-22. Comprehensive problem on premium bond

The following schedule shows the details for most parts of this question.

Amortization table for 20-year bond with semi-annual interest payments

<table>
<thead>
<tr>
<th>Bond Principal</th>
<th>$20,000,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coupon Interest Rate</td>
<td>6.0%</td>
</tr>
<tr>
<td>Market Interest Rate</td>
<td>4.0%</td>
</tr>
<tr>
<td>Month and Year Issued</td>
<td>July-01</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Month/Year</th>
<th>Period</th>
<th>Bond Carrying Amount at Start of Period</th>
<th>Interest Expense</th>
<th>Premium Discount (Discount) Amortization</th>
<th>Bond Carrying Amount at End of Period</th>
<th>Cost Interest Payment</th>
<th>Principal Payment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Issue date:</td>
<td></td>
<td>$27,917,110</td>
<td></td>
<td></td>
<td>$7,917,110</td>
<td></td>
<td></td>
</tr>
<tr>
<td>January-02</td>
<td>1</td>
<td>$27,917,110</td>
<td>$1,116,684</td>
<td>($83,316)</td>
<td>$7,833,794</td>
<td>$27,833,794</td>
<td>$1,200,000</td>
</tr>
<tr>
<td>July-02</td>
<td>2</td>
<td>27,833,794</td>
<td>1,113,352</td>
<td>(86,648)</td>
<td>7,747,146</td>
<td>27,747,146</td>
<td>1,200,000</td>
</tr>
<tr>
<td>January-03</td>
<td>3</td>
<td>27,747,146</td>
<td>1,109,886</td>
<td>(90,114)</td>
<td>7,657,032</td>
<td>27,657,032</td>
<td>1,200,000</td>
</tr>
<tr>
<td>July-03</td>
<td>4</td>
<td>27,657,032</td>
<td>1,106,281</td>
<td>(93,719)</td>
<td>7,563,313</td>
<td>27,563,313</td>
<td>1,200,000</td>
</tr>
<tr>
<td>January-04</td>
<td>5</td>
<td>27,563,313</td>
<td>1,102,533</td>
<td>(97,467)</td>
<td>7,465,845</td>
<td>27,465,845</td>
<td>1,200,000</td>
</tr>
<tr>
<td>July-04</td>
<td>6</td>
<td>27,465,845</td>
<td>1,098,634</td>
<td>(101,366)</td>
<td>7,364,479</td>
<td>27,364,479</td>
<td>1,200,000</td>
</tr>
<tr>
<td>January-05</td>
<td>7</td>
<td>27,364,479</td>
<td>1,094,579</td>
<td>(105,421)</td>
<td>7,259,058</td>
<td>27,259,058</td>
<td>1,200,000</td>
</tr>
<tr>
<td>July-05</td>
<td>8</td>
<td>27,259,058</td>
<td>1,090,362</td>
<td>(109,638)</td>
<td>7,149,421</td>
<td>27,149,421</td>
<td>1,200,000</td>
</tr>
<tr>
<td>January-06</td>
<td>9</td>
<td>27,149,421</td>
<td>1,085,977</td>
<td>(114,023)</td>
<td>7,035,397</td>
<td>27,035,397</td>
<td>1,200,000</td>
</tr>
<tr>
<td>July-06</td>
<td>10</td>
<td>27,035,397</td>
<td>1,081,416</td>
<td>(118,584)</td>
<td>6,916,813</td>
<td>26,916,813</td>
<td>1,200,000</td>
</tr>
<tr>
<td>January-07</td>
<td>11</td>
<td>26,916,813</td>
<td>1,076,673</td>
<td>(123,327)</td>
<td>6,793,486</td>
<td>26,793,486</td>
<td>1,200,000</td>
</tr>
<tr>
<td>July-07</td>
<td>12</td>
<td>26,793,486</td>
<td>1,071,739</td>
<td>(128,261)</td>
<td>6,665,225</td>
<td>26,665,225</td>
<td>1,200,000</td>
</tr>
</tbody>
</table>
Requirement 1:
The January 1, 2001, issue price is $27,917,110.

Requirement 2:
The amortization table is shown above.

Requirement 3:
Interest expense and cash interest payment information is given in the amortization table. The entry for June 30, 2002, is:

<table>
<thead>
<tr>
<th></th>
<th>Debit</th>
<th>Credit</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>DR</td>
<td>Interest expense</td>
<td>Cash</td>
<td>$1,113,352</td>
</tr>
<tr>
<td>DR</td>
<td>Premium on bonds</td>
<td></td>
<td>$86,648</td>
</tr>
<tr>
<td>CR</td>
<td>Cash</td>
<td></td>
<td>$1,200,000</td>
</tr>
</tbody>
</table>

The entry for December 31, 2002, is:

<table>
<thead>
<tr>
<th></th>
<th>Debit</th>
<th>Credit</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>DR</td>
<td>Interest expense</td>
<td>Cash</td>
<td>$1,109,886</td>
</tr>
<tr>
<td>DR</td>
<td>Premium on bonds</td>
<td></td>
<td>$90,114</td>
</tr>
<tr>
<td>CR</td>
<td>Cash</td>
<td></td>
<td>$1,200,000</td>
</tr>
</tbody>
</table>

Requirement 4:
Points to be made include: the company received $27.9 million cash in exchange for a promise to repay on $20 million in principal and $2.4 million in interest each year; because more than $20 million was received, the true interest rate is less than 6% each period; some of each year’s interest payment is really a payment on the principal; to reflect these facts properly on the books, interest expense is recorded at the true market rate (4% each period) and using the true amount owed—book value of the debt including unamortized premium.

Requirement 5:
Deere will not record the guarantee as a liability on its financial statements but may disclose its contingent obligation in a footnote to the financials.

Requirement 6:
From the amortization schedule in Requirement 1, we can see that the book value of the entire debt issue is $26,793,486 on January 1, 2007. So, the book value of 40% of the debt would be $10,717,394 (rounded). If the company exercised its call provision and retired 40% of the debt (or $8,000,000 face value) at a price of 105, the following entry would be made:

<table>
<thead>
<tr>
<th></th>
<th>Debit</th>
<th>Credit</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>DR</td>
<td>Bonds payable</td>
<td>Cash</td>
<td>$8,000,000</td>
</tr>
<tr>
<td>DR</td>
<td>Premium on bonds</td>
<td></td>
<td>$2,717,394</td>
</tr>
<tr>
<td>CR</td>
<td>Cash</td>
<td></td>
<td>$8,400,000</td>
</tr>
<tr>
<td>CR</td>
<td>Gain on extinguishment of debt</td>
<td></td>
<td>$2,317,394</td>
</tr>
</tbody>
</table>
Requirement 7:
If the market yield on the debt is 10%, its market price would be $23,074,490 and 40% of the debt would have a market value of $9,229,796. This means that the company paid $1,487,598 less by calling the debt than it would have paid buying the debt on the open market.

P11-23. Hedging a Purchase Commitment

Requirement 1:
Silverado must give the supplier a six-month advance commitment for titanium purchases at a fixed price, but the company does not want to forego the possibility that titanium prices will decline over the period. So, the company enters into a forward contract to sell titanium in six months at the same $310 price. If titanium prices fall, as Silverado expects, the forward contract will increase in value and this value increase will offset the value decline of Silverado’s firm commitment contract with the supplier. The net effect is that Silverado will end up paying the June 30 market price for titanium.

Was it a good idea? Yes, in this case, because titanium prices fell to $285 per pound by June 30.

Requirement 2:
Both contracts have zero value at inception, as the problem statement indicates. So there is no entry made on January 1 for either contract.

Requirement 3:
The following entries are made on March 31:

<table>
<thead>
<tr>
<th>DR</th>
<th>Investment in forward contract $128,079</th>
</tr>
</thead>
<tbody>
<tr>
<td>CR</td>
<td>Gain on forward contract $128,079</td>
</tr>
<tr>
<td></td>
<td>(To record the change in fair value on the forward contract)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DR</th>
<th>Loss on firm commitment $128,079</th>
</tr>
</thead>
<tbody>
<tr>
<td>CR</td>
<td>Liability under firm commitment $128,079</td>
</tr>
<tr>
<td></td>
<td>(To record the change in fair value of the firm commitment)</td>
</tr>
</tbody>
</table>

Notice that the gain on the forward contract is offset by the loss on the firm commitment, and that both the gain and the loss flows through income in March.
**Requirement 4:**
The following entries are made on June 30:

- **DR** Investment in forward contract $121,921  
  **CR** Gain on forward contract $121,921  
  *(To record the change in fair value on the forward contract: $250,000 minus $128,079)*

- **DR** Loss on firm commitment $121,921  
  **CR** Liability under firm commitment $121,921  
  *(To record the change in fair value of the firm commitment)*

- **DR** Cash $250,000  
  **CR** Investment in forward contract $250,000  
  *(To record the cash receipt upon settlement of the forward contract.)*

- **DR** Titanium $3,100,000  
  **CR** Cash $3,100,000  
  *(To record the purchase of titanium at the contracted price.)*

- **DR** Firm commitment $250,000  
  **CR** Titanium $250,000  
  *(To unwind the firm commitment and adjust the carrying amount of the titanium purchase.)*

Notice that titanium inventory is now on the books at June 30 market price of $285 per pound ($3,100,000 minus $250,000 = $2,850,000), the net price paid by the company as a result of its fair value hedge of the firm commitment.

**P11-24. Hedging a Planned Sale (TL)**

**Requirement 1:**
Newton plans to sell some of its corn inventory next March, six months from now (October). This sale will take place at the March market price. However, Newton does not want to be exposed to commodity price risk between now and March, so the company enters into a March forward contract that locks in a $1,100,000 price for the corn.

Was it a good idea? Yes, in this case, because corn prices fell by March.

**Requirement 2:**
The forward contract has zero value at inception, as indicated in the problem statement, so there is no entry made when the contract is signed.
**Requirement 3:**
The following entries are made on December 31:

DR Investment in forward contract $95,000
CR Other comprehensive income $95,000
(To record the change in fair value on the forward contract)

No entry is made to record the change in fair value of the corn inventory itself. Only the derivative security is “marked-to-market”.

**Requirement 4:**
The following entries are made on March 15:

DR Other comprehensive income $70,000
CR Investment in forward contract $70,000
(To record the change in fair value on the forward contract: $95,000 minus $25,000.)

DR Cash $25,000
CR Investment in forward contract $25,000
(To record the cash received from settlement of the forward contract.)

DR Cash $1,075,000
DR Cost of goods sold $1,000,000
CR Revenue $1,075,000
CR Corn inventory $1,000,000
(To record the sale of corn inventory at the market price.)

DR Other comprehensive income $25,000
CR Revenue $25,000
(To reclassify the cumulative “Other comprehensive income” balance as revenue associated with the sale of corn inventory.)

Notice that the total revenue and cash flow from selling corn is $1,100,000 (the $1,075,000 March market price for corn plus the $25,000 settlement from the forward contract).

**Requirement 5:**
The answer to this question depends on how Newton designates the forward contract hedge. If Newton designates the forward contract as a cash flow hedge of 50% of planned sale of corn inventory, the hedge is “fully effective”. In this case, the entries proceed along the lines outlined above, except that contract fair values are scaled back by 50% (to $47,500 and $12,500, respectively). Newton would then receive only $12,500 in cash when the forward contract was settled, and only $12,500 would be transferred from “Other comprehensive income” to revenue in the final journal entry.
If Newton designates the forward contract as a cash flow hedge of the entire planned sale of corn inventory, the hedge would be considered “ineffective” under GAAP and thus not qualify for special hedge accounting rules. The derivative would still be “marked-to-market” as shown above, but the fair value gains and losses would flow directly to income rather than to “Other comprehensive income”. As a result, earnings volatility would increase and there would be no final journal entry transfer of “Other comprehensive income” to revenue.

P11-25. Interest-rate swap as a cash flow hedge

Requirements 1 and 2:
The analysis is summarized in the following table.

<table>
<thead>
<tr>
<th>Notional Amount</th>
<th>Interest rate</th>
<th>Cash interest</th>
</tr>
</thead>
<tbody>
<tr>
<td>July 1, 2002:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>First Kansas City loan $5,000,000 6.00% $300,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quincy B&amp;T swap $5,000,000 6.00% $300,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Difference in cash interest</td>
<td></td>
<td>$0</td>
</tr>
</tbody>
</table>

| July 1, 2003:   |               |               |
| First Kansas City loan $5,000,000 6.25% $312,500 |               |
| Quincy B&T swap $5,000,000 6.00% $300,000 |               |
| Difference in cash interest |               | $12,500       |

The July 1, 2002 “net cash settlement” for Basie is zero because the fixed-rate payment and the variable-rate payment are the same, $300,000. On July 1, 2003 Basie will receive a $12,500 cash settlement from Quincy because the variable-rate payment is greater than the fixed rate payment.

Basie pays First Kansas City $300,000 on July 1, 2002 and $312,500 on July 1, 2003. Notice that the July 1, 2003 payment is comprised of $300,000 cash from Basie and another $12,500 that came from Quincy B&T.
**Requirement 3 and 4:**
The swap contract has zero value at inception, as indicated in the problem statement, so there is no entry made when the contract is signed.

The following entries are made on June 30, 2002:

**DR** Interest expense $300,000  
**CR** Accrued interest payable $300,000  
(To record variable-rate interest on the First Kansas City Bank loan for the fiscal year ending June 30.)

**DR** Investment in swap contract $40,000  
**CR** Other comprehensive income $40,000  
(To record the change in fair value of the swap contract.)

No entry is made to record “net cash settlement” for the swap because it is zero.

The following entry is made on July 1, 2002:

**DR** Accrued interest payable $300,000  
**CR** Cash $300,000  
(To record the cash payment of interest to First Kansas City Bank.)

The following entries are made on June 30, 2003:

**DR** Interest expense $312,500  
**CR** Accrued interest payable $312,500  
(To record variable-rate interest on the First Kansas City Bank loan for the fiscal year ending June 30.)

**DR** Receivable from Quincy $12,500  
**CR** Interest expense $12,500  
(To record “net cash settlement” for the swap.)

**DR** Other comprehensive income $68,000  
**CR** Investment in swap contract $68,000  
(To record the change in fair value of the swap contract.)
Although not required by the problem statement, the following entries are made on July 1, 2003:

**DR** Accrued interest payable $312,500  
**CR** Cash $312,500  
(To record the cash payment of interest to First Kansas City Bank.)

**DR** Cash $12,500  
**CR** Receivable from Quincy B&T $12,500  
(To record the cash receipt from Quincy.)

**P11-26. Interest-rate swap as a fair value hedge**

**Requirements 1 and 2:**
The analysis is summarized in the following table.

<table>
<thead>
<tr>
<th>Notional Amount</th>
<th>Interest rate</th>
<th>Cash interest</th>
</tr>
</thead>
<tbody>
<tr>
<td>December 31, 2001:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Guiffrie Bank loan</td>
<td>$10,000,000</td>
<td>8.00%</td>
</tr>
<tr>
<td>Herman Bank swap</td>
<td>$10,000,000</td>
<td>8.00%</td>
</tr>
<tr>
<td>Difference in cash interest</td>
<td></td>
<td></td>
</tr>
<tr>
<td>December 31, 2002:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Guiffrie Bank loan</td>
<td>$10,000,000</td>
<td>8.00%</td>
</tr>
<tr>
<td>Herman Bank swap</td>
<td>$10,000,000</td>
<td>8.25%</td>
</tr>
<tr>
<td>Difference in cash interest</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The December 31, 2001 “net cash settlement” for Four Brothers is zero because the fixed-rate payment and the variable-rate payment are the same, $800,000. On December 31, 2002 Four Brothers will pay a $25,000 cash settlement to Herman because the variable-rate payment is greater than the fixed rate payment.

Four Brothers pays Guiffrie Bank $800,000 on December 31, 2001 and on December 31, 2002. Of course, Four Brothers also has to pay Herman Bank $25,000 on December 31, 2002.
**Requirement 3 and 4:**
The swap contract has zero value at inception, as indicated in the problem statement, so there is no entry made when the contract is signed.

The following entries are made on December 31, 2001:

<table>
<thead>
<tr>
<th>Debit</th>
<th>Credit</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>DR Interest expense</td>
<td>CR Cash</td>
<td>$800,000</td>
</tr>
</tbody>
</table>

(To record the fixed-rate interest on the Guiffrie Bank loan 2001.)

<table>
<thead>
<tr>
<th>Debit</th>
<th>Credit</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>DR Guiffrie Bank Loan (debt)</td>
<td>CR Gain on hedge activity</td>
<td>$45,000</td>
</tr>
</tbody>
</table>

(To record the change in fair value of the fixed-rate debt that is attributable to changes in interest rates at the end of 2001.)

<table>
<thead>
<tr>
<th>Debit</th>
<th>Credit</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>DR Loss on hedge activity</td>
<td>CR Investment in swap contract</td>
<td>$45,000</td>
</tr>
</tbody>
</table>

(To record the change in fair value of the swap contract.)

No entry is made to record “net cash settlement” for the swap contract because it is zero.

The following entries are made on December 31, 2002:

<table>
<thead>
<tr>
<th>Debit</th>
<th>Credit</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>DR Interest expense</td>
<td>CR Cash</td>
<td>$800,000</td>
</tr>
</tbody>
</table>

(To record the fixed-rate interest on the Guiffrie Bank loan 2002.)

<table>
<thead>
<tr>
<th>Debit</th>
<th>Credit</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>DR Interest expense</td>
<td>CR Cash</td>
<td>$25,000</td>
</tr>
</tbody>
</table>

(To record the “net cash settlement” payment to Herman Bank)

<table>
<thead>
<tr>
<th>Debit</th>
<th>Credit</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>DR Loss on hedge activity</td>
<td>CR Guiffrie Bank Loan (debt)</td>
<td>$68,000</td>
</tr>
</tbody>
</table>

(To record the change in fair value of the fixed-rate debt that is attributable to changes in interest rates at the end of 2002.)

<table>
<thead>
<tr>
<th>Debit</th>
<th>Credit</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>DR Investment in swap contract</td>
<td>CR Gain on hedge activity</td>
<td>$68,000</td>
</tr>
</tbody>
</table>

(To record the change in fair value of the swap contract.)
P11-27. Hedge Effectiveness

**Requirement 1:**
Because the futures contracts are deemed “ineffective” for GAAP purposes, the special hedge accounting rules cannot be used. Notice how these entries produce increased earnings volatility compared to those in requirement 2 below. Here are the journal entries:

**October 1, 2001:**

**DR** Amount due from broker $140,000  
**CR** Cash $140,000  
(To record the cash payment for the margin requirement. No entry is made for the futures contracts themselves because they have zero value at initiation.)

**December 31, 2001**

**DR** Amount due from broker $200,000  
**CR** Gain on futures contracts $200,000  
(To record the change in fair value of the futures contracts: 5 million pounds at 4 cents per pound.)

Because special hedge accounting rules do not apply, there is no offsetting entry to the copper inventory account.

**February 26, 2002:**

**DR** Cash $190,000  
**DR** Loss on futures contracts 150,000  
**CR** Amount due from broker $340,000  
(To record the change in fair value of the futures contracts—3 cents per pound--and settlement of the contracts.)

**DR** Accounts receivable $9,400,000  
**DR** Cost of goods sold 6,500,000  
**CR** Sales revenue $9,400,000  
**CR** Copper inventory 6,500,000  
(To record the sale of copper and reduce the inventory account by the original cost of the copper.)
**Requirement 2:**
Now the futures contracts are deemed “effective” for GAAP purposes, and the special hedge accounting rules can be used. Notice how these entries produce less earnings volatility compared to those in requirement 1 above. Here are the journal entries:

**October 1, 2001:**

**DR** Amount due from broker $140,000  
**CR** Cash $140,000  
(To record the cash payment for the margin requirement. No entry is made for the futures contracts themselves because they have zero value at initiation.)

**December 31, 2001**

**DR** Amount due from broker $200,000  
**CR** Gain on hedge activity $200,000  
(To record the change in fair value of the futures contracts: 5 million pounds at 4 cents per pound.)

**DR** Loss on hedge activity $200,000  
**CR** Copper inventory $200,000  
(To adjust the carrying value of copper inventory for the change in fair value.)

**February 26, 2002:**

**DR** Cash $190,000  
**DR** Loss on hedge activity $150,000  
**CR** Amount due from broker $340,000  
(To record the change in fair value of the futures contracts—3 cents per pound—and settlement of the contracts.)

**DR** Copper inventory $150,000  
**CR** Gain on hedge activity $150,000  
(To adjust the carrying value of copper inventory for the change in fair value.)

**DR** Accounts receivable $9,400,000  
**DR** Cost of goods sold $6,450,000  
**CR** Sales revenue $9,400,000  
**CR** Copper inventory $6,450,000  
(To record the sale of copper and reduce the inventory account by the adjusted cost of the copper.)
**Requirement 3:**
These journal entries illustrate how the income statement and the balance sheet are affected by the definition of the hedged item. Notice how the first set of entries (requirement 1) gives rise to greater earnings volatility because changes in the fair value of the hedging instrument are not offset by changes in the fair value of the hedged item. This also means that the balance sheet is affected—no fair value changes are recorded to the copper inventory account. Notice also that different income statement and balance sheet amounts are produced by the two sets of entries (requirement 1 versus requirement 2) **even though the economics of the copper hedge is the same in both cases.**
C11-1. Risk Management

Requirement 1:
An interest-rate swap can reduce a borrower’s exposure to cash flow fluctuations and fair value changes associated with changing interest rates. A borrower with fixed-rate debt outstanding can use a variable-rate swap to “lock in” a lower interest rate when rates are falling. A borrower with variable-rate debt outstanding can use a fixed-rate swap to “lock in” a lower interest rate when rates are rising. These derivative securities help borrowers reduce market risk and lower their overall cost of debt.

Requirement 2:
If Heinz has only fixed-rate debt outstanding, then the swap contract is for variable-rate interest. Heinz has no cash flow exposure to changing interest rates because the cash interest payments on the fixed-rate debt are “fixed”—i.e., don’t fluctuate with interest rate changes. Heinz does have exposure to fair value changes, however—the value of the fixed-rate debt declines as interest rates rise, and increases as interest rates fall. So, the swap would qualify as a “fair value” hedge.

Requirement 3:
Continuing our discussion from requirement 2, the “underlying instrument” is the original fixed-rate debt. If the debt itself is settled (meaning retired) before the swap contract is settled, the swap becomes a speculative investment (not a hedging instrument) since there is no longer a “hedged item”. In this case, all gains and losses on the swap contract must flow directly to income.

Requirement 4:
Heinz sells products in foreign countries and receives payment in foreign currencies. Changes in currency exchange rates increase (or decrease) the value of these transactions as measured in U.S. dollars. A foreign currency futures contract can be used to “lock in” a currency exchanges rate and insulate Heinz from this market risk.
Requirement 5:
Not all of the foreign currency contracts used by Heinz qualify for special hedge accounting treatment. Those that do have their realized and unrealized gains and losses deferred until the underlying transaction occurs. Those that do not qualify for special hedge accounting rules have their realized and unrealized gains and losses flow directly to income (and without offsetting losses and gains being recorded on the “hedged item”).

Requirement 6:
A futures contract “locks in” a specific price for the commodity (tomatoes) at some future date, say $10 per bushel on February 15th. Heinz can use a futures contract to protect itself from commodity price increases from now until when it buys the tomatoes on February 15th. But what if the price of tomatoes falls to only $8 per bushel? Using a futures contract, Heinz would still be obligated to the contract price of $10 per bushel even though the market price on February 15th is only $8.

An options contract, on the other hand, allows Heinz to protect itself from tomato price increases and still benefit from possible price declines. If tomatoes are selling for $12 a bushel on February 15th, Heinz will exercise the option and pay only $10 per bushel. But, if tomatoes are selling for only $8 per bushel, Heinz will let the option expire and buy tomatoes at the $8 market price.

Requirement 7:
Heinz uses futures contracts to hedge the cash flow risk of planned commodity purchases.

C11-2. Tuesday Morning Corporation (CW): Interpreting long-term debt disclosures

Requirement 1:
$1,402 from the balance sheet

Requirement 2:
$1,298 from the cash flow statement

Requirement 3:
The difference is $104. This appears to suggest that payment on the note payable in Note 5 was not made during 1994, but that it is included in the current maturities amount of $2,747 as of the end of 1994.

From Note 5: $2,747 - $1,794 - $416 - $432 = $105 \equiv $104
Rounded, where $416 is (4 \times $104) and $432 is (4 \times $108).
Requirement 4:
Current portion is $2,747

$1,794  Remaining principal on note
432  4 quarterly installments on industrial development bond
416  4 quarterly installments on note payable
104  see Question #3
1  Rounding

$2,747

Requirement 5:
Journal entry for March 31:

DR Current installment on mortgage  $108
DR Interest expense  49
CR Cash  $157

Simple interest = $1,401 \times .14 \times 1/4 = $49

Requirement 6:
Journal entry for April 30:

DR Current installment on mortgage  $1,794
DR Interest expense*  63
CR Mortgage on property  $1,794
CR Cash  63

* $1,794 \times .14 \times 1/4 = $63

Requirement 7:
Journal entry for April 30, assuming full payment.

DR Current installment on mortgage  $1,794
DR Interest expense  63
CR Cash  $1,857
C11-3. Delhaize American Inc. (CW): Fair value disclosure of long-term debt

Requirement 1:
The footnote indicates that the company’s debt has a fair value of $413.6 million at the end of 1999. This is the amount that would need to be paid if the long-term debt was purchased and retired.

Requirement 2:

| DR         | Long-term debt       | $426,930 |
| DR         | Long-term debt—current portion | 2,834 |
| CR         | Cash                 | $413,600 |
| CR         | Extraordinary gain on debt extinguishment | 16,164 |

Requirement 3:
The gain on loss at retirement is treated as an extraordinary item on the 1999 income statement. The impact on next year’s (2000) income statement would be indirect—no interest expense would appear that year because the company’s long-term debt was retired in 1999.

Requirement 4:

| DR         | Long-term debt       | $495,000 |
| DR         | Extraordinary loss on debt extinguishment | 39,000 |
| CR         | Cash                 | $536,000 |

Requirement 5:

| DR         | Long-term debt       | $495,000 |
| DR         | Extraordinary loss on debt extinguishment | 14,850 |
| CR         | Cash                 | $509,850 |

(To record the call and retirement of the debt at 103% of par value—which is assumed to be the same as book value.)

Notice that by “calling” the debt, the company reduces its cash outflow (and extinguishment loss) for debt retirement by $26,150.

Requirement 6:

If the debt is “collateralized” by property, plant and equipment (PP&E), then the lender can take possession of the PP&E if the borrower defaults on the loan. Bank loans for personal automobiles are a good example. If you don’t pay, the bank repossess your car and can then sell it to pay off your loan. Lenders prefer these arrangements because it reduces their risk of
default—you have an incentive to pay off the loan (or you lose the car). And, if you don’t? Well, the bank takes back the car and sells it.

Management might prefer “collateralized” debt if it lowers the cost of debt. Collateralized loans are found in industries where there are valuable “fixed assets” in place—trucking, construction, heavy manufacturing, etc. These kinds of loans are not common in other industries because there are no valuable “fixed assets” that can serve as loan collateral.

C11-4. ShopKo Stores Inc. (CW): Comprehensive case on long-term debt

Requirement 1:
Long-term debt issued in fiscal 1993: $200,000,000 from Note C.

Requirement 2:
The footnote indicates that proceeds from issuing the debt totaled $197.1 million, but that figure is net of $1.9 million in underwriting and insurance costs. So, the gross cash proceeds from the debt must have been $199.0 million. The journal entry is:

<table>
<thead>
<tr>
<th>DR</th>
<th>Cash</th>
<th>$199.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>DR</td>
<td>Discount on notes</td>
<td>1.0</td>
</tr>
<tr>
<td>CR</td>
<td>Nonds payable</td>
<td></td>
</tr>
</tbody>
</table>

| CR  | Nonds payable | $200.0 |

| DR  | Bond issue costs (an asset) | $1.9 |
| CR  | Cash                       | $1.9 |

Requirement 3:
The original issue discount was $1.0 million, as shown above. The footnote indicates that the unamortized discount is $0.888 million ($0.332 plus $0.556) at year-end, so amortization for the year must have been $0.112 million.

Requirement 4:
Most of the proceeds ($181.2 million) were used to repay outstanding borrowings under a credit agreement with another company—SUPERVALU; the remainder was used for working capital and general corporate purposes.
Requirement 5:
According to the “fair value” disclosure in footnote H, the 9.25% unsecured notes had a market value of $107.341 million, compared to a book value of $99.444 million. If the company could repurchase the entire debt issue at this market price, the following entry would be made:

\[
\begin{align*}
\text{DR} & \quad 9.25\% \text{ Notes payable} & \quad 100,000 \\
\text{DR} & \quad \text{Loss on early debt extinguishment} & \quad 7,897 \\
\text{CR} & \quad \text{Cash} & \quad 107,341 \\
\text{CR} & \quad \text{Discount on notes} & \quad 0.556
\end{align*}
\]

C11-5. Coca-Cola Company (CW): Using long-term debt footnotes

Requirement 1:
The footnote indicates that $9 million of long-term debt is due in 1997. That is the amount shown as “current” in the footnote table.

Requirement 2:
The footnote goes on to indicate that the following amounts are due in each of the next five years:

- 1997: $9 million
- 1998: 422 million
- 1999: 16 million
- 2000: 257 million
- 2001: 2 million

Requirement 3:
This schedule of debt payments help analysts forecast the company’s cash flow needs over the next 5 years. Analysts can compare forecasts of the company’s operating cash flows with the cash flows required to service debt.

Requirement 4:
The (cash) effective interest rate for 1996 is about:

\[
\frac{100 \text{ million of interest paid}}{1,693 \text{ million of debt outstanding}} \approx 5.9\%.
\]

This calculation ignores short-term debt (commercial paper and loans) because these items are not disclosed in the long-term debt footnote. We could identify short-term debt from the balance sheet or another footnote. Notice that our estimate of 5.9% is close to the stated interest rates on the company’s long-term debt, so we’re probably close to the correct number.
If the footnote also disclosed interest expense for 1996, we could make a similar “effective interest rate” calculation that would capture accrued (but unpaid) interest on the company’s debt.

**Requirement 5:**
Interest expense is likely to be about $66.375 next year (1997) or 5.9% of the $1,125 million debt outstanding at the end of 1996.

**Requirement 6:**
Coke is a multinational company that operates in many foreign countries. It borrows money from foreign lenders to finance some of its international activities. These foreign borrowings can reduce the company’s exposure to foreign currency exchange rate risk but they can also increase the company’s cost of borrowing if interest rates are lower in the U.S. than in foreign countries.

**Requirement 7:**
The following schedule calculates the company’s weighted-average interest rate on long-term debt using the “stated” (coupon) rates shown in the footnote. The company does not disclose its effective interest rate on individual borrowings.

<table>
<thead>
<tr>
<th></th>
<th>Outstanding ($million)</th>
<th>% of amount outstanding</th>
<th>Stated interest rate</th>
<th>Weighted average rate</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Weighted-average interest rate for 1996:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 3/4% U.S. dollar notes</td>
<td>$0</td>
<td>0.00%</td>
<td>7.750%</td>
<td>0.000%</td>
</tr>
<tr>
<td>5 3/4% Japanese yen notes</td>
<td>-</td>
<td>0.00%</td>
<td>5.750%</td>
<td>0.000%</td>
</tr>
<tr>
<td>5 3/4% German mark notes</td>
<td>161</td>
<td>14.94%</td>
<td>5.750%</td>
<td>0.859%</td>
</tr>
<tr>
<td>7 7/8% U.S. dollar notes</td>
<td>250</td>
<td>23.19%</td>
<td>7.875%</td>
<td>1.826%</td>
</tr>
<tr>
<td>6% U.S. dollar notes</td>
<td>251</td>
<td>23.28%</td>
<td>6.000%</td>
<td>1.397%</td>
</tr>
<tr>
<td>6 5/8% U.S. dollar notes</td>
<td>150</td>
<td>13.91%</td>
<td>6.625%</td>
<td>0.922%</td>
</tr>
<tr>
<td>6% U.S. dollar notes</td>
<td>150</td>
<td>13.91%</td>
<td>6.000%</td>
<td>0.835%</td>
</tr>
<tr>
<td>7 3/8% U.S. dollar notes</td>
<td>116</td>
<td>10.76%</td>
<td>7.375%</td>
<td>0.794%</td>
</tr>
<tr>
<td>Total long-term debt with stated interest rate</td>
<td>$1,078</td>
<td>100.00%</td>
<td>6.632%</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>47</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total long-term debt</td>
<td>$1,125</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Outstanding ($million)</th>
<th>% of amount outstanding</th>
<th>Stated interest rate</th>
<th>Weighted average rate</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Weighted-average interest rate for 1999:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6% U.S. dollar notes</td>
<td>250</td>
<td>23.47%</td>
<td>6.000%</td>
<td>1.408%</td>
</tr>
<tr>
<td>6 5/8% U.S. dollar notes</td>
<td>150</td>
<td>14.08%</td>
<td>6.625%</td>
<td>0.933%</td>
</tr>
<tr>
<td>6% U.S. dollar notes</td>
<td>150</td>
<td>14.08%</td>
<td>6.000%</td>
<td>0.845%</td>
</tr>
<tr>
<td>5 3/4% U.S. dollar notes</td>
<td>399</td>
<td>37.46%</td>
<td>5.750%</td>
<td>2.154%</td>
</tr>
<tr>
<td>7 3/8% U.S. dollar notes</td>
<td>116</td>
<td>10.89%</td>
<td>7.375%</td>
<td>0.803%</td>
</tr>
<tr>
<td>Total long-term debt with stated interest rate</td>
<td>$1,065</td>
<td>100.00%</td>
<td>6.144%</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>50</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total long-term debt</td>
<td>$1,115</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The company's weighted-average interest rate on long-term debt seems to have fallen since 1996, probably because interest rates in the U.S. economy also declined over this same time period.
Elsewhere in its 1999 annual report, the company mentioned that the “effective interest rate” for short-term and long-term debt combined that year was 5.9%. So our estimate was close even though we used “stated” (not “effective”) rates and ignored short-term debt.

**Requirement 8:**
Coke is still a multinational company that operates in many foreign countries. So, its decision to not borrow yen or marks could be based on several factors. One possibility is that U.S. interest rates have declined relative to Japanese and German rates, making U.S. loans a less costly form of debt than foreign loans. Of course, borrowing U.S. dollars to finance its Japanese and/or German activities may expose the company to foreign currency exchange rate risk. However, currency swaps or other derivative securities could be used to manage this risk exposure without the need to borrow the foreign currencies themselves.

**Requirement 9:**
The $261 million needed for debt repayment in 2001 could come from the company’s operating cash flows that year, from available cash and short-term investment balances, from short-term loans, and so on. Given the company’s long history of large operating cash flows, it is likely that this source will fund the repayment.