Chapter 13: Financial Instruments: Long-term Debt

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*W The solution to this assignment is on the text website, Connect. The solution is marked **WEB.**

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Questions

1. The primary advantage of trade credit is that it (typically) has no interest cost. That is, suppliers give a company 30 (for example) days to pay an invoice and charge no interest for this period.

2. An operating line of credit, or credit facility, is usually the form of bank loan secured by accounts receivable and inventory. These loans are due on demand, and are expected to fluctuate with higher or lower levels of accounts receivable and inventory over the business cycle. Land and building usually provide collateral for a commercial mortgage or a term loan.

3. As compared to equity, long-term loans are often more easily arranged; do not give up any voting control (no ownership dilution). In addition, loans involve interest expense, which is a tax deduction, and allow leverage to boost returns for equity investors.

4. A long-term loan might involve a blended payment, where equal regular payments are part interest and part principal. Over time, the portion related to principal grows, because the loan principal declines from prior payments and less interest is required. Alternatively, a loan may require designated scheduled principal payments, plus regular interest. In this scheme, a payment is designated all principal or interest.

5. The term of a long-term loan is the period for which there is an agreement on terms and conditions, most obviously the interest cost. The amortization period is the period used to determine regular blended payments. A twenty-five year amortization period would include five different five-year terms, for example.

6. Long-term loans may be arranged with pension funds or insurance companies. Both of these investors potentially have large cash balances that must be invested for long time periods to generate appropriate returns for stakeholders.

7. Accounting covenants might include maximum debt-to equity, minimum current ratio or minimum interest coverage. Restricted actions might involve restrictions on dividend payout, restrictions on adding additional debt, restrictions on share transactions including transfer of control, restrictions on pledging assets on other loans, and restrictions on changes of key employees. (Only two examples are required.)

8. Par value (also known as the face value, principal or maturity value) is the principal amount paid on maturity. The issue price of the bond is the present value of its cash flows (both principal and normal interest payments) discounted at the market interest rate on the issuance or valuation date. Par value and the issue price will be identical when the stated (contractual) interest rate equals the market interest rate. The two

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values are different when the interest rates are different. If a $5,000 bond is sold for 101, the proceeds would be $5,050 ($5,000 × 101%)

9. If market yield rates decline after issuance, the discount rate used in valuation declines (assuming company-specific risk is stable). This would cause the present value of the bond to rise. If the bond was originally issued at 98, it was issued below par and now might trade above par to reflect lower yield. This shift is not reflected on the company's books; measurements are based on the 98 issuance price. Fair values are disclosed, however.

10. The bond premium or discount is a contra account to the par value of the long-term liability, bonds payable, on the statement of financial position, and either increases (premium) or decreases (discount) it accordingly. The amortization of the bond premium or discount is part of interest expense, and either increases (discount) or decreases (premium) the cash paid to arrive at the expense. This adjusts the cash paid at the nominal rate to an expense which is an approximation of the effective rate.

11. a) The amount of accrued interest expense recognized at the end of the accounting period is the amount of interest that has accumulated (i.e., incurred and not yet paid) since the last interest payment. It will be paid on the next interest date.
    b) The amount of discount or premium amortization recognized is the amount that is required to reflect the yield rate in interest expense. Interest expense is not the cash paid after this adjustment. It is related to time and the carrying amount of the bond.

12. Accrued interest must be recognized when bonds are sold (or purchased) between interest dates because the full amount of the cash interest as specified in the bond agreement is paid to the holder of the bond on each interest date regardless of the sale (or issue) date. The purchaser advances to the seller that portion of the periodic interest accrued (i.e., incurred) up to the date of sale. The net amount reflects the period the bond was actually outstanding.

13. The upfront administration fee would not be recognized as an expense when paid. Instead, it would factor into a calculation of the effective interest rate over the life of the loan, which would be higher than the stated interest rate of 6%.

14. Exchange gain: $325,000 ($0.98 – $1.03) = $16,250. This is the change in the exchange rate during the year.

15. Capitalization of borrowing costs begins at the earliest of the date when the money is borrowed, a payment is made on the asset, and work starts to make the asset ready for use.

16. The borrowing cost for general borrowings reflects the weighted average of loan sources, or 6.4% ((4% x $2 million) + (7% x $8 million)/$10 million total financing.)

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17. A gain or loss will occur on the repayment of a bond payable at any time that the repayment price is different than the net carrying value of the bond, including unamortized premium or issuance costs, if any.

18. The bond discount or premium would be part of a bond retirement entry when the bond is retired prior to maturity, because the discount or premium would have a remaining balance to be eliminated. The amount that is eliminated is the unamortized balance.

19. A defeasance is a financial arrangement where the debtor irrevocably places investments in a trust fund for the sole purpose of using those resources to pay interest and principal on specified debt. The creditor agrees to this and legal release is given to the borrower. In an in-substance defeasance, the transaction is the same except there is no legal release by the creditor. Debt subject to a defeasance arrangement is derecognized, but debt subject to an in-substance defeasance is left on the books.

20. Cash flow for interest is $39,000 ($45,500 - $4,500 - $2,000).

21. The primary difference between straight-line and effective-interest amortization is the measurement of interest expense. Under the straight-line method, an equal dollar amount of expense and amortization is recognized each period; under the effective-interest method, a constant *rate* (i.e., the market interest rate on the day of issuance) is used to calculate interest. The expense is a function of the outstanding net liability; the dollar amount of interest expense and amortization recognized changes annually. The effective interest method is required IFRS practice because it provides a more accurate measure of the cost of borrowing. ASPE allows straight-line method because there is a more restricted user group and potentially a less complicated business situation/reporting environment.

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Cases

Case 13-1 Huy Publications Ltd.

Overview

Huy Publications Ltd. (HPL) operates in a risky industry, known for its business failures. While HPL itself is reportedly stable, they have had loss years and have new facilities and new debt (government-guaranteed) in addition to that described. Reporting healthy, stable annual profits must be a concern in such an environment, as is complying with any and all debt covenants, some of which are based on financial statement information. Lenders would require GAAP-based financial statements, since covenants are calculated from audited information. ASPE versus IFRS has not been specified, but ASPE seems logical considering the size of the company. The **ethics** of choice are important here, as there might be temptation to pick an alternative that artificially creates acceptable results for key users. Financial position must be accurately portrayed.

Issue

Evaluation of loan alternatives

Analysis and Conclusions

Alternative 1 – Canadian Bank

a) The effective interest rate is 8.225% (solved by spreadsheet) over the ten-year life of the loan, after factoring in the $19,000 up-front fee and the $5,500 transaction fees. The interest rate is fixed for the ten-year life.
b) Principal need not be repaid until the end of the loan, allowing HPL flexibility in arranging either operating cash flow to finance the repayment or refinancing through another borrowing arrangement.
c) HPL would have to transfer banking business to Canadian away from their current bank, which may not be attractive.
d) The loan requires corporate guarantees but also personal guarantees from HPL's shareholders, which may be particularly unwelcome in this risky business sector.
e) Debt:equity ratios must be kept at 2:1, but dividends can be up to 30% of earnings; current levels are only 10-15% of earnings. The debt: equity covenant may be viewed as reasonably restrictive; the dividend covenant less so.

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Alternative 2 – Ottawa Bank

a) The interest rate for the first five years (6.5%) is lower than the interest rate for Alternative 1. If the up-front fee is factored in (over ten years), the loan would have to bear a stated interest rate of 10.5% (solved by spreadsheet) over the second five years in order to have an overall cost equivalent to Alternative 1. Will the interest rate in the second five-year period be below 10.5% or above 10.5%? Accurate response to this question will tell HPL which alternative is cheaper, but interest rates are notoriously unpredictable.
b) The up-front fee is considerably larger, which is less attractive to HPL.
c) The debt covenants are more restrictive for HPL, requiring that no new long-term debt be issued and that dividends not exceed current percentages of income.
d) Corporate security is quite similar to Alternative 1, but also requires a floating charge on all corporate assets. Significantly, no personal guarantee is required, which may be a major factor for HPL.
e) Principal payment is not required until the end of the term.

Alternative 3 - Pension fund bond

a) The effective interest rate on this loan is 8.4% (solved by spreadsheet), considering both the fact that the interest is compounded semi-annually and there are $227,500 in legal, etc. fees paid up front. The loan cost is fixed over the life on the loan.
b) The security is the least onerous for any alternative; general credit rating only.
c) The covenants are severe (no dividends unless current ratio is 3.5 or above after declaration, no repurchase if issue of common shares, restrictions on current ratio and debt ratios, no changes in management, etc.)
d) HPL would have to agree to put a representative of the lender on their Board, which is potentially undesirable.
e) Upfront fees are high, which is less attractive to HPL because less net cash is available at the beginning of the loan period.

Conclusion

When comparing these alternatives, the cost of borrowing must be revised to include fees and transaction costs so that comparisons are fair and complete.
Senior management of HPL must prioritize the factors that are different for these loans. Cost of borrowing, future interest rates, restrictive covenants, personal guarantees, security, and a position on the Board are all factors.
In addition, there may be some leeway to further negotiate unattractive terms if HPL can articulate the tradeoffs they are willing to make.

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Case 13-2 Dry Clean Depot Limited

Overview

Dry Clean Depot Limited (DCDL) is a private company that has elected to comply with IFRS. The company is reasonably small, with $7 million in sales, and 40 retail locations. DCDL has just negotiated a new equipment loan, with covenants that specify a maximum 2-to-1 debt-to-equity ratio. Other covenants require a minimum level of $500,000 in cash, and restrict dividends to $100,000 per year. These latter covenants require compliance, but are not affected by accounting policies. The debt-to-equity ratio restriction means that the company would prefer to maximize equity (earnings) and minimize debt, but **ethical** boundaries must be respected.

Issues

1. Effective cost of loan
2. Capitalization of borrowing costs
3. Capital cost of equipment and depreciation
4. Lease arrangement
5. Environmental obligation
6. Revenue recognition
7. Lease terms

Analysis and conclusion

1. Effective cost of loan

The effective interest rate for the $2,000,000 loan is determined by looking at the annual carrying cost ($90,000 per year) and also the $377,000 upfront fee. When both are factored in, the effective interest rate is 7.2%:

Effective interest rate =
Solve for x in,

$2,000,000 = $377,000 + $90,000 (P/A, x %, 10) + $2,000,000 (P/F, x %, 10)

x = <u>7.2%</u>

Upfront fees are recorded as a discount and amortized to interest expense (etc.) during the life of the loan. Since the discount is netted with the loan on the SFP, this helps modestly reduce debt balances for covenant calculations.

2. Capitalization of borrowing costs

Borrowing costs must be capitalized during the acquisition period, which is lengthy. This applies to the specific loan, and also money used from general borrowing.

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After the acquisition period, interest is an expense. If there were investment earnings on idle loan cash, for the period between the time that the loan money is advanced and amounts are paid out to suppliers, such earnings are netted in the interest capitalization calculation.

General borrowing costs for the portion of the purchase price financed through DCDL cash flows are also be capitalized, but no imputed costs for equity. The borrowing cost must be calculated on a weighted average basis.
Further information on each of these issues must be gathered.

Interest to be capitalized:

Loan balance	$2,000,000 × 7.2% × 10/12	$120,000

The ten month period consists of six months for production, three months for shipping plus one month for installation and testing. In terms of time line, the loan is assumed to be advanced and the equipment immediately ordered. This must be verified.

Additional interest will be capitalized for amounts financed from general borrowings. This amount is not determinable but information must be gathered to calculate the adjustment.

Interest capitalization will preserve levels of earnings (equity), making the debt-to-equity ratio easier to achieve.

3. Capital cost of equipment and depreciation

Many of the costs associated with equipment acquisition will be capitalized, as follows:

Description	**Amount**
Invoice price	$2,450,000
Interest cost (above)	120,000
Interest on general borrowing	??
Shipping	34,000
Duty ($2,450,000 x 20%)	490,000
Installation & testing	38,000
	$3,132,000 + ??

Equipment is depreciated over its life using an acceptable depreciation method such as straight-line or declining balance. Policy for this must be set, along with a determination of the useful life and salvage value, or the declining balance rate. The

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equipment should be evaluated to see if components have various life spans; if so, then depreciation must be stratified to reflect this fact.

4. Lease Arrangement

DCDL must evaluate the need to record a liability for the onerous contract that is represented by the lease situation in Sudbury. The landlord has been informed that DCDL will vacate, and a sub-tenant located, with a signed contract for the sub-lease. This proves positive intent to act.

DCDL has an obligation to pay $27,500 for occupancy costs each year for the next three years, and has a sub-tenant that is willing to pay at least $5,000 per year. Therefore, there is an unfunded obligation of $22,500 per year. This may be less if the extra sub-rent in years 2 and 3, 10% of the sub-tenant sales in excess of $150,000, can be reliably estimated. However, since DCDL has had negative experience with this location, and the nature of the sub-tenant operation is unknown, no amount has been estimated in these calculations. This area must be explored further.

Since the payments take place over three years, the time value of money must be estimated to value the liability. Interest expense (accretion) will then be recorded each year. The interest rate to use should be a borrowing rate for operating activities over a three-year period. This rate is not known and must be established. A rate of 7%, based on the equipment loan (7.2%) has been used but this rate may not be comparable because term (10 years) and security are different.

Using the 7% rate, and assuming rent is payable at the beginning of each year:

Liability balance	$22,500 × (P/AD, 7 %, 3) (rounded)	$63,000

This amount will be recorded as a loss and a liability, worsening the debt-to-equity ratio. It is not avoidable.

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5. Environmental obligation

DCDL has a contractual liability in eight locations for environmental remediation in the event of contamination caused by dry cleaning operations, in particular, contamination caused by perc.

These obligations must be estimated and discounted for the time value of money if payment is delayed. As for the onerous contract obligation, an interest rate of 7% will be used as an estimate but a more appropriate interest rate (term and security) must be estimated.

The liability exists because DCDL stands ready to meet any potential costs. The major issue is measurement of the liability. If there is no contamination, then the liability has a zero value and there is no amount recorded. This appears to be the case for most premises, and regular testing provides comfort that liabilities are identified on a timely basis.

For one location, however, it appears as though there might be an environmental issue. Further testing is being done to confirm this, and the outcome of this testing will determine if remediation, and liability recognition, is needed.

If action is needed, then the cost and the timing of action must be determined. The cost has been suggested in the $250,000 to $500,000 range. Costs must be further explored, and an expected value established. If, for example, both of these estimates were equally likely, then the amount to be accrued would be $375,000. Discounted for two years at 7%, this is a $325,000 (rounded) liability. This amount is also capitalized as an asset, amortized over the remaining lease term.

Note that additional liability recognition of a significant amount has negative implications for the covenant agreement. Some covenant renegotiation might be considered, or perhaps additional equity financing might be possible.

More importantly, the environmental obligations call the business model into question, and appropriate pricing and management of operational risks should be considered and evaluated at a strategic level.

The cost of vacating premises at the end of the lease would also have to be identified and evaluated for recognition. If DCDL has agreed to move after environmental cleanup, and this has costs, then the amount must be reflected in the financial statements. It may well be immaterial.

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6. Revenue recognition

DCDL sold prepaid dry cleaning services cards this year. When cards are issued, a liability for unearned revenue is created, and when the cards are used, the liability is decreased and revenue is recognized. This is appropriate accounting. Card value of $126,000 ($468,000 - $342,000) is outstanding at year-end, or 27% of the gross cards issued.

The issue that needs to be examined is how the initial $20 price reduction is treated. A $120 card costs $100 for the customer, which is in essence a sales discount. The amount must be relabeled as a sales discount, not an expense, and shown as a contra account to sales. This is a presentation issue. Revenue should reflect cash value.

This issue can be explained in one of two ways:

1. Services are being sold for a lower price, but this is not below cost (gross profit is usually 60%); services are still profitable after the reduction granted with the cards. Valuation of revenue and liability should be at the cash amount received not the regular price. Therefore, sales of the period should be $285,000 ($342,000/1.2), and the liability should be recorded at $105,000 ($126,000/1.2). This increases net income (now has $342,000 - $78,000 recorded) and liabilities.

2. Alternatively, valuation can be explained through the discount account. The discount amount, $78,000 for the cards issued, has been entirely expensed in the current period. The question is whether this relates to this period, or whether the $78,000 should be prorated consistent with card use. If it were prorated, the unused portion would reduce the reported liability.

   There is no need to establish a liability for more than the proceeds received. Accordingly, the sales discount should be recognized as it is used. The discount should be adjusted to $57,000 ($78,000 x 342/468) and the remaining $21,000 recorded as a contra to the liability account, reducing it to $105,000 ($126,000 - $21,000).

Either of these explanations is acceptable.

DCDL expects that 5 to 10% of the value on the cards will not be used. At the volumes sold this year, this represents $23,400 to $46,800 of the liability (gross) outstanding at year-end or $19,500 to $39,000 when deflated to the lower cash amount. At year–end, this is approximately 20% to 45% of the outstanding liability, which is very high. The company has a legal obligation in perpetuity for these amounts, and must stand ready to honor the cards if they are used at any point in the future. The company lacks history to use in determining any unused

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percentage. Accordingly, at this stage in the life of this program, it would not be advisable to decrease the liability for expected unused cards.

In terms of covenant implications, scaling back the liability and increasing earnings this year are both positive outcomes. It would be preferable to reduce the liability for unused cards, but if this cannot be measured, it certainly cannot be manipulated.

7. Lease arrangements

DCDL is a tenant in forty locations. The leases have been described as short-term rentals, over three to five years As such, they would almost certainly qualify as operating leases, and no liability for the leases would be recorded. DCDL should be aware, though, that the IASB is considering a proposal to capitalize all leases regardless of length of term. This would result in liability recognition for DCDL. The loan contract just negotiated puts a limit on debt-to-equity over a ten-year time span, and capitalization might be required within this window. Therefore, DCDL should negotiate in advance with the lender around the scenario of an eventual capitalization, perhaps asking that such lease obligations be excluded from the ratio, or that the ratio be increased to reflect the alternate accounting rules.

Conclusion

Overall, liabilities have been established for environmental issues, onerous contracts, and potentially for leases. If DCDL is now close to the debt covenant for debt-to-equity, this will be uncomfortable. It is still the inception of the loan contract. The company should look at projections for key financial variables and decide whether the loan covenant is reasonable. If not, re-negotiation or alternate financing sources must be explored.

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Case 13-3 Darcy Limited

Overview

Michel Lessard has requested that the financial statements of Darcy Limited, a company that manufactures equipment for the oil and gas industry, be reviewed for the purpose of valuation. **Ethically**, it is important to provide advice on a fair price to Mr. Lessard without overstating or understating the company's situation; however, there is a natural bias to reduce earnings and assets given that Mr. Lessard represents a group of purchasers and this is the beginning of negotiations. Since no one else is relying on this report, this bias is **ethically** acceptable.

The valuation formula is based on net tangible assets and earnings, so any adjustment that changes either of these metrics will change the purchase price. Earnings must include only recurring items, assumed to repeat in the future. Ongoing items must be valued at the amount that would be expected to continue, and one-time items are not included in the valuation rule.

Issues

1. Financial health of Darcy Limited
2. Valuation of low-interest loan
3. Valuation of warranty expense and obligation
4. Goodwill write-up
5. Valuation of capital assets
6. Revenue recognition
7. Valuation of allowance for doubtful accounts
8. Restatement of foreign currency accounts receivable
9. Adjustments to earnings for non-recurring items now included
10. Calculation of bid ranges/ Conclusion.

Analysis and conclusion

1. Financial health of Darcy Limited

The financial health of Darcy is somewhat suspect. There is no cash on the SFP, and there is a new operating loan that is likely needed just for day-to-day purposes. The current ratio has declined from 2.94 to 1.69, reflecting additional short-term debt. However, the company is carrying little long-term debt, and has significant capital assets. If land or other assets could be sold or mortgaged, liquidity may not be a concern.

There has been a large buildup in accounts receivable. Both the warranty liability and the allowance for doubtful accounts are very low, and research expenses have been curtailed,

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indicating that the company's actions and policies may be affected by the potential sale of the company. This may reflect badly on the **ethics** of management.

Of critical concern is that there appears to be no real history of profits, as all the retained earnings balance comes from this current year plus the past year; retained earnings were only $20 prior to last year. Either there were no profits, or sizable dividends were declared.

Sales declined from $45 million to $32.7 million this year, indicating possible operating problems. Alternatively, the industry may be going through a cyclical downturn. Many expenses appear to be low – including research and administrative expenses – and this has helped keep earnings at a respectable level. This may not be reflective of ongoing operations, though. Return on equity is low, even with the curtailed expenses.

These factors must be investigated prior to any offer being made. Valuation rules of thumb are meaningless if the company has operating problems. Budgets and prospects for the coming years must be carefully investigated.

Assuming that the purchasers wish to go ahead, valuation adjustments have been examined in several areas.

2. Valuation of low-interest loan

Darcy purchased $2,600 of capital equipment this year, financed with a five-year low-interest loan. The loan is at 2%, while market rates are 6%. In such a case, the loan and the capital assets are valued at the present value of the loan, and interest is based on the 6% market rate. Amortization is based on the (lower) present value, not the nominal amount, of the transaction.

These adjustments are calculated in Exhibit 3. Including revaluation and three months of amortization, the loan balance reduces from $2,600 to $2,181, and the capital assets reduce from $2,519 to $2,094. Interest and amortization also change. These adjustments have a minor effect on the purchase price because they reduce both assets and liabilities, and increase and reduce earnings to net out to a small adjustment.

3. Valuation of warranty expense and obligation

The warranty obligation is very low, and has declined significantly over the year. Adequacy of this obligation has been evaluated by looking at the actual claims history, related to the year of sale. See Exhibit 4. Only two years' data has been made available over the complete warranty term. Once the expenditures have been related to the year of sale, though, it appears that 3% of sales (or perhaps up to 3.4% of sales) is a more appropriate expense level than the 2% of sales used now. Additional evidence should be gathered to prove this calculation.

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If the warranty expense were increased to 3% of sales, an additional $330 of warranty expense would be recorded in the current year, and the warranty obligation should include accruals for one remaining year of 20X6 sales, and two remaining years for the 20X7 sales. This would increase the warranty obligation, and reduce net assets, by $1,534. Note that the cumulative effect of the change from 2% to 3% has not been adjusted to earnings as it would be non-recurring. 20X7 expense is adjusted to 3% of sales.

These amounts are approximate because part years have been disregarded.

4. Goodwill write-up

Goodwill is an intangible asset and is not included in the purchase price formula, which is based on net tangible assets. Therefore, goodwill has been excluded in Exhibit 2 in the initial calculation of net tangible assets.

However, management has written up goodwill by $50 each year as an assessment of the increase in goodwill over the year. This amount is included in earnings. This is not acceptable in the financial statements, as the increase is not verifiable and also is not related to a tangible asset. This amount has been removed from earnings in Exhibit 1.

5. Valuation of capital assets

The pre-20X7 balances of capital assets has been revalued to fair market value. This is necessary to reflect fair value in the net tangible assets used to value the company.

Land, with a book value of $7,000, is likely worth $10,500, increasing net assets in Exhibit 2 by $3,500. The opening balance of capital assets in 20X7 (closing 20X6), excluding land, has be revalued by 20% and additional amortization on the higher fair value has been recorded. An average life of 6 years (range was four to eight years; six was used as the average). Additional verification may be done to ascertain whether this amortization period is reasonable. See Exhibit 7.

As a result of these adjustments, earnings declines by $320 for additional amortization, and net assets increase by another $1,600 for the net increase. See Exhibits 1 and 2.

6. Revenue recognition

Darcy has engaged in a barter transaction during the year, and has given up inventory with a cost of $23. This amount has been expensed but no revenue has been recorded. Since the company has received something of value (future services) it is tempting to record revenue at some reasonable amount.

However, this barter transaction is just one step in satisfying an order from a second customer, and value is not verified until that second order is complete. While it is not the

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classic acquisition of inventory to facilitate a second sale, it is not the end of the earnings process in a string of transactions. Thus, no revenue should be recognized.

It is not appropriate, though, to record only the $23 expense, because this can be recorded as the value of the machining work to be received in the future (book value). Both assets and earnings are adjusted to eliminate the $23 expense recorded. See Exhibit 6.

Others might argue that for the purposes of valuation, recognition of full value might be appropriate, and record revenue of $28, using the most conservative value in the range. The difference is not material to the calculations.

7. Valuation of allowance for doubtful accounts

The allowance for doubtful accounts has historically been recorded at the level of 5% of accounts receivable. The existing allowance is not this high. Refer to Exhibit 5. The foreign-denominated account receivable, which is agreed to be collectible, is first removed from the accounts receivable total. Five percent of the remaining balance is $569, or $299 different than currently recorded. Both net assets and earnings are reduced accordingly.

Note that this adjustment affects 20X7 earnings only because the allowance looked adequate up to the beginning of 20X7, which indicates that only the current year expense must be increased.

In general, valuation of accounts receivable is sensitive, and the purchaser group should carefully evaluate the collectability of all accounts receivable.

8. Restatement of foreign currency accounts receivable

The foreign account receivable is in US dollars, and it must be restated to the current exchange rate at the end of year, as the best predictor of its value at maturity. This increases net assets by $220. See Exhibit 5.

The exchange gain was not included in earnings because it would not be recurring, and therefore should not be included in a purchase price calculation.

9. Adjustments to earnings for non-recurring items now included

The gain on disposal of capital assets has been excluded from earnings used for valuation purposes. This gain is not likely a recurring operating item. Assets are being purchased at fair value and no gains or losses on sale should be considered.

In addition, research expenditures should be increased from $120 to the prior level of $350. Experts should be consulted to ensure that $350 is indeed an appropriate level of research activity.

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10. Calculation of bid ranges/Conclusions

One possible purchase bid was suggested as six times recurring operating earnings. This is calculated in Exhibit 1. Earnings is adjusted for all items identified and discussed, including additional warranty cost, bad debt expense, amortization on revalued assets and research. The result is that earnings is minimal, and produces a valuation of $1.3 million. This is unreasonably low and cannot be seriously used for valuation.

However, the low result serves to highlight the poor operating performance of the company this year, caused especially by the decline in sales. It appears as though other expenses were minimized to make the profit situation look better. Even if the reported profit were used, the price suggested would only be approximately $6 million ($990 x 6). This is not in line with asset-based valuation measures (see Exhibit 2) as Mr. Lessard had hoped.

Perhaps the company can be restructured to significantly increase profit performance, but this is different than buying an existing profitable company, and one can argue that it is the new owner, not the old owner, who should benefit from the improvement.

Net tangible assets are evaluated in Exhibit 2 and perhaps highlight the strength of the company. Existing assets are adjusted for the revalued low-interest loan, additional warranty liability and allowance for doubtful accounts. The US receivable is revalued, as are land and other capital assets. The result is revised net assets of $27,594, and a suggested purchase price in the range of $33 million.

This is a significant price to pay for a company with no real profit history. However, the company has little long-term debt, and it may be possible to reduce net assets by collecting receivables, selling some capital assets, or putting long-term debt into place. This would reduce the net assets outstanding, and generate cash.

Further analysis of the profit potential is necessary before one could recommend purchasing Darcy at a price of $33 million. The prospects for this company and the industry must be evaluated, and the financial statements are not helpful in this regard.

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Exhibit 1
Valuation based on earnings

Earnings, as reported		$990
Adjustments for accounting measurements		
Loan interest (Exhibit 3)	(19)	
Amortization (Exhibit 3)	13	
Warranty (Exhibit 4)	(330)	
Bad debts (Exhibit 5)	(299)	
Goodwill gain reversal	(50)	
Expense capitalized (exhibit 6)	23	
Restatement for sustainable items		
Gain on disposal – not recurring	(80)	
Research (increase to $350 versus $120)	(230)	
Administration	??	
Revaluation of capital assets – amortization (Exhibit 7)	(320)	
	(1,292)	
Tax @40%	517	(775)
Sustainable earnings		215
Multiple		6X
Suggested purchase price		1,290

Minimal earnings, therefore company cannot be valued on earnings.

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Exhibit 2
Valuation based on net tangible assets

Assets less liabilities less intangibles ($41,645 - $12,720 - $2,600 - $1,835 - $400)	$24,090
Adjustments for accounting measurements	
Low interest loan (Exhibit 3)	419
Capital assets (Exhibit 3)	(425)
Warranty (Exhibit 4)	(1,534)
Allowance for doubtful accounts (Exhibit 5)	(299)
Foreign denominated receivable (Exhibit 5)	220
Reduce expense; additional asset (Exhibit 6)	23
Revaluation of land (Exhibit 7)	3,500
Revaluation of other capital assets (Exhibit 7)	1,600
Revalued net assets	27,594
Multiple	1.2 X
Suggested purchase price	$ 33,113

Exhibit 3
Low-interest loan financing

Present value of loan at market interest rates:

$2,600 x (P/F, 6%, 5) (.74726)	=	$1,943
$52* x (P/A, 6%, 5) (4.21236)	=	219
		$2,162

*$2,600 x 2% = $52

Earnings impact:

Adjusted interest expense: $2,162 x 6% x 3/12	$32
Current interest expense: $2,600 x 2% x 3/12	13
Increased interest expense	$19
Adjusted amortization expense: $2,162/8 x 3/12	$68
Current amortization expense: $2,600/8 x 3/12	81
Decreased amortization expense	$13

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SFP impact:

Adjusted loan balance: $2,162 + $19	$ 2,181
Current loan balance	2,600
Decreased loan balance	$ 419
Adjusted capital assets: $2,162 – $68	$2,094
Current capital assets $2,600 - $81	2,519
Decreased capital assets	$ 425

Exhibit 4
Warranty expense/obligation

Year	Sales	Claims paid this year	Claims paid in year 2	Claims paid in year 3	Total paid	Percent of sales
20X4	$31,020	$260	$320	$460	$1,040	3.35%
20X5	37,810	190	325	630	1,145	3.03%
20X6	44,960	230	300		incomplete	
20X7	32,670	190			incomplete	

Reasonable percentage: around 3%

Earnings current year = $32,670 x 3%
= $980 versus $650 expensed = additional expense $330

SFP, current year

Should be remaining claims for 20X6 and 20X7 sales	
($44,960 + $32,670) x 3%	$2,329
less: claims paid for 20X6 and 20X7 sales	
($230 + $300 + $190)	(720)
Balance	$1,609
Additional liability ($1,609 - $75)	($1,534)

Note: overlap between years not considered.
Note: catch up adjustment to expense not recorded in 20X7 because it is cumulative, and not recurring

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Exhibit 5
Bad debts/allowance

Accounts receivable, gross ($18,720 + $270)	$18,990
Less: foreign receivable	(7,620)
	$11,370
Estimated uncollectible – 5%	569
Current allowance	270
Additional expense and allowance	$299
Foreign denominated receivable	$7,620
Correct balance $7,000 x 1.12	7,840
Adjustment	$220

The entire catch up amount for bad debt expense has been recorded as an expense in 20X7 because the 20X6 allowance seems adequate (4.8% of receivables). The problem seems all related to 20X7. No exchange gain is included in earnings for the foreign receivable because the item seems non-recurring.

Exhibit 6
Revenue recognition

Valuation: Given up inventory @$31 (list price) and received services @$28-$30.
Reliability of list prices is unclear.
Cost of inventory given up, $23
Not the end of the earning process because acquired to facilitate another sale; No revenue recognition.
However, defer expense and create asset: $23

Exhibit 7
Capital asset revaluation

Capital assets, net, pre-20X7	$16,600
Less: land	(7,000)
	$9,600
Increase in value – 20%	$1,920
Additional amortization $1,920 / 6 (average life)	$320
Net increase to capital assets ($1,920 - $320)	$1,600
Land balance	$7,000
Increase in value – 50%	$3,500

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Technical Review

Technical Review 13-1

Requirement 1

Principal $5,000,000 (P/F, 4%, 20) = $5,000,000 × (0.45639) 2,281,950
Interest $150,000 (P/A, 4%, 20) = $150,000 × (13.59033) 2,038,550
$4,320,500

Requirement 2

Principal $5,000,000 (P/F, 2.5%, 16) = $5,000,000 × (0.67362) 3,368,100
Interest $150,000 (P/A, 2.5%, 16) = $150,000 × (13.05500) 1,958,250
$5,326,350

Requirement 3

Present value at 1 August (Requirement 1) 4,320,500
Present value at 1 February (n=19, below) 4,343,291
$ 22,791

Issuance proceeds: $4,320,500 + (2/6 of $22,791) 4,328,097

Present value at n=19:
Principal $5,000,000 (P/F, 4%, 19) = $5,000,000 × (0.47464) 2,373,200
Interest $150,000 (P/A, 4%, 19) = $150,000 × (13.13394) 1,970,091
$4,343,291

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Technical Review 13-2

Requirement 1

Principal $6,000,000 (P/F, 3%, 20) = $6,000,000 × (0.55368) 3,322,080
Interest $150,000 (P/A, 3%, 20) = $150,000 × (14.87747) 2,231,621
$5,553,701

Requirement 2

Period	Cash interest paid	Interest expense (3%)	D or P amortization	Closing net bond liab.
Op. balance				5,553,701
1	150,000	166,611	16,611	5,570,312
2	150,000	167,109	17,109	5,587,421
3	150,000	167,623	17,623	5,605,044
4	150,000	168,151	18,151	5,623,195

Technical Review 13-3

Requirement 1

Power receives $9,360,000 ($10,000,000 less $640,000)

Requirement 2

The IRR of the payment stream is 3%, compounded semi-annually, or 6% per year.

Solve for *i* in:
$10,000,000 = $640,000 + [$225,000 × (P/A, *i*, 10)] + [$10,000,000 × (P/F, *i*, 10)]

Requirement 3

Period	Cash interest paid	Interest expense (3%)	D or P amortization	Closing net bond liab.
Op. balance				9,360,000
1	225,000	280,800	55,800	9,415,800
2	225,000	282,474	57,474	9,473,274
3	225,000	284,198	59,198	9,532,472
4	225,000	285,974	60,974	9,593,446

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Technical Review 13-4

Borrowing rate = $174,000/ $2,900,000 = 6%

Payment	Calculation	Capitalizable
Early June	$1,200,000 × 4/12 × 6% (June to September)	$ 24,000
October	$126,000 × 0 Capitalization period ends at the end of September	
		$24,000

To capitalize borrowing costs:

Inventory	24,000	
Interest expense		24,000

Technical Review 13-5

To update interest expense and amortization:

Interest expense	22,533	
Premium on bonds payable	800	
Cash ($10,000,000 × 20% × 7% × 2/12)		23,333

To record the retirement:

Bonds payable ($10,000,000 x 20%)	2,000,000	
Premium on bonds payable ($84,000 x 20%) less $800	16,000	
Loss, retirement of debt	184,000	
Cash		2,200,000

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Assignments

Assignment 13-1

Logical circumstances for:

Operating line of credit	Need for short-term financing; Accounts receivable and/or inventory available for security.
Commercial paper	Large corporation with good credit rating; financial intermediary available.
Term loan	Medium-term loan from a financial institution, with tangible capital assets available for security.
Commercial mortgage	Loan from a financial institution secured against land and buildings; term is often 5 years but amortization period for blended payments is longer.

Assignment 13-2

		Financing source
Case A	The company's primary assets are land and buildings	Commercial mortgage; typical security for a mortgage
Case B	The company is a large public company with significant tangible assets and a need for millions of dollars in long-term financing.	Long-term bonds payable; tangible assets are possible security and company size and capital need match the bond market
Case C	The company's primary assets are intangible and earnings are erratic	Equity financing; No tangible assets for security for a loan and risk high because of erratic earnings
Case D	The company requires short-term financing and has sizeable inventory and account receivable balances	Operating line of credit; typical security for an operating line of credit

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Assignment 13-3

		Financing source
Case A	The company is a large public company with significant tangible assets, an excellent credit rating, and a need for short-term loans at low cost.	Commercial paper; Circumstances qualify for commercial paper as long as an intermediary exists. Operating line of credit is another alternative
Case B	The company has significant tangible assets that are all pledged as security for other loans, and the industry sector is very risky.	Equity financing; No tangible assets for security for a loan and risk high because of industry
Case C	The company's primary assets are machinery and equipment.	Term loan; typical security for a term loan
Case D	The company's primary assets are accounts receivable.	Operating line of credit; typical security for an operating line of credit

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Assignment 13-4

Requirement 1

Principal: $8,000,000 × (P/F, 2.5%, 16) = $8,000,000 × 0.67362 =	$5,388,960
Interest: ($8,000,000 × 2.25%) × (P/A, 2.5%, 16) = $180,000 × 13.055 =	2,349,900
Issue proceeds at 30 April 20X0	$7,738,860

Requirement 2

Principal: $8,000,000 × (P/F, 2%, 11) = $8,000,000 × 0.80426 =	$6,434,080
Interest: ($8,000,000 × 2.25%) × (P/A, 2%, 11) = $180,000 × 9.78685 =	1,761,633
Issue proceeds at 30 October 20X2	$8,195,713

Requirement 3

Principal: $8,000,000 × (P/F, 4%, 14) = $8,000,000 × 0.57748 =	$4,619,840
Interest: ($8,000,000 × 2.25%) × (P/A, 4%, 14) = $180,000 × 10.56312 =	1,901,362
Issue proceeds at 30 April 20X1	$6,521,202

Requirement 4

At 30 October 20X5, there are five interest periods remaining:

a. Book value

Principal: $8,000,000 × (P/F, 2.5%, 5) = $8,000,000 × 0.88385	$7,070,800
Interest: ($8,000,000 × 2.25%) × (P/A, 2.5%, 5) = $180,000 × 4.64583 =	836,249
	$7,907,049

b. Fair value

Principal: $8,000,000 × (P/F, 5%, 5) = $8,000,000 × 0.78353	$6,268,240
Interest: ($8,000,000 × 2.25%) × (P/A, 5%, 5) = $180,000 × 4.32948 =	779,306
	$7,047,546

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Assignment 13-5

Requirement 1

Principal: $40,000,000 × (P/F, 3%, 40) =	
$40,000,000 × 0.30656 =	$12,262,400
Interest: ($40,000,000 × 2.75%) × (P/A, 3%, 40) =	
$1,100,000 × 23.11477 =	25,426,247
Issue proceeds at 1 June 20X5	$37,688,647
Interest expense:	
$37,688,647 × 3% =	$1,130,659
Interest paid:	$1,100,000

Requirement 2

Principal: $40,000,000 × (P/F, 4%, 36) =	
$40,000,000 × 0.24367 =	$9,746,800
Interest: ($40,000,000 × 2.75%) × (P/A, 4%, 36) =	
$1,100,000 × 18.90828 =	20,799,108
Issue proceeds at 1 June 20X7	$30,545,908
Interest expense:	
$30,545,908 × 4% =	$1,221,363
Interest paid:	$1,100,000

Requirement 3

Principal: $40,000,000 × (P/F, 2%, 31) =	
$40,000,000 × 0.54125 =	$21,650,000
Interest: ($40,000,000 × 2.75%) × (P/A, 2%, 31) =	
$1,100,000 × 22.93770 =	25,231,470
Issue proceeds at 30 November 20X9	$46,881,470
Interest expense:	
$46,881,470 × 2% =	$ 937,629
Interest paid:	$1,100,000

Requirement 4

In all cases, interest expense is not cash paid. Interest expense is dictated by the yield rate, not the nominal rate.

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Assignment 13-6

Requirement 1

Principal	$5,000,000 x (P/F 4%, 40) (.20829) =	$1,041,450
Interest	$212,500 x (PVA 4%, 40) (19.79277) =	4,205,964
		$5,247,414

Requirement 2

Period	Cash interest paid	Interest expense	D or P amortization	Closing net bond liab.
Op. balance				5,247,414
1	212,500	209,897	2,603	5,244,811
2	212,500	209,792	2,708	5,242,103
3	212,500	209,684	2,816	5,239,287
4	212,500	209,571	2,929	5,236,358

Requirement 3

1 October 20x4

Cash	5,247,414	
Premium on bonds payable		247,414
Bonds payable		5,000,000

31 December 20x4

Interest expense ($209,897 x 3/6)	104,949	
Premium on bonds payable ($2,603 × 3/6)	1,301	
Interest payable ($212,500 × 3/6)		106,250

31 March 20x5

Interest expense ($209,897 x 3/6)	104,948	
Interest payable	106,250	
Premium on bonds payable ($2,603 × 3/6)	1,302	
Cash		212,500

30 September 20x5

Interest expense	209,792	
Premium on bonds payable	2,708	
Cash		212,500

31 December 20x5

Interest expense ($209,684 x 3/6)	104,842	
Premium on bonds payable ($2,816 × 3/6)	1,408	
Interest payable ($212,500 × 3/6)		106,250

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Assignment 13-7 (WEB)

Requirement 1

Bond proceeds:

P = $3,000,000 × (P/F, 4%,20) + ($3,000,000 × 5%) × (P/A, 4%,20)
= ($3,000,000 × 0.45639) + ($150,000 × 13.59033)
= $1,369,170 + $2,038,550
= $3,407,720

Requirement 2

30 September 20x1:		
Cash	3,407,720	
Bonds payable		3,000,000
Premium on bonds		407,720
31 March 20x2:		
Interest expense	136,309	
Premium on bonds	13,691	
Cash		150,000
[interest expense = 4% of $3,407,720]		
30 September 20x2:		
Interest expense	135,761	
Premium on bonds	14,239	
Cash		150,000
[interest expense = 4% of ($3,407,720 – $13,691) = .04($3,394,029)]		
31 March 20x3:		
Interest expense	135,192	
Premium on bonds	14,808	
Cash		150,000
[interest expense = .04($3,394,029 – $14,239) = .04($3,379,790)]		
30 September 20x3:		
Interest expense	134,599	
Premium on bonds	15,401	
Cash		150,000
[interest expense = .04($3,379,790 – $14,808) = .04($3,364,982)]		

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Requirement 3

The unamortized premium on 1 October 20x7, using the effective interest method, is the present value of the remaining cash flows at that date, less the principal amount of the bonds at 1 October 20x7, four years before maturity:

Unamortized premium = [$3,000,000(P/F, 4%, 8) + $150,000(P/A, 4%, 8)] – $3,000,000
= [$3,000,000(.73069) + $150,000(6.73274)] – $3,000,000
= ($2,192,070 + $1,009,911) – $3,000,000
= $3,201,981 – $3,000,000
= $201,981

Requirement 4

Premium amortization for next 6 months:

Using the answer to requirement 4:

- The present value of the bonds at 1 October 20x7 is $3,201,981.
- Interest expense for the next six months is 4% of the PV, or $128,080.
- Premium amortization is the difference between the expense of $128,080 and the payment of $150,000, or $21,920.

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Assignment 13-8

Requirement 1

Price of bond:

P	$2,000,000 (P/F, 2%, 7) = $2,000,000 × (.87056)	$1,741,120
I	$50,000 (P/A, 2%, 7) = $50,000 × (6.47199)	323,600
		$2,064,720

Requirement 2

Date	*Interest Payment*	*Interest Expense*	*Premium Amortization*	*Unamortized Premium*	*Net bond Liability*
Opening				$64,720	$2,064,720
1	$50,000	$41,294	$ 8,706	56,014	2,056,014
2	50,000	41,120	8,880	47,134	2,047,134
3	50,000	40,943	9,057	38,077	2,038,077
4	50,000	40,762	9,238	28,839	2,028,839
5	50,000	40,577	9,423	19,416	2,019,416
6	50,000	40,388	9,612	9,804	2,009,804
7	50,000	40,196	9,804	0	2,000,000

Requirement 3

1 September 20x9

Cash	2,064,720	
Premium on bonds payable		64,720
Bonds payable		2,000,000

31 December 20x9 (adjusting entry):

Interest expense (4/6)	27,529	
Premium on bonds payable	5,804	
Accrued interest payable		33,333

28 February 20X10

Accrued interest payable	33,333	
Interest expense (2/6)	13,765	
Premium on bonds payable (2/6)	2,902	
Cash		50,000

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31 August 20x10		
Interest expense	41,120	
Premium on bonds payable	8,880	
Cash		50,000
31 December 20x10 (adjusting entry):		
Interest expense (4/6)	27,295	
Premium on bonds payable	6,038	
Accrued interest payable		33,333

Requirement 4

20x9	
Interest expense	$27,529
20x10	
Interest expense ($13,765 + $41,120 + $27,295)	$82,180

Requirement 5

20x9	
Bonds payable, 5%, effective rate 4%, due 28 February 20X13	$2,000,000
Premium on bond payable ($64,720 – $5,804)	58,916
	$2,058,916
20x10	
Bonds payable, 5%, effective rate 4%, due 28 February 20X13	$2,000,000
Premium on bond payable ($58,916 - $2,902 - $8,880 - $6,038)	41,096
	$2,041,096

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Assignment 13-9

Requirement 1

1 April 20x1		
Cash	814,003	
Premium on bonds payable		14,003
Bonds payable		800,000
30 September 20x1		
Interest expense	20,350	
Premium on bonds payable	1,250	
Cash		21,600
31 December 20x1 (adjusting entry):		
Interest expense (3/6)	10,159	
Premium on bonds payable	641	
Accrued interest payable		10,800
30 March 20x2		
Accrued interest payable	10,800	
Premium on bonds payable	640	
Interest expense	10,160	
Cash		21,600
30 September 20x2		
Interest expense	20,287	
Premium on bonds payable	1,313	
Cash		21,600
31 December 20x2 (adjusting entry):		
Interest expense (3/6)	10,127	
Premium on bonds payable	673	
Accrued interest payable		10,800

Requirement 2

Bonds payable, 5.4%, effective rate 5%, due 30 March 20X6	$800,000
Premium on bond payable ($10,159 – $673)	9,486
	$809,486

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Assignment 13-10 (WEB)

Requirement 1

Price of bond:

P $200,000 (P/F, 4%, 8) = $200,000 × (.73069) $146,138
I $7,600 (P/A, 4%, 8) = $7,600 × (6.73274) 51,169
$197,307

Requirement 2

Date	*Interest Payment*	*Interest Expense*	*Discount Amortization*	*Unamortized Discount*	*Net bond Liability*
Opening				$2,693	$197,307
31 Aug. 20x4	$7,600	$7,892	$292	2,401	197,599
28 Feb. 20x5	7,600	7,904	304	2,097	197,903
31 Aug. 20x5	7,600	7,916	316	1,781	198,219
28 Feb. 20x6	7,600	7,929	329	1,452	198,548
31 Aug. 20x6	7,600	7,942	342	1,110	198,890
28 Feb. 20x7	7,600	7,956	356	754	199,246
31 Aug. 20x7	7,600	7,970	370	384	199,616
28 Feb. 20x8	7,600	7,984	384	0	200,000

Requirement 3

Proceeds of bond = $197,599 + 1/6 of ($197,599 -$197,903) = $197,650
Accrued interest = $200,000 x 7.6% x 1/12 = $1,267

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Requirement 4

30 September 20x4

Cash ($197,650 + $1,267)	198,917	
Discount on bonds payable ($200,000 - $197,650)	2,350	
Bonds payable		200,000
Interest payable		1,267

31 December 20x4 (adjusting entry):

Interest expense	3,952	
Interest payable ($200,000 × 7.6% × 3/12)		3,800
Discount on bond payable ($304 × 3/6)		152

Note: If interest expense had been credited in the first entry, it would have to be adjusted now, to set up the proper payable ($5,067) and expense ($3,952) at year-end. Crediting interest expense in the initial entry is only a "wash" *after the first six month payment.*

28 February 20x5:

Interest payable ($1,267 + $3,800)	5,067	
Interest expense	2,634	
Discount on bonds payable ($304 × 2/6)		101
Cash		7,600

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Assignment 13-11

Requirement 1

Present value at 1 April (per table)	$814,003
Present value at 30 September	812,753
	$ 1,250

Issuance proceeds: $814,003 - (4/6 of $1,250)	$813,170
Accrued interest ($21,600 x 4/6)	$ 14,400

Requirement 2

1 August 20x1		
Cash ($813,170 + $14,400)	827,570	
Interest payable		14,400
Premium on bonds payable		13,170
Bonds payable		800,000
30 September 20x1		
Interest expense ($20,350 x 2/6)	6,783	
Premium on bonds payable ($1,250 x 2/6)	417	
Interest payable	14,400	
Cash		21,600
31 December 20x1 (adjusting entry):		
Interest expense (3/6)	10,159	
Premium on bonds payable	641	
Accrued interest payable		10,800
30 March 20x2		
Accrued interest payable	10,800	
Premium on bonds payable	640	
Interest expense	10,160	
Cash		21,600
30 September 20x2		
Interest expense	20,287	
Premium on bonds payable	1,313	
Cash		21,600

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31 December 20x2 (adjusting entry):

Interest expense (3/6).....	10,127	
Premium on bonds payable	673	
Accrued interest payable		10,800

Requirement 3

Interest expense, 20x1 ($6,783+ $10,159)	$ 16,942

Bonds payable, 5.4%, effective rate 5%, due 30 March 20X6	$800,000
Premium on bond payable ($12,753 – $641)	12,112
	$812,112

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Assignment 13-12

Requirement 1

Price of bond:

P	$30,000 (P/F, 4%, 6) = $30,000 × (.79031)	$23,709
I	$900 (P/A, 4%, 6) = $900 × (5.24214)	4,718
		$28,427

Requirement 2

Bond Amortization Table
(Stated rate 3%; effective rate 4%; semi-annual)

Date	*Cash Payment*	*Effective Interest*	*Discount Amortization*	*Unamortized Discount*	*Net Bond Liability*
Opening				1,573	28,427
31 May 20x6	900	1,137	237	1,336	28,664
30 Nov. 20x6	900	1,147	247	1,089	28,911
31 May 20x7	900	1,156	256	833	29,167
30 Nov.20x7	900	1,167	267	566	29,434
31 May 20x8	900	1,177	277	289	29,711
30 Nov. 20x8	900	1,189*	289	0	30,000

*Rounded

Requirement 3

Proceeds of bond = $28,427 + 2/6 of ($28,664 -$28,427) = $28,506
Accrued interest = $30,000 x 6% x 2/12 = $300

Requirement 4

Discount amortization to 31 May 20x6 is $158 ($237 x 4/6) or ($28,664 -$28,506)

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Assignment 13-13

Requirement 1

The company did not get a 3% loan. The upfront fee must be included when establishing the real borrowing cost, and its effect is to increase the interest rate to 5%.

Effective interest rate = Solve for x% in,

$4,000,000 = $217,860 + $120,000 (P/A, x %, 3) + $4,000,000 (P/F, x %, 3)
x = 5%

Proof:
$4,000,000 = $217,860 + $120,000 (P/A, 5%, 3)+ $4,000,000 (P/F, 5%, 3)
$4,000,000 = $217,860 + $120,000 (2.72325) + $4,000,000 (.86384)
$4,000,000 = $4,000,000

Requirement 2

The upfront fee is not expensed at the inception of the loan. It is deferred, and amortized over the life of the loan using the effective interest method.

Requirement 3

Beginning of Year 1

Cash ($4,000,000 - $217,860)	3,782,140	
Discount/ financing cost	217,860	
Note payable		4,000,000

End of Year	1	2	3
Interest expense	189,107 [1]	192,562[2]	196,191[3]
Cash	120,000	120,000	120,000
Discount/ financing cost	69,107	72,562	76,191

(1) $3,782,140 x .05
(2) ($3,782,140 + $69,107 = $3,851,247) × .05
(3) ($3,851,247 + $72,562 = $3,923,809) × .05

End of Year 4

Note payable	4,000,000	
Cash		4,000,000

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Assignment 13-14

Requirement 1

Effective interest rate = Solve for x in,

$500,000 = $53,460 + $10,000 (P/A, x %, 3) + $500,000 (P/F, x %, 3)
x = 6%

Proof:
$500,000 = $53,460+ $10,000 (P/A, 6%, 3)+ $500,000 (P/F, 6%, 3)
$500,000 = $53,460 + $10,000 (2.67301) + $500,000 (.83962)
$500,000 = $500,000

Net amount advanced on borrowing: $500,000 - $53,460 = $446,540

Requirement 2

Interest expense: (table not required)

Period	Cash interest paid	Int. expense (6%)	Amortization	Closing net liability
Op. balance				446,540
1	10,000	26,792	16,792	463,332
2	10,000	27,800	17,800	481,132
3	10,000	28,868	18,868	500,000

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Assignment 13-15

Requirement 1

Cash	19,800,000	
Long-term note payable (US$20,000,000 × 0.99)		19,800,000

Requirement 2

Statement of financial position

Long-term note payable (US$20,000,000 × $0.95)	$19,000,000
Accrued interest payable (US$20,000,000 × 6% × 8/12 × $0.95)	$ 760,000

Statement of comprehensive income

Interest expense (US$20,000,000 × 6% × 8/12 × $0.98)	$ 784,000 dr.
Foreign exchange gain ($19,800,000 – $19,000,000) + ($784,000 - $760,000)	$ 824,000 cr.

Note that interest expense is measured at the average rate for the year, and the interest liability is measured at the closing exchange rate. There is an exchange gain for the difference.

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Assignment 13-16 (WEB)

Requirement 1

Date		Loan Balance	(Gain)/Loss
1 May 20x2	@ $1.09	$8,720,000	
31 December 20x2	@ $1.12	8,960,000	$240,000
31 December 20x3	@ $1.10	8,800,000	(160,000)

Earnings, year ended 31 December 20x2
Exchange loss
re: principal 240,000

31 December 20x2 SFP
Loan payable $8,960,000

Earnings, year ended 31 December 20x3
Exchange (gain)
re: principal ..... (160,000)

31 December 20x3 SFP
Loan payable $8,800,000

Requirement 2

Interest Expense

20x2	$8,000,000 × .0725 × 8/12 × $1.11	$429,200
20x3	$8,000,000 × .0725 × $1.09	$632,200

Exchange G/L (Interest)
20x2

Interest payable/paid at 31 December 20x2 ($8,000,000 × .0725 × 8/12 × $1.12)	$433,067
Interest expense (above)	429,200
Exchange loss	$ 3,867

There is an exchange gain or loss on interest expense because it is accrued at the average rate and paid at a specific date when the exchange rate is different than the average.

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Assignment 13-17

Requirement 1

Cost of borrowing, general borrowing:
($84,000 +$280,000) / ($1,200,000 + $4,300,000) = 6.6%

The capitalization period ends when the warehouse is put into use, or early December/ end of November.

Requirement 2

Payment	Calculation	Capitalizable
1 February, 20x2	$560,000 × 10/12 ×6.6%	$ 30,800
Late March, 20x2	$500,000 × 8/12 ×6.6%	22,000
Late August, 20x2	$1,700,000 specific loan* $35,500 x ¾ * $ 300,000 general borrowing $300,000 × 3/12 ×6.6%	26,625 4,950
Late November, 20x2	$1,200,000× 0/12 ×6.6%	0
		$84,375

* Sources of financing assumed because timing aligns. $2,000,000 spent; $1,700,000 from the specific loan and $300,000 from general borrowing.
The $35,500 cost for the specific loan is for the entire year, that is, the four months that the loan was outstanding. The capitalizable period ends at the end of November, so only ¾ of this amount is capitalizable.

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Assignment 13-18

Requirement 1

Any eligible borrowing cost that is directly attributable to the acquisition, construction or production of the inventory and the storage facility forms part of the cost of that asset and is capitalized. This includes interest on the specific loan for the storage facility and general borrowing costs for the storage facility and inventory.

Requirement 2

Inventory	29,948	
Interest expense		29,948

Cost of borrowing: $520,000/($1,500,000 + $8,000,000) = 5.47%
Capitalization ends when good are available for sale.
Interest has already been expensed, so this entry re-allocates the amount to be capitalized.

Payment	Calculation	Capitalizable
Early March payment	$730,000 × 9/12 ×5.47% (1 March – 30 November)	$ 29,948

Storage facility	21,788	
Interest expense		15,955
Interest payable ($1,000,000 x 7% x 1/12)		5,833

Interest on the specific loan is capitalizable after the loan is issued, presumably concurrently with the $1,200,000 early December payment. Interest is not yet recorded. Other interest is capitalizable out of general borrowing cost. This interest has already been expensed, so this entry re-allocates the amount to be capitalized. Capitalization continues until the building is completed in January of next year.

Payment	Calculation	Capitalizable
Late July	$500,000 × 5/12 ×5.47%	$ 11,396
Late October	$400,000× 2/12 ×5.47%	3,647
Early December	($1,200,000 - $1,000,000 through specific loan) × 1/12 ×5.47%	912
		$15,955

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Assignment 13-19

Requirement 1

Cash ($90,000 - $15,165).....	74,835	
Discount/ financing cost	15,165	
Note payable		90,000

The company receives $74,835 in cash.
Effective interest rate for specific loan = Solve for x in,

$90,000 = $15,165 + $1,800 (P/A, x %, 5) + $90,000 (P/F, x %, 5)
x = 6%

Proof:

$90,000 = $15,165 + $1,800 (P/A, 6%, 5)+ $90,000 (P/F, 6%, 5)
$90,000 = $15,165 + $1,800 (4.21236) + $90,000 (.74726)
$90,000 = $90,000

Requirement 2

Payment	*Calculation*	*Capitalizable*
Mid-January	Invoice price	$180,000
July	Customization	$ 15,000
August	Training	10,000
Specific loan	($90,000 - $15,165) x 6% x 7.5 /12 months (mid-January – early September)(1)	2,806
General borrowing	($180,000 - $74,835 paid through specific loan) x 5.67% (2) x 7.5/12 months $15,000 x 5.67% (2) x 1/12 $10,000 x 5.67% (2) x 0/12 July and August payments are assumed to take place at the end of the month.	3,798
	Note: may not exceed fair value of a customized bulldozer	$211,604

(1) Capitalization period ends in early September
(2) Average borrowing cost on general borrowing
= 5.67% ($160,000 + $95,000)/(3,000,000 + $1,500,000)
This excludes the mortgage loan for the manufacturing facility because it is not general borrowing. No cost for equity financing is capitalizable.

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Assignment 13-20

Requirement 1

Principal: $3,000,000 × (P/F, 3%, 20) = $3,000,000 × (.55368) =	$1,661,040
Interest payments: $75,000 × (P/A, 3%, 20) = $75,000 × (14.87747) =	1,115,810
Bond price	$2,776,850

1 July 20x2 - Issuance of bonds:

Cash	2,776,850	
Discount on bonds payable	223,150	
Bonds payable, 5%		3,000,000

Requirement 2

1 July 20x5 - Purchased $1,200,000 bonds at effective rate of 8%:

Bonds payable, 5%	1,200,000	
Gain, retirement of debt		122,356
Discount on bonds payable (1)		67,774
Cash (2)		1,009,870

Computations:

(1) Book value is present value with 14 periods remaining:

1,200,000 × (P/F, 3%, 14) = $1,200,000 × (.66112)	$793,344
($200,000 × 2.5%) × (P/A, 3%, 14) = $30,000 × (11.29607)	338,882
Book value (PV)	$1,132,226
Discount ($1,200,000 - $1,132,226)	$67,774

(2) Purchase price:

$1,200,000 × (P/F, 4%, 14) = $1,200,000 × (.57748)	$692,976
($1,200,000 × 2.5%) × (P/A, 4%, 14) = $30,000 × (10.56312)	316,894
Purchase price (PV)	$1,009,870

The gain on retirement of debt is reported as an unusual item in earnings.

Requirement 3

The change in market value, which caused a gain for the issuer and a loss for the investor, occurred when interest rates changed. Since the yield rate rose, the borrower was made better off (PV of debt declined) and the investor worse off. However, this economic event is not captured in the financial statements of the borrower.

As far as the retirement itself is concerned, it does result in gain recognition for the borrower. However, in economic terms, the transaction itself did not create an economic gain or loss because the cash paid was equal to the current present value of the 5% bonds.

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Assignment 13-21 (WEB)

Case A

31 December 20x16 - Retirement of the debt:

Bonds payable, 12%	200,000	
Premium on bonds payable (1)	21,340	
Gain, retirement of debt		15,340
Cash ($200,000 × 1.03)		206,000

(1)$21,340 = $200,000 – [$200,000 × (P/F, 10%, 8) + ($24,000) × (P/A, 10%, 8)]

Case B

Requirement 1

Principal: $200,000 × (P/F, 11%, 10) = $200,000 × (.35218) =	$70,436
Interest payments: $20,000 × (P/A, 11%, 10)	
= $20,000 × (5.88923) =	117,785
Bond price	$188,221

1 January 20x2

Cash	188,221	
Discount on bonds payable	11,779	
Bonds payable, 10%, 10-year		200,000

Requirement 2

Book value at the end of 20X4:	
Principal: $200,000 × (P/F, 11%, 7) = $200,000 × (.48166) =	$96,332
Interest payments: $20,000×(P/A, 11%, 7) = $20,000 × (4.71220)=	94,244
Bond price	$190,576

1 July 20x5

To update interest expense and discount amortization for 20x5:

Interest expense ($190,576 x 11% x 6/12)	10,482	
Discount on bonds payable		482
Interest payable ($200,000 × 10% × 6/12)		10,000

To record the retirement:

Bonds payable	200,000	
Interest payable	10,000	
Loss, retirement of debt	10,942	
Discount on bonds payable*		8,942
Cash ($202,000 + $10,000)		212,000

*Unamortized balance:
($200,000 - $190,576 = $9,424 - $482)

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Assignment 13-22

Case A

To update interest expense and amortization:

Interest expense	91,923	
Discount on bonds payable		1,494
Deferred upfront costs		429
Interest payable ($15,000,000 × 60% × 6% × 2/12)		90,000

To record the retirement:

Bonds payable	9,000,000	
Interest payable ($15,000,000 × 60% × 6% × 8/12)	360,000	
Gain, retirement of debt		37,743
Discount on bonds payable ($186,750 × 60%) less $1,494		110,556
Deferred issue costs ($53,550 × 60%) less $429		31,701
Cash ($9,000,000 x .98) + $360,000		9,180,000

Case B

To record interest payment:

Interest expense ($240,000 + $8,000)	248,000	
Interest payable ($12,000,000 × 4% × 3/6) (from 31 Dec. 20X7)	240,000	
Discount on bonds payable		8,000
Cash ($12,000,000 × 4%)		480,000

To record retirement:

Bonds payable	3,600,000	
Gain, retirement of debt		61,000
Discount on bonds payable ($88,000 - $8,000) × 30%		24,000
Cash		3,515,000

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Assignment 13-23

Requirement 1

Interest expense ($256,565 x .3 x 2/6)	25,656	
Discount on bonds payable ($31,565 x 2/6 x .3)		3,156
Cash ($225,000 x .3 x 2/6)		22,500

Requirement 2

Bonds payable	2,700,000	
Loss on bond retirement	158,244	
Discount on bonds payable ($448,000 x .3) – $3,156		131,244
Cash ($2,700,000 x 101%)		2,727,000

Requirement 3

Interest expense ($256,565 x .7)	179,596	
Discount on bonds payable ($31,565 x .7)		22,096
Cash ($225,000 x .7)		157,500

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Assignment 13-24

Requirement 1

Issuance proceeds: $38,301,565 + 1/6 x $32,063 (see table) = $38,306,909
Accrued interest = $40,000,000 × 7.5% × 1/12 = $250,000

Principal: $40,000,000 × (P/F, 4%, 29) = $40,000,000 × (.32065) = $12,826,000
Interest payments: $1,500,000 × (P/A, 4%, 29)
= $1,500,000 × (16.98371) = 25,475,565
Bond price (rounded) $38,301,565

Interest expense: (table not required)

Period	Cash interest paid	Int. expense (4%)	Amortization	Closing net liability
Op. balance				38,301,565*
1	1,500,000	1,532,063	32,063	38,333,628**
2	1,500,000	1,533,345	33,345	38,366,973
3	1,500,000	1,534,679	34,679	38,401,652

* n = 29
** n = 28

Requirement 2

Cash ($38,306,909 + $250,000)..... 38,556,909
Discount on bonds payable 1,693,091
Bonds payable 40,000,000
Interest payable (or expense)..... 250,000

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Requirement 3

Interest expense	1,276,719	
Interest payable	250,000	
Discount on bonds payable ($32,063 x 5/6)) or ($38,308,909 - $38,333,628)		26,719
Cash ($40,000,000 x 7.5% x 6/12)		1,500,000

Requirement 4

Interest expense ($1,533,345 x 2/6) x 10%	51,112	
Discount on bonds payable ($33,345 x 2/6) x 10%		1,112
Interest payable ($4,000,000 x 7.5% x 2/12)		50,000

Bonds payable	4,000,000	
Interest payable	50,000	
Loss on bond retirement	125,525	
Cash ($4,000,000 x 99%) + $50,000		4,010,000
Discount on bonds payable (1)		165,525

(1) ($38,333,628 - $40,000,000) x .10 = $166,637; $166,637 - $1,112 = $165,525

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Assignment 13-25

Requirement 1

1 July 20x1

Cash[1]	688,417	
Discount on bonds payable	111,583	
Bonds payable		800,000

[1] $800,000 (P/F, 6%, 19) (.33051) + $38,000 (P/A, 6%, 19) (11.15812)

31 December 20x1

Interest expense*	41,305	
Discount on bonds payable		3,305
Cash		38,000

*$688,417 × .06

Requirement 2

Book value at 30 June 20x6 of the $240,000 of bonds defeased 1 August 20x6 (9 semiannual period remaining) = $240,000 × (P/F, 6%, 9) + ($240,000 × 4.75%) × (P/A, 6%, 9) = $219,595.

Unamortized discount remaining = $20,405 = $240,000 – $219,595

1 August 20x6

Interest expense (6% × $219,595 × 1/6)	2,196	
Discount on bonds payable		296
Interest payable (4.75% × $240,000 × 1/6)		1,900
Interest payable	1,900	
Bonds payable	240,000	
Loss on bond defeasance	27,309	
Discount on bonds payable ($20,405 – $296)		20,109
Cash [(1.03 × $240,000) + $1,900]		249,100

Requirement 3

The critical element of a defeasance that permits de-recognition of the liability is that the creditor agrees to the arrangement and legal release is given to the borrower. In an in-substance defeasance, the transaction is the same except there is no legal release by the creditor. Debt subject to a defeasance arrangement is derecognized, but debt subject to an in-substance defeasance is left on the books.

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Requirement 4

Interest rates have declined since Computer Medic issued its bonds. They were issued at a discount and now sell at a premium. The relative attractiveness has increased reflecting a drop in overall interest rates.

Requirement 5

The loss is caused by changing interest rates and valuation of the bond liability at a value based on its issuance price. The loss does not equal the change in Computer Medic's economic status. Many would argue that Computer Medic has experienced no change in economic status because a liability has been defeased at market value. To the extent that a company's financial position improves with an equal reduction of debt and assets, Computer Medic may be a stronger company. In addition, the defeasance may be a smart move. Computer Medic may be able to replace the 10% debt with lower interest rate debt, improving its long-run liquidity position.

Requirement 6

Book value at 30 June 20x6 of the $560,000 of bonds remaining = [$560,000 × (P/F, 6%, 9)] + [$560,000 × 4.75% × (P/A, 6%, 9)] = $512,389

31 December 20x6		
Interest expense (6% × $512,389).....	30,743	
Discount on bonds payable		4,143
Cash (4.75% × $560,000)		26,600

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Assignment 13-26

Requirement 1

Merit Ltd
Partial Statement of Cash Flows
Year ended 31 December 20x9

Cash used for financing activities:	
Bond retirement (7% bond) ($3,000,000 x 101%)..	(3,030,000)
Bond retirement (6.5% bond) ($6,000,000 x 97.5%)	(5,850,000)

Requirement 2

Cash paid for interest

Interest expense (given)	$2,110,000
Discount, 7% bond	(14,700)
Discount, 6.5% bond.....	(5,200)
Discount, 7.25% bond.....	(17,200)
Cash paid	$2,072,900

Requirement 3

Gain or loss:	7% Bond	6.5% Bond
Price paid	$3,030,000	$5,850,000
Book value.....	3,000,000	6,000,000
Discount *.....	(21,000)	(35,000)
Total	2,979,000	5,965,000
(Gain)/loss	$51,000	$(115,000)

* $152,500 - $14,700 - $116,800 = $21,000; $61,500 - $5,200 - $21,300 = $35,000

Issuance of the 7.25% bond for land is a non-cash transaction and is excluded from the SCF. Supplementary disclosure is required.

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Assignment 13-27

Requirement 1

Forsythe Solutions Corp
Partial Statement of Cash Flows
Year ended 31 December 20x2

Financing activities:	
Bond issued (5% bond)	$ 7,800,000
Bond retirement (6% bond) ($20,000,000 x 102%)	(20,400,000)

Requirement 2

Cash paid for interest

Interest expense (given)	$625,000
Discount, 5% bond ($200,000 - $196,000)	(4,000)
Discount, 6% bond (given)	(54,000)
Increase in interest payable ($62,500 - $49,000)	(13,500)
Cash paid	$553,500

Requirement 3

Gain or loss:	6% Bond
Price paid (req. 1)	$20,400,000
Book value	20,000,000
Discount ($603,000 - $54,000)	(549,000)
Total	19,451,000
Loss	$949,000

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Assignment 13-28 (ASPE)

Requirement 1
(unchanged from A 13-6)

Principal	$5,000,000 x (P/F 4%, 40) (.20829) =	$1,041,450
Interest	$212,500 x (PVA 4%, 40) (19.79277) =	4,205,964
		$5,247,414

Requirement 2

Period	Cash interest paid	Interest expense	Discount or premium amortization	Closing net bond liability
Opening balance				5,247,414
1	212,500	206,315	6,185 (1)	5,241,229
2	212,500	206,315	6,185	5,235,044
3	212,500	206,315	6,185	5,228,859
4	212,500	206,315	6,185	5,222,674

(1) $247,414/40

Requirement 3

1 October 20x4

Cash	5,247,414	
Premium on bonds payable		247,414
Bonds payable		5,000,000

31 December 20x4

Interest expense	103,157	
Premium on bonds payable ($6,185 × 3/6)	3,093	
Interest payable ($212,500 × 3/6)		106,250

31 March 20x5

Interest expense	103,158	
Interest payable	106,250	
Premium on bonds payable ($6,185× 3/6)	3,092	
Cash		212,500

30 September 20x5

Interest expense	206,315	
Premium on bonds payable	6,185	
Cash		212,500

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31 December 20x5

Interest expense	103,157	
Premium on bonds payable ($6,185 × 3/6).....	3,093	
Interest payable ($212,500 × 3/6)		106,250

Requirement 5

The effective interest method is required under IFRS. It is preferable because it measures interest expense as a constant percentage of the outstanding liability – a better measure of cost of debt. Straight-line might be preferable because it is simpler. ASPE allows straight-line method because there is a more restricted user group and potentially a less complicated business situation/reporting environment.

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Assignment 13-29 (ASPE)

Requirement 1

	Amortization Schedule, Straight-line Method:				
				Balance	**Carrying**
Interest	**Cash**	**Interest**	**Premium**	**Unamortized**	**Amount**
Period	**Interest**	**Expense ($21,600 - $1,400)**	**Amortization (1/10)**	**Premium**	**of Bonds**
	Opening			$14,003	$814,003
1 (30 Sept, 20X1)	$21,600	$20,200	$1,400	12,603	812,603
2	21,600	20,200	$1,400	11,203	811,203
3	21,600	20,200	$1,400	9,803	809,803
4	21,600	20,200	$1,400	8,403	808,403
5	21,600	20,200	$1,400	7,003	807,003
6	21,600	20,200	$1,400	5,603	805,603
7	21,600	20,200	$1,400	4,203	804,203

Requirement 2

1 April 20x1

Cash	814,003	
Premium on bonds payable		14,003
Bonds payable		800,000

30 September 20x1

Interest expense	20,200	
Premium on bonds payable	1,400	
Cash		21,600

31 December 20x1 (adjusting entry):

Interest expense (3/6)	10,100	
Premium on bonds payable	700	
Accrued interest payable		10,800

30 March 20x2

Accrued interest payable	10,800	

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Premium on bonds payable	700	
Interest expense	10,100	
Cash		21,600

30 September 20x2

Interest expense	20,200	
Premium on bonds payable	1,400	
Cash		21,600

31 December 20x2 (adjusting entry):

Interest expense (3/6).....	10,100	
Premium on bonds payable	700	
Accrued interest payable		10,800

Requirement 3

Bonds payable, 5.4%, effective rate 5%, due 30 March 20X6	$800,000
Premium on bond payable ($9,803 – $700)	9,103
	$809,103

Requirement 4

In the first period, interest expense is 2.48% ($20,200/$814,003) of the opening liability balance. This rate is 2.51 % ($20,200/$805,603) in period 7. The rate changes because of the use of straight-line amortization. If the effective interest method were used, interest expense would always reflect the yield rate of 2.5% (5% annually). This measurement inconsistency is the reason that the effective interest method is preferable.

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Assignment 13-30 (ASPE)

Requirement 1

Cash (Given)	1,606,617	
Premium on bonds payable		106,617
Bonds payable		1,500,000

Requirement 2

Interest expense	66,115	
Premium on bonds payable ($106,617 × 1/10 × 5/6)	8,885	
Interest payable ($1,500,000 × 12% × 5/12)		75,000

Requirement 3

Interest expense	13,221	
Interest payable	75,000	
Premium on bonds payable ($106,617 × 1/10 × 1/6)	1,777	
Cash ($1,500,000 × 12% × 6/12)		90,000

Requirement 4

Bonds payable ($1,500,000 × 40%)	600,000	
Premium on bonds payable ($31,985 × 40%) (1)	12,794	
Gain on bond retirement		24,794
Cash ($1,500,000 × 40% × .98)		588,000

(1) With n=3 on this date, the remaining premium is $106,617 × 3/10 = $31,985

Requirement 5

Financing section,
Retirement of bonds payable, ($588,000)
Operating activities section, indirect method,
Less: gain on bond retirement ($24,794)

If the direct method were used, the gain on bond retirement would not be listed.

Requirement 6

Long-term liabilities:

Bond payable, 12%, due 31 January 20x7	$900,000
Plus: premium on bonds payable	19,191*
	$919,191

* $31,985 × 60%

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