Chapter 18
Accounting for Leases

M. Problems

P18-1. ***Suggested solution:***

		Yes / No
a.	Lease transfers title to the lessee at the end of the lease.	Yes
b.	Lease payments include executory costs.	No
c.	Lease transfers substantially all risks and rewards of ownership.	Yes
d.	Lease is for tangible property.	No
e.	Lease is for intangible property.	No
f.	Lease is considered long-term.	No

P18-2. ***Suggested solution:***

		Yes/No
a.	Minimum lease payments comprise at least 75% of the fair value of the leased asset (under ASPE).	No
b.	Minimum lease payments comprise substantially all of the fair value of the lease asset.	Yes
c.	The lease is a lease on land.	No
d.	The lease contains a bargain purchase option.	Yes
e.	The lease term comprises a major part of the economic life of the asset.	Yes
f.	The lease term comprises at least 75% of the economic life of the asset (under ASPE).	Yes

P18-3. ***Suggested solution:***

Assessing whether the lease transfers substantially all the risks and rewards of ownership is consistent with the definition of assets. Specifically, the assessment relates to the future benefits of the leased property, and the ability of the lessor or lessee to control access to those benefits. A lease that gives the lessee substantially all the risks and rewards of ownership results in the lessee having control of the future benefits associated with the leased property, which is consistent with the lessee recording the asset as required for a finance lease.

P18-4. ***Suggested solution:***

A lease transfers economic control but not necessarily legal title of the leased asset to the lessee. As a result, there is a separation of ownership and control. Such agency relationships create the moral hazard form of information asymmetry. The lessee will tend to treat the leased asset with less care than would be the case if the lessee actually owned the asset.

A lease that transfers substantially all the risks and rewards of ownership means that the lessee will take due care of the leased asset, reducing the moral hazard/agency cost to a low level. Recording the leased property as an asset on the lessee's books is consistent with the low level of moral hazard for owned assets. On the other hand, a lease that does not transfer substantially all risks and rewards of ownership will have relatively high agency costs that are borne by the lessor, and thus it makes sense for the lessor to maintain the leased asset on its books.

P18-5. ***Suggested solution:***

Cash flows	Calculation	Present value
Annual payments	$26,380 × PVFA(10%,5) = $26,380 × 3.7908	$100,001
Fair value of asset		100,000
PV of MLP as % of fair value		100%

Using BAII Plus: 5 N, 10 I/Y, 26,380 PMT, CPT PV ➔PV = -100,001

The present value of MLP equals 100% of the asset's fair value, so this is a finance lease.

P18-6. ***Suggested solution:***

Cash flows	Calculation	Present value
Annual payments	$80,000 × PVFA(8%,5) = $80,000 × 3.9927	$319,417
Fair value of asset		600,000
PV of MLP as % of fair value		53%

Using BAII Plus: 5 N, 8 I/Y, 80000 PMT, CPT PV ➔PV = -319,417

The present value of MLP equals only 53% of the asset's fair value, so the lease does not transfer substantially all risks and rewards of ownership to the lessee. It is therefore an operating lease.

P18-7. ***Suggested solution:***

Cash flows	Calculation	Present value
Annual payments	$90,000 × PVFA(9%,7) = $90,000 × 5.0330	$452,966
Guaranteed residual value	$60,000 / 1.09^7 =	32,822
PV of MLP		485,788
Fair value of asset		500,000
PV of MLP as % of fair value		97%

Using BAII Plus: 7 N, 9 I/Y, 90000 PMT, 60000 FV, CPT PV ➔PV = -485,788

The present value of MLP is 97% of the asset's fair value, so the lease transfers substantially all risks and rewards of ownership to the lessee. Thus, this is a finance lease.

P18-8. ***Suggested solution:***

This is an operating lease because it does not transfer substantially all risks and rewards of ownership. Evaluation of the specific indicators is as follows:

Criteria (one of the following)	Evaluation
Transfer of title or bargain purchase option	None
Lease covers major part of asset's useful life	10 years is 33% of useful life of 30 years
PV of MLP is substantially all of the fair value	27% of fair value (see below)

Cash flows	Calculation	Present value
Annual payments	$200,000 × (1 + PVFA(10%,9)) = $200,000 × 6.7590	$1,351,805
Fair value of asset		5,000,000
PV of MLP as % of fair value		27%

Using BAII Plus: 2nd BGN, 2nd SET, 2nd QUIT, 10 N, 10 I/Y, 200000 PMT, CPT PV ➔ PV = -1,351,805

Journal entries for first year of lease:

Jan. 1, 2013	Dr. Prepaid rent	200,000	
	Cr. Cash		200,000
Dec. 31, 2013	Dr. Rent expense	200,000	
	Cr. Prepaid rent		200,000

P18-9. ***Suggested solution:***

First compute the value of the lease using minimum lease payments (MLP).

Cash flows	Calculation	Present value
Annual payments	\$16,000 × (1 + PVFA(10%,5)) = \$16,000 × 4.7908	\$76,653
Guaranteed residual	\$5,000 / 1.10^6	2,822
Total		\$79,475

Using BAII Plus: 2nd BGN, 2nd SET, 2nd QUIT, 6 N, 10 I/Y, 16000 PMT, 5000 FV, CPT PV ➔ PV = -79,475

The present value of the MLP (\$79,475) constitutes substantially all (99%) of the fair value of the equipment (\$80,000), so this is a finance lease.

Journal entries

Feb. 1	Dr. Leased equipment	79,475	
	Cr. Lease obligation		79,475
	Dr. Lease obligation	16,000	
	Cr. Cash		16,000
Dec. 31	Dr. Interest expense (\$63,475 × 10% × 11/12)	5,819	
	Cr. Lease obligation		5,819
	Dr. Depreciation expense ((\$79,475 – \$5,000)/6 × 11/12)	11,378	
	Cr. Accumulated depreciation		11,378

P18-10. ***Suggested solution:***

a. First compute the value of the lease using minimum lease payments (MLP).

Cash flows	Calculation	Present value
Annual payments	$16,000 × (1 + PVFA(6%,7)) = $16,000 × 6.5824	$105,318
Guaranteed residual	$15,000 / 1.06^8	9,411
Total		$114,729

Using BAII Plus: 2nd BGN, 2nd SET, 2nd QUIT, 8N, 6 I/Y, 16000 PMT, 15000 FV, CPT PV ➔ PV = -114,729

The present value of the MLP ($114,729) constitutes substantially all (96%) of the fair value of the equipment ($120,000), so this is a finance lease. The lease term of eight years is also a major portion of the total economic life of the equipment.

Journal entries

Jul. 1	Dr. Leased equipment	114,729	
	Cr. Lease obligation		114,729
	Dr. Lease obligation	16,000	
	Cr. Cash		16,000
Dec. 31	Dr. Interest expense ($98,729 × 6% × 6/12)	2,962	
	Cr. Lease obligation		2,962
	Dr. Depreciation expense (($114,729 – $15,000)/8 × 6/12)	6,233	
	Cr. Accumulated depreciation		6,233

b. Total debt increases, as does total assets. On initial recognition on July 1, 2013, both increase by the same amount, so the total debt to total assets ratio increases toward 1.0 from its previous level. Subsequently, the depreciation and interest accrued will further increase the ratio.

P18-11. ***Suggested solution:***

Cash flows	Calculation	Present value
Annual payments	$92,823 × PVFA(9%,7) = $92,823 × 5.0330	$467,174
Guaranteed residual value	$60,000 / 1.09^7 =	32,822
PV of MLP		499,996
Fair value of asset		500,000
PV of MLP as % of fair value		100%

Using BAII Plus: 7 N, 9 I/Y, 92823 PMT, 60000 FV, CPT PV ➔ PV = -499,996

The present value of MLP is 100% of the asset's fair value, so the lease transfers substantially all risks and rewards of ownership to the lessee. Thus, this is a finance lease.

Journal entries in first year:

Inception	Dr. Lease receivable (net of unearned interest)	500,000	
	Cr. Cash (to manufacturer)		500,000
End of Year 1	Dr. Cash	92,823	
	Cr. Interest revenue ($500,000 × 9%)		45,000
	Cr. Lease receivable		47,823

P18-12. ***Suggested solution:***

a. Computation of required lease payments

	Calculation	Amount
Fair value of asset	given	$100,000
Present value of guaranteed residual value (GRV)		0
Value to be recovered by annual lease payments		$100,000
Present value factor for an annuity of 5 years at 10%	PVFA(10%,5)	3.7908
Annual payments required by lessor		$26,380

Using BAII Plus: 5 N, 10 I/Y, -100,000 PV, CPT PMT ➔ PMT = 26,380

b. Computation of lessee's PV of MLP

Cash flows	Calculation	Present value
Annual payments	$26,380 × PVFA(10%,5) = $26,380 × 3.7908	$100,000

Using BAII Plus: 5 N, 10 I/Y, 26,380 PMT, CPT PV ➔ PV = -100,001

c. Computation of lessor's PV of MLP—same as part b

d. The lessee should classify this lease as a finance lease, because the PV of MLP equals the fair value of the asset.

P18-13. ***Suggested solution:***

a. Computation of required lease payments

	Calculation	Amount
Fair value of asset	given	$100,000
Present value of guaranteed residual value (GRV)	$20,000 / 1.10^5	12,418
Value to be recovered by annual lease payments		$ 87,582
Present value factor for an annuity of 5 years at 10%	PVFA(10%,5)	3.7908
Annual payments required by lessor		$23,104

Using BAII Plus: 5 N, 10 I/Y, -100,000 PV, 20000 FV, CPT PMT ➔ PMT = 23,104

b. Computation of lessee's PV of MLP

	Calculation	Present value
Annual payments	$23,104 × PVFA(10%,5) = $23,104 × 3.7908	$ 87,582
GRV	$20,000 / 1.10^5	12,418
PV (MLP)		$100,000

Using BAII Plus: 5 N, 10 I/Y, 23,104 PMT, 20,000FV, CPT PV ➔ PV = -100,001

Note that the lessee should use the implicit rate since it is known.

c. Computation of lessor's PV of MLP—same as part b

d. The lessee should classify this lease as a finance lease because the PV of MLP equals the fair value of the asset.

P18-14. ***Suggested solution:***

The answer to this problem is the same as for P18-13. Under ASPE, the lessee uses the lower of the incremental borrowing rate and the implicit rate (if known). In this case, the lower rate is the implicit rate, which is the rate used under IFRS.

P18-15. ***Suggested solution:***

a. Computation of required lease payments

	Calculation	Amount
Fair value of asset	given	$100,000
Present value of guaranteed residual value (GRV)	$20,000 / 1.10^5	12,418
Value to be recovered by annual lease payments		$ 87,582
Present value factor for an annuity of 5 years at 10%	PVFA(10%,5)	3.7908
Annual payments required by lessor		$23,104

Using BAII Plus: 5 N, 10 I/Y, -100,000 PV, 20000 FV, CPT PMT ➔ PMT = 23,104

b. Computation of lessor's PV of MLP

	Calculation	Present value
Annual payments	$23,104 × PVFA(10%,5) = $23,104 × 3.7908	$ 87,582
GRV	$20,000 / 1.10^5	12,418
PV (MLP)		$100,000

Using BAII Plus: 5 N, 10 I/Y, 23,104 PMT, 20,000FV, CPT PV ➔ PV = -100,001

c. Computation of lessee's PV of MLP

	Calculation	Present value
Annual payments	$23,104 × PVFA(8%,5) = $23,104 × 3.9927	$ 92,248
GRV	$20,000 / 1.08^5	13,612
Total		$105,860
Fair value	Given	100,000
PV(MLP)	Lower of present value and fair value	$100,000

Using BAII Plus: 5 N, 8 I/Y, 23,104 PMT, 20,000FV, CPT PV ➔ PV = -105,859

Note that the lessee should use the incremental borrowing rate since it is known. However, with the PV of MLP limited to the fair value of $100,000, the lessee needs to compute the interest rate that would result in the PV of MLP being equal to $100,000. To compute this interest rate, we can use a financial calculator or Excel solver, but we can also use the analysis in part (a). That is, the implicit interest rate of 10% is the rate that will result in PV(MLP) = $100,000.

With an interest of 10%, the lessee's PV of MLP is the same as the lessor's, as shown in part (b).

d. The lessee should classify this lease as a finance lease because the PV of MLP equals the fair value of the asset.

P18-16. ***Suggested solution:***

a. Computation of required lease payments

	Calculation	Amount
Fair value of asset	given	$100,000
Present value of guaranteed residual value (GRV)	$20,000 / 1.10^5	12,418
Value to be recovered by annual lease payments		$ 87,582
PV factor for an annuity due of 5 years at 10%	1 + PVFA(10%,4)	4.1699
Annual payments required by lessor		$21,003

Using BAII Plus: 2nd BGN, 2nd SET, 2nd QUIT, 5 N, 10 I/Y, -100,000 PV, 20000 FV, CPT PMT ➔ PMT = 21,003

b. Computation of lessee's PV of MLP

PV Component	Calculation	Present value
Annual payments	$21,003 × (1 + PVFA(8%,4)) = $21,003 × 4.3121	$ 90,567
GRV	$20,000 / 1.08^5	13,612
PV (MLP)		$104,179
Fair value of asset		100,000
Lesser of above		$100,000

Using BAII Plus: 2nd BGN, 2nd SET, 2nd QUIT, 5 N, 8 I/Y, 21,003 PMT, 20000 FV, CPT PV ➔ PV = -104,179

Note that the lessee does not know the lessor's implicit rate, so it uses its incremental borrowing rate.

c. Computation of lessor's PV of MLP:
Under IFRS, the lessor uses the implicit rate. Since the lease payments have be determined using the implicit rate of 10% and an asset value of $100,000, the PV of MLP is $100,000, comprised of the following amounts from part a:

PV Component	Calculation	Amount
Annual payments	$21,003 × (1 + PVFA(10%,4) = $21,003 × 4.1699	$87,582
GRV	$20,000 / 1.10^5	12,418
PV(MLP)		$100,000

d. The lessee should classify this lease as a finance lease because the PV of MLP comprises all of the asset's fair value.

P18-17. ***Suggested solution:***

a. Computation of required lease payments

	Calculation	Amount
Fair value of asset	given	$100,000
Present value of unguaranteed residual value (URV)	$20,000 / 1.10^5	12,418
Value to be recovered by annual lease payments		$ 87,582
PV factor for an annuity due of 5 years at 10%	1 + PVFA(10%,4)	4.1699
Annual payments required by lessor		$21,003

Using BAII Plus: 2nd BGN, 2nd SET, 2nd QUIT, 5 N, 10 I/Y, -100,000 PV, 20000 FV, CPT PMT ➔ PMT = 21,003

b. Computation of lessee's PV of MLP

	Calculation	Present value
Annual payments	$21,003 × (1 + PVFA(8%,4)) = $21,003 × 4.3121	$ 90,568
URV	Not included because not part of minimum	0
PV (MLP)		$90,568

Using BAII Plus: 2nd BGN, 2nd SET, 2nd QUIT, 5 N, 8 I/Y, 21003 PMT, CPT PV ➔ PV = -90,568

Note that the lessee does not know the lessor's implicit rate, so it uses its incremental borrowing rate of 8%.

c. Computation of lessor's PV of MLP

	Calculation	Present value
Annual payments	$21,003 × (1 + PVFA(10%,4)) = $21,003 × 4.1699	$ 87,580
URV	Not included because not part of minimum	0
PV (MLP)		$87,580

Using BAII Plus: 2nd BGN, 2nd SET, 2nd QUIT, 5 N, 10 I/Y, 21003 PMT, CPT PV ➔ PV = -87,580

d. The lessee should classify this lease as a finance lease because the PV of MLP exceeds 90% of the asset's fair value (it is 90.6%).

e. The lessor should classify this lease as an operating lease because the PV of MLP is less than 90% of the asset's fair value (it is 87.6%).

P18-18. ***Suggested solution:***

a. Lease amortization schedule

Period	Year	Interest for year @ 15%	Payments at end of year	Reduction in principal	Principal after interest and payments
					$670,431
1	2012	$100,565	$200,000	$ 99,435	570,996
2	2013	85,649	200,000	114,351	456,645
3	2014	68,497	200,000	131,503	325,142
4	2015	48,771	200,000	151,229	173,913
5	2016	26,087	200,000	173,913	0

b. Journal entries

Jan. 1 2012	Dr. Leased equipment	670,431	
	Cr. Lease obligation		670,431
Dec. 31 2012	Dr. Interest expense (see part a)	100,565	
	Dr. Lease obligation (see part a)	99,435	
	Cr. Cash (given)		200,000
	Dr. Depreciation expense (($670,431 / 5)	134,086	
	Cr. Accumulated depreciation		134,086

P18-19. ***Suggested solution:***

a. Lease amortization schedule

Period	Year	Payments at beginning of year	Balance after payment	Interest @ 11%	Principal after interest and payments
					$326,852
1	2013	$50,000	$276,852	$30,454	$307,306
2	2014	$50,000	$257,306	$28,304	$285,609
3	2015	$50,000	$235,609	$25,917	$261,526
4	2016	$50,000	$211,526	$23,268	$234,794
5	2017	$50,000	$184,794	$20,327	$205,122
6	2018	$50,000	$155,122	$17,063	$172,185
7	2019	$50,000	$122,185	$13,440	$135,625
8	2020	$50,000	$85,625	$9,419	$95,044
9	2021	$50,000	$45,044	$4,955	$49,999
10	2022	$50,000	($1)		

b. Journal entries

Jan. 1	Dr. Leased equipment	326,852	
2013	Cr. Lease obligation		326,852
	Dr. Lease obligation	50,000	
	Cr. Cash		50,000
Dec. 31	Dr. Interest expense (see part a)	30,454	
2013	Cr. Lease obligation (see part a)		30,454
	Dr. Depreciation expense (($326,852 x 20%)	65,370	
	Cr. Accumulated depreciation		65,370

P18-20. ***Suggested solution:***

a. Lease amortization schedule for Greene Capital (lessor). The residual value needs to be included (independent of whether it is guaranteed or not) and the amortization schedule ends with the residual value at the end of 20 years. The present value of the lease is: PV(LP) = \$3,500,000 × (PVFA(10%, 19) + 1) + \$20,000,000 / 1.10^{20} = \$3,500,000 × 9.3649 + \$2,972,873 = \$35,750,093.

Period	Year	Payments at beginning of year	Balance after payment	Interest @ 10%	Principal after interest and payments
					\$35,750,093
1	2013	3,500,000	32,250,093	3,225,009	35,475,102
2	2014	3,500,000	31,975,102	3,197,510	35,172,612
3	2015	3,500,000	31,672,612	3,167,261	34,839,874
4	2016	3,500,000	31,339,874	3,133,987	34,473,861
5	2017	3,500,000	30,973,861	3,097,386	34,071,247
6	2018	3,500,000	30,571,247	3,057,125	33,628,372
7	2019	3,500,000	30,128,372	3,012,837	33,141,209
8	2020	3,500,000	29,641,209	2,964,121	32,605,330
9	2021	3,500,000	29,105,330	2,910,533	32,015,863
10	2022	3,500,000	28,515,863	2,851,586	31,367,449
11	2023	3,500,000	27,867,449	2,786,745	30,654,194
12	2024	3,500,000	27,154,194	2,715,419	29,869,613
13	2025	3,500,000	26,369,613	2,636,961	29,006,575
14	2026	3,500,000	25,506,575	2,550,657	28,057,232
1	2027	3,500,000	24,557,232	2,455,723	27,012,956
16	2028	3,500,000	23,512,956	2,351,296	25,864,251
17	2029	3,500,000	22,364,251	2,236,425	24,600,676
18	2030	3,500,000	21,100,676	2,110,068	23,210,744
19	2031	3,500,000	19,710,744	1,971,074	21,681,818
20	2032	3,500,000	18,181,818	1,818,182	20,000,000

b. The lease amortization schedule for Sonora Lodge (lessee) is the same as for the lessor because it has guaranteed the residual value.

P18-21. ***Suggested solution:***

a. Lease amortization schedule for Yucatil (lessor).

Period	Year	Payments at beginning of year	Balance after payment	Interest @ 9%	Principal after interest and payments
					$371,674
1	2013	$80,000	$291,674	$26,251	$317,925
2	2014	$80,000	$237,925	$21,413	$259,338
3	2015	$80,000	$179,338	$16,140	$195,478
4	2016	$80,000	$115,478	$10,393	$125,872
5	2017	$80,000	$45,872	$4,128	$50,000

Note that the lessor includes the residual value in the present value calculation to determine the starting value of the lease amortization schedule, even though the residual is not guaranteed.

b. Lease amortization schedule for Zebra (lessee)

Period	Year	Payments at beginning of year	Balance after payment	Interest @ 9%	Principal after interest and payments
					$339,178
1	2013	$80,000	$259,178	$23,326	$282,504
2	2014	$80,000	$202,504	$18,225	$220,729
3	2015	$80,000	$140,729	$12,666	$153,394
4	2016	$80,000	$73,394	$6,606	$80,000
5	2017	$80,000	$0	$0	$0

The lessee does not include the residual value because it has not guaranteed it.

P18-22. ***Suggested solution:***

a. Lessee should classify it as a finance lease, determined as follows:

Criteria (one of the following)	Evaluation
Transfer of title or bargain purchase option	None
Lease covers major part of asset's useful life	5 years is 100% of useful life
PV of MLP is substantially all of the fair value	100% of fair value (see below)

	Calculation	Present value
Annual payments	$46,498 × (1 + PVAF(10%,4)) = $46,498 × 4.1699	$193,890
GRV	$10,000 / 1.10^5	6,209
PV (MLP)		$200,100
Fair value		$200,100
PV(MLP) as % of fair value		100%

Using BAII Plus: 2nd BGN, 2nd SET, 2nd QUIT, 5 N, 10 I/Y, 46498 PMT, 10000 FV, CPT PV ➔ PV = -200,100

b. Lessor should classify it as a finance lease, determined as follows:

Criteria (one of the following)	Evaluation
Transfer of title or bargain purchase option	None
Lease covers major part of asset's useful life	5 years is 100% of useful life
PV of MLP is substantially all of the fair value	100% of fair value (same as for lessee)

c. Lessee's lease amortization schedule

Period	Year	Payments at beginning of year	Balance after payment	Interest for year @ 10%	Reduction in principal	Principal after interest and payments
						$200,100
1	2011	$46,498	$ 153,602	$15,360	$31,138	168,962
2	2012	46,498	122,464	12,246	34,252	134,710
3	2013	46,498	88,212	8,821	37,677	97,033
4	2014	46,498	50,535	5,054	41,444	55,589
5	2015	46,498	9,091	909	45,589	10,000

d. Journal entries on January 1, 2011

	Lessee—Salem Creamery			Lessor—Big City Finance Company		
Jan. 1, 2011	Dr. Leased equipment	200,100		Dr. Lease receivable*	200,100	
	Cr. Lease obligation		200,100	Cr. Cash (to purchase equip)		200,100
	Dr. Lease obligation	46,498		Dr. Cash	46,498	
	Cr. Cash		46,498	Cr. Lease receivable		46,498

*This lease receivable is stated net of unearned interest.

e. Journal entries on December 31, 2011 and January 1, 2012:

	Lessee—Salem Creamery			Lessor—Big City Finance Company		
Dec. 31, 2011	Dr. Interest expense (see (c))	15,360		Dr. Lease receivable	15,360	
	Cr. Lease obligation		15,360	Cr. Interest revenue		15,360
	Dr. Depreciation expense ($200,100 – $10,000)/5	38,020				
	Cr. Acc. depreciation		38,020			
Jan. 1, 2012	Dr. Lease obligation	15,360		Dr. Cash	46,498	
	Dr. Lease obligation (see (c))	31,138		Cr. Lease receivable		46,498
	Cr. Cash		46,498			

f. Journal entry for Salem at end of lease:

Dec. 31, 2015	Dr. Lease obligation	10,000	
	Dr. Accumulated depreciation	190,100	
	Cr. Leased equipment		200,100
	Dr. Loss on residual value guarantee	6,000	
	Cr. Cash		6,000

P18-23. ***Suggested solution:***

a. Computing the PV of MLP

	Calculation	Present value
Annual payments	$34,478× (1 + PVAF(12%,3)) = $34,478 × 3.4018	$117,288
Guaranteed residual value	$20,000 / 1.12^4	12,710
PV (MLP)		$129,999
	Round to nearest $100	$130,000

Using BAII Plus: 2nd BGN, 2nd SET, 2nd QUIT, 4 N, 12 I/Y, 34478 PMT, 20000 FV, CPT PV ➔ PV = -129,999

b. Lessee's lease amortization schedule:

Period	Payments at beginning of year	Balance after payment	Interest for year @ 12%	Reduction in principal	Principal after interest and payments
					$130,000
1	$34,478	$95,522	$11,463	$23,015	106,985
2	34,478	72,507	8,701	25,777	81,208
3	34,478	46,730	5,608	28,870	52,338
4	34,478	17,860	2,140*	32,338	20,000

*Adjusted by $3 for rounding

c. Journal entries for the first year of the lease:

	Lessee			Lessor		
Jan. 1, Year 1	Dr. Leased truck	130,000		Dr. Lease receivable*	130,000	
	Cr. Lease obligation		130,000	Cr. Truck		130,000
	Dr. Lease obligation	34,478		Dr. Cash	34,478	
	Cr. Cash		34,478	Cr. Lease receivable		34,478
Dec. 31, Year 1	Dr. Interest expense	11,463		Dr. Lease receivable	11,463	
	Cr. Lease obligation		11,463	Cr. Interest revenue		11,463
	Dr. Depreciation expense	27,500				
	Cr. Accum. depreciation (($130,000 – $20,000)/4)		27,500			

*This lease receivable is stated net of unearned interest.

d. Journal entries for end of lease under different assumptions about actual residual value (RV).

	Lessee			Lessor		
RV = $20,000	Dr. Accum. depreciation	110,000		Dr. Truck	20,000	
	Dr. Lease liability	20,000		Lease receivable		20,000
	Cr. Leased truck		130,000			
RV = $4,000	Dr. Accum. depreciation	110,000		Dr. Cash	16,000	
	Dr. Lease liability	20,000		Dr. Truck	4,000	
	Cr. Leased truck		130,000	Cr. Lease receivable		20,000
	Dr. Loss on RV guarantee	16,000				
	Cr. Cash		16,000			
RV = $35,000	Dr. Accum. depreciation	110,000		Dr. Truck	20,000	
	Dr. Lease liability	20,000		Lease receivable		20,000
	Cr. Leased equipment		130,000	Note that lessor cannot recognize a gain for the value in excess of the expected residual value; that gain would be recognized when the truck is sold.		

e. Journal entries for 2011 assuming residual value is unguaranteed. Figures in **bold** denote differences from part c.

	Lessee			Lessor		
Jan. 1, Year 1	Dr. Leased truck (see a)	**117,288**		Dr. Lease receivable	130,000	
	Cr. Lease obligation		**117,288**	Cr. Truck		130,000
	Dr. Lease obligation	34,478		Dr. Cash	34,478	
	Cr. Cash		34,478	Cr. Lease receivable		34,478
Dec. 31, Year 1	Dr. Interest expense (($117,288 – $34,478) × 12%)	**9,937**		Dr. Lease receivable	11,463	
	Cr. Lease obligation		**9,937**	Cr. Interest revenue		11,463
	Dr. Depreciation expense	**29,322**				
	Cr. Accum. depreciation (($117,288)/4)		**29,322**			

Using BAII Plus: 2nd BGN, 2nd SET, 2nd QUIT, 4 N, 12 I/Y, 34478 PMT, CPT PV ➔ PV = -117,288

P18-24. ***Suggested solution:***

a. Vanier should classify it as a finance lease, determined as follows:

Criteria (one of the following)	Evaluation
Transfer of title or bargain purchase option	None
Lease covers major part of asset's useful life	7 years is 70% of useful life➔ possible
PV of MLP is substantially all of the fair value	97% of fair value (see below) ➔ yes

	Calculation	Present value
Annual payments	$31,200× (PVAF(12%,7)) = $31,200× 4.5638	$142,389
Fair value		$146,913
PV(MLP) as % of fair value		97%

Using BAII Plus: 7 N, 12 I/Y, 31200 PMT, CPT PV ➔ PV = -142,389

b. Thornhill should classify it as a finance lease, determined as follows:

Criteria (one of the following)	Evaluation
Transfer of title or bargain purchase option	None
Lease covers major part of asset's useful life	7 years is 70% of useful life➔ possible
PV of MLP is substantially all of the fair value	97% of fair value ➔ yes

c. Vanier's lease amortization schedule (lessee)

Period	Year	Interest for year @ 12%	Payments at end of year	Reduction in principal	Principal after interest and payments
					$142,389
1	2013	$17,087	$31,200	$14,113	128,276
2	2014	15,393	31,200	15,807	112,469
3	2015	13,496	31,200	17,704	94,765
4	2016	11,372	31,200	19,828	74,937
5	2017	8,992	31,200	22,208	52,729
5	2018	6,328	31,200	24,872	27,857
7	2019	3,343	31,200	27,857	0

d. Thornhill's lease amortization schedule (lessor)

Period	Year	Interest for year @ 12%	Payments at end of year	Reduction in principal	Principal after interest and payments
					$146,913*
1	2013	$17,630	$31,200	$13,570	133,343
2	2014	16,001	31,200	15,199	118,144
3	2015	14,177	31,200	17,023	101,121
4	2016	12,135	31,200	19,065	82,055
5	2017	9,847	31,200	21,353	60,702
5	2018	7,284	31,200	23,916	36,786
7	2019	4,414	31,200	26,786	10,000

*$142,389 + $10,000 / 1.12^7 = $142,389 + $4,524 = $146,913

Using BAII Plus: 7 N, 12 I/Y, 31200 PMT, 10000 FV, CPT PV ➔ PV = -146,913

e. Journal entries for 2013:

	Lessee—Vanier Construction			Lessor—Thornhill Equipment		
Jan. 1, 2013	Dr. Leased equipment	142,389		Dr. Lease receivable (net of unearned interest)	146,913	
	Cr. Lease obligation		142,389	Cr. Sales revenue		146,913
				Dr. Cost of goods sold	100,000	
				Cr. Inventories		100,000
				Dr. Sales revenue (for residual value not "sold")*	4,524	
				Cr. Cost of goods sold		4,524
Dec. 31, 2013	Dr. Interest expense (see c)	17,087		Dr. Cash	31,200	
	Dr. Lease obligation	14,113		Cr. Interest revenue (see d)		17,630
	Cr. Cash		31,200	Cr. Lease receivable (net)		13,570
	Dr. Depreciation expense ($142,389/7)	20,341				
	Cr. Acc. depreciation		20,341			

*Residual value not "sold" = $146,913 – $142,389 = $4,524

P18-25. ***Suggested solution:***

a. The interest revenue is the same for all four scenarios, $17,630, which is the amount originally computed ($146,913 × 12%).

b. Journal entries at end of lease for lessor:

	Case (i) Original	Case (ii) GRV of $10,000	Case (iii) BPO of $10,000 exercised	Case (iv) BPO of $10,000 not exercised
Dr. Asset held for lease	10,000	8,000		1,000
Dr. Cash		2,000	10,000	
Dr. Loss on unexercised BPO				9,000
Cr. Lease receivable	10,000	10,000	10,000	10,000

P18-26. ***Suggested solution:***

a. Depreciation expense calculations
GRV = guaranteed residual value; BPO = bargain purchase option

	Case (i) Original	Case (ii) GRV of $10,000	Case (iii) BPO of $10,000	Case (iv) BPO of $10,000
PV of annual payments	$142,389	$142,389	$142,389	Same as (iii)
PV of GRV or BPO	0	4,524	4,524	
PV of MLP = value of leased asset initially recognized	$142,389	$146,913	$146,913	
Less residual value at end of lease		10,000		
Less residual value at end of useful life			4,000	
Depreciable amount	$142,389	$136,913	$142,913	
Years of lease term	÷ 7	÷ 7		
Years of useful life			÷ 10	
Annual depreciation	$ 20,341	$ 19,559	$ 14,291	

b. Journal entries at end of lease for lessee

	Case (i) Original		Case (ii) GRV of $10,000		Case (iii) BPO of $10,000 exercised		Case (iv) BPO of $10,000 not exercised	
Dr. Acc. depr (leased equip)	142,389		136,913		100,037		100,037	
Cr.Leased equipment		142,389		146,913		146,913		146,913
Dr. Lease obligation			10,000		10,000		10,000	
Dr. Loss on residual value guarantee			2,000				36,876	
Cr. Cash				2,000		10,000		
Dr. Equipment					146,913			
Cr. Acc. depr (equipment)						100,037		

P18-27. ***Suggested solution:***

Company B will tend to appear stronger financially because its leases provide off-balance-sheet financing. B is able to avoid recognizing the lease assets and the lease obligations on the balance sheet, which tends to improve leverage ratios such as debt-to-assets compared with capitalizing leases. On the income statement, the operating lease expense tends to be smaller in the early years of a lease compared with the combined amount of expenses from depreciation and interest for a finance lease.

P18-28. ***Suggested solution:***

a. Present value of lease:

Cash flows	Calculation	Present value
Annual payments	$11,950 × (1 + PVFA(6%,7)) = $11,950 × 6.5824	$78,659

Using BAII Plus: 2nd BGN, 2nd SET, 2nd QUIT, 8 N, 6 I/Y, 11950 PMT, CPT PV ➔ PV = -78,659

b. Loan payments:

$78,900 / PVFA(6%,8) = $78,900 / 6.2098 = $12,706.

Using BAII Plus: 8 N, 6 I/Y, -78,900 PV, CPT PMT ➔ PMT = -12,706

c. Impact on financial statement accounts:

	Option 1 Lease		Option 2 Purchase	
Account	Calculation	Amount	Calculation	Amount
Non-current assets	$78,660 × 7/8	$68,828	$78,900 × 7/8	$69,038
Liabilities	($78,660 – $11,950) × 1.06	70,713	($78,900) × 1.06 – $12,706	70,928
Depreciation	$78,660 / 8	$ 9,833	$78,900 / 8	$ 9,863
Interest expense	$78,660 – $11,950) × 6%	4,003	$78,900 × 6%	4,734
Effect on income		$13,836		$14,597

Under both options, non-current assets will increase, as will liabilities. Net income will include expenses for depreciation and interest. The amounts are not materially different between the two options.

d. Reasons to lease: asset has no expected value at the end of the lease; leasing is slightly cheaper in terms of present value (but not materially so).
Reasons to buy: the asset remains the property of Longview once the loan is fully paid.

P18-29. ***Suggested solution:***

a. First compute the value of the lease using minimum lease payments (MLP):

Cash flows	Calculation	Present value
Annual payments	$25,000 × (1 + PVFA(6%,4)) = $25,000 × 4.4651	$111,628

Using BAII Plus: 2nd BGN, 2nd SET, 2nd QUIT, 5 N, 6 I/Y, 25000 PMT, CPT PV ➔ PV = -111,628

The present value of the MLP ($111,628) constitutes only 66% of the fair value of the equipment ($170,000). However, the lease term of 5 years equals the expected useful life, so this is a finance lease.

Journal entries:

Apr. 1	Dr. Leased equipment	111,628	
	Cr. Lease obligation		111,628
	Dr. Lease obligation	25,000	
	Cr. Cash		25,000
Mar. 31	Dr. Interest expense (($111,628 – $25,000) × 6%)	5,198	
	Cr. Lease obligation		5,198
	Dr. Depreciation expense ($111,628 / 5)	22,326	
	Cr. Accumulated depreciation		22,326

b. Balance sheet presentation:

Non-current assets	
Lease equipment	$111,628
Less: accumulated depreciation	(22,326)
Net	$ 89,302
Current liabilities	
Lease obligation – current portion	$25,000
Non-current liabilities	
Lease obligation ($111,628 – $25,000 + $5,198 – $25,000)	66,826

P18-30. ***Suggested solution:***

Balance sheet presentation for December 31, 2012:

Non-current assets	
Lease equipment	$130,000
Less: accumulated depreciation (($130,000 – $20,000) × 2/4)	(55,000)
Net	$ 75,000
Current liabilities	
Lease obligation – current portion*	$ 34,478
Non-current liabilities	
Lease obligation ($81,207 from schedule – $34,478 current portion)	$ 46,729

*It is important to note that the current portion is the amount of the reduction in the principal of the lease obligation in the coming year. The annual payment of $34,478 is made on the first day of the next fiscal year and therefore the entire amount will go toward reducing the principal.

P18-31. ***Suggested solution:***

Balance sheet presentation for December 31, 2013:

Non-current assets	
Leased equipment	$142,389
Less: accumulated depreciation ($142,389 × 3/7)	(61,024)
Net	$ 81,365
Current liabilities	
Lease obligation – current portion*	$ 19,828
Non-current liabilities	
Lease obligation ($94,765 from schedule – $19,828 current portion)	$ 74,937

*It is important to note that the current portion is the amount of the reduction in the principal of the lease obligation in the coming year. The annual payment of $31,200 comprises both principal reduction and interest to be incurred over the year 2013.

P18-32. ***Suggested solution:***

a. Prairie (the lessee) would classify the lease as a finance lease, determined as follows:

Criteria (one of the following)	Evaluation
Transfer of title or bargain purchase option	Yes
Lease covers major part of asset's useful life	Yes—100% of 12-year useful life
PV of MLP is substantially all of the fair value	Yes—100% of fair value

	Calculation	Present value
Annual payments	$280,000 × (1 + PVAF(12%,11)) = $280,000 × 6.9377	$1,942,556
Fair value	Fair value equals the lease payments discounted at the lessor implicit rate because the lessor used the fair value to set the annual lease payments.	$1,942,556
PV (MLP) as % of fair value		100%

Using BAII Plus: 2nd BGN, 2nd SET, 2nd QUIT, 12 N, 12 I/Y, 280000 PMT, CPT PV ➔ PV = -1,942,556

Loco-Motive should classify it as a finance lease, determined as follows:

Criteria (one of the following)	Evaluation
Transfer of title or bargain purchase option	Yes
Lease covers major part of asset's useful life	Yes—100% of 12-year useful life
PV of MLP is substantially all of the fair value	Yes—100% of fair value

b. Journal entries at inception of lease and first rental payment:

	Lessee—Prairie Railroad			Lessor—Loco-Motive Corporation		
Jan. 1, 2011	Dr. Leased equipment	1,942,556		Dr. Lease receivable*	1,942,556	
	Cr. Lease obligation		1,942,556	Cr. Sales revenue		1,942,556
				Dr. Cost of goods sold	1,550,000	
				Cr. Inventories		1,550,000
	Dr. Lease obligation	280,000		Dr. Cash	280,000	
	Cr. Cash		280,000	Cr. Lease receivable		280,000

*This lease receivable is stated net of unearned interest.

c. Lease amortization schedule for lessee (Prairie):

Period	Year	Payments at beginning of year	Balance after payment	Interest for year @ 12%	Reduction in principal	Principal after interest and payments
						$1,942,556
1	2011	$280,000	$1,662,556	$199,507	$80,493	1,862,063
2	2012	280,000	1,582,063	189,848	90,152	1,771,911
3	2013	280,000	1,491,910	179,029	100,971	1,670,940

d. Journal entries for interest for 2011:

	Lessee—Prairie Railroad			Lessor—Loco-Motive Corporation		
Dec.31, 2011	Dr. Interest expense	199,507		Dr. Lease receivable*	199,507	
	Cr. Lease obligation		199,507	Cr. Interest revenue		199,507

*This lease receivable is stated net of unearned interest.

e. Presentation for December 31, 2011:

Lessee	
Non-current assets	
Lease equipment	$1,942,556
Less: accumulated depreciation ($1,942,556 / 12)	(161,880)
Net	$1,780,676
Current liabilities	
Lease obligation – current portion	$ 280,000
Non-current liabilities	
Lease obligation ($1,862,063 from schedule – $280,000 current portion)	$1,582,063
Income statement	
Depreciation expense	$ 161,880
Interest expense	199,507

Lessor	
Current assets	
Lease receivable—current portion	$ 280,000
Non-current assets	
Lease receivable	1,582,063
Income statement	
Sales	$1,942,556
Cost of sales	1,500,000
Interest income	199,507

P18-33. ***Suggested solution:***

a. Both values are used. Air Canada specifies in Note 3(T) that it records a lease asset and obligation at the lesser of fair value and present value of lease payments. This policy is consistent with the requirements of IFRS

b. Note 9 shows that finance lease obligations amounted to $426 million.

c. The company used an average interest rate of 10.01% to discount its finance lease obligations. The rate looks reasonable since it approximates the company's incremental borrowing cost. Note 9 shows a wide range of interest rates, which is a function of the currencies involved.

9. LONG-TERM DEBT AND FINANCE LEASES

	Final Maturity	Weighted Average Interest Rate (%)	2011	2010
Aircraft financing (a)				
Fixed rate US dollar financing	2012 – 2021	7.52	$ 1,515	$ 1,863
Floating rate US dollar financing	2015 – 2021	2.52	701	620
Floating rate Japanese yen financing	2020	0.33	199	207
Floating rate CDN dollar financing	2012	2.98	2	10
Senior secured notes – US dollar (b)	2015 – 2016	9.94	813	796
Senior secured notes – CDN dollar (b)	2015	10.13	300	300
Other secured financing – US dollar (c)	2013 – 2015	5.72	235	250
Other secured financing – CDN dollar (d)	2012 – 2032	4.61	204	134
Long-term debt			**3,969**	**4,180**
Finance lease obligations (e)	2013 – 2033	10.01	426	493
Total debt and finance leases			**4,395**	**4,673**
Unamortized discount			(12)	(16)
Unamortized debt issuance costs			(53)	(62)
Current portion			(424)	(567)
Long-term debt and finance leases			**$ 3,906**	**$ 4,028**

d. The company expensed $46 million in interest on finance leases.
e. The carrying value of leased assets ($288 million) is lower than the balance of lease obligations ($426 million). The difference is $138 million. The reason for the asset value being lower is that depreciation lowers the asset value more quickly than the principal reduction on the lease obligation. The lease obligation is typically like a mortgage, where the principal balance reduces slowly at first because most of the payment goes toward covering interest.

P18-34. ***Suggested solution:***

a. Telus's depreciation policy for leased assets is straight-line (see Note 1(i)).
b. Note 20 indicates that operating lease payments total $1,419 million for all future years. Amounts due in the next five years total $754.
c. At the end of 2011, the company had $3 million of deferred gains on sale-leasebacks and the amount arose from transactions on buildings (see Note 24). IFRS requires the deferral of gains to prevent artificial gains (or losses) from being recognized on sales of assets that are then immediately leased back because the sale price can be arbitrarily set with the lease payments adjusted to compensate.

P18-35. ***Suggested solution:***

a. Bombardier's Note 18 indicates that, as a lessee, the company had $214 million of assets reduced by $88 million of accumulated depreciation.
b. The payments for operating leases in 2012 are $100 million. Information on operating leases is available from Total commitments for operating lease payments in all future years is $587 million. Note 35:

OPERATING LEASES

The Corporation leases buildings and equipment and assumes aircraft operating lease obligations in connection with the sale of new aircraft. Future minimum lease payments, mostly related to buildings and equipment, under non-cancellable operating leases are due as follows as at:

	December 31, 2011	January 31, 2011	February 1, 2010
Within 1 year	**$100**	$108	$ 98
Between 1 and 5 years	**216**	248	258
More than 5 years	**271**	227	230
	$587	$583	$586

Rent expense was $123 million for the fiscal year ended December 31, 2011 ($115 million for the fiscal year ended January 31, 2011).

c. The present value of operating lease payments is $454.3 million, computed as follows.

Year after 2011	Payment	Discount factor @5.35%	Present value
1	$100.00	0.9492	$ 94.92
2	54.00	0.9010	48.65
3	54.00	0.8553	46.18
4	54.00	0.8118	43.84
5	54.00	0.7706	41.61
6	54.20	0.7315	39.65
7	54.20	0.6943	37.63
8	54.20	0.6591	35.72
9	54.20	0.6256	33.91
10	54.20	0.5938	32.19
Total	$587.00		$ 454.30

d. The debt-to-equity ratio based on reported figures is 34.6. If the operating leases were to be capitalized, the ratio would increase to 35.2.

	As reported	With operating leases capitalized
Total liabilities	23,193	23,193
PV of operating leases		454
Adjusted liabilities	23,193	23,647
Total equity	671	671
Debt-to-equity ratio	34.6	35.2

e. The company had lease receivables at $88 million. This amount is reduced by $10 million in accumulated depreciation.

f. In the sale and leaseback transactions, the company sells the aircraft and then leases them back. (see Note 24).

P18-36. ***Suggested solution:***

	Devlin Company (seller-lessee)		$000s	Bancroft (buyer-lessor) Bank		$000s
Jan. 1, 2013	Dr. Cash	64,000		Dr. Building	64,000	
	Cr.Building (net)		40,000	Cr. Cash		64,000
	Cr. Deferred gain		24,000			
	Dr. Leased building	64,000		Dr. Lease receivable	64,000	
	Cr. Lease obligation		64,000	Cr.Building		64,000
	Dr. Lease obligation	7,650		Dr. Cash	7,650	
	Cr. Cash		7,650	Cr. Lease receivable		7,650
Dec. 31, 2013	Dr. Interest expense	6,762		Dr. Lease receivable	6,762	
	Cr. Lease obligation (($64,000 – $7,650) × 12%)		6,762	Cr. Interest revenue		6,762
	Dr. Depreciation expense	3,200				
	Cr. Accum. depreciation ($64,000 / 20)		3,200			
	Dr. Deferred gain ($24,000/20)	1,200				
	Cr. Depreciation expense		1,200			

Note that the net depreciation is $3,200,000 – $1,200,000 = $2,000,000, which is the amount that would have been recorded had Devlin not engaged in the sale-leaseback and depreciated the carrying amount of $40,000,000 over 20 years.

P18-37. ***Suggested solution:***

	Devlin Company (seller-lessee)		$000s	Bancroft Bank(buyer-lessor)		$000s
Jan. 1, 2013	Dr. Cash	64,000		Dr. Building	64,000	
	Cr.Building (net)		40,000	Cr. Cash		64,000
	Cr. Deferred gain		24,000			
	Dr. Prepaid rent	7,650		Dr. Cash	7,650	
	Cr. Cash		7,650	Cr. Unearned rent revenue		7,650
Dec. 31, 2013	Dr. Rent expense	7,650		Dr. Unearned rent revenue	7,650	
	Cr. Prepaid rent		7,650	Cr. Rent revenue		7,650
	Dr. Deferred gain	1,200		Dr. Depreciation expense	3,200	
	Cr. Rent expense		1,200	Cr. Accum. depreciation ($64,000 / 20)		3,200

Note that the deferred gain is amortized in proportion to rental payments. Total payment = 20 × $7650k = $153,000k. Deferred gain recognized in 2011 = ($7,650k / $153,000k) × $24,000k = $1,200. In this case, the rental payments are equal in each year, so the amount amortized in each year is just 1/20th of the total gain deferred.

P18-38. ***Suggested solution:***

a. This lease is an operating lease because it does not transfer substantially all of the risks and rewards of ownership. Specifically, there is no transfer of title or bargain purchase option, the lease term of 10 years is only one-half of the 20 year useful life, and the present value of minimum lease payments is $2,250,000 × (PVFA(7%, 9) + 1) = $2,250,000 × 7.5152 = $16,909,273, which is only 70.5% of the fair value of $24,000,000.

b. If Efron classifies this lease as operating, then it can recognize the gain on the sale, since the sale price is at fair value. That is, the sale is considered to be separate from the leasing transaction. The journal entries are then as follows:

	Efron Company (seller-lessee)		$000s	Gordon Capital (buyer-lessor)		$000s
Jan. 1,	Dr. Cash	24,000		Dr. Cargo ship - cost	24,000	
2014	Dr. Accum. depr. – cargo ship	10,000		Cr. Cash		24,000
	Cr.Cargo ship - cost		30,000			
	Cr. Gain on sale		4,000			
	Dr. Prepaid rent	2,250		Dr. Cash	2,250	
	Cr. Cash		2,250	Cr. Unearned rent revenue		2,250
Dec. 31,	Dr. Rent expense	2,250		Dr. Unearned rent revenue	2,250	
2014	Cr. Prepaid rent		2,250	Cr. Rent revenue		2,250
				Dr. Depreciation expense	1,200	
				Cr. Accum. depr. – cargo ship ($24,000 / 20)		1,200

P18-39. ***Suggested solution:***

a. This lease is an operating lease because it does not transfer substantially all of the risks and rewards of ownership. Specifically, there is no transfer of title or bargain purchase option, the lease term of 5 years is only one-quarter of the 20 year useful life, and the present value of minimum lease payments is $1,600,000 × (PVFA(8%, 4) + 1) = $1,600,000 × 4.3121 = $6,899,403, which is only which is only 57% of the fair value of $12,000,000.

b. If Amelia classifies this lease as operating, then it cannot recognize the gain on the sale, since the sale price is *not* at fair value. With the sale price above fair value, Amelia must defer the gain and recognize it in proportion to its rental payments. The journal entries are then as follows:

	Amelia Company (seller-lessee)		$000s	Lewis Capital (buyer-lessor)		$000s
Jan. 1,	Dr. Cash	14,000		Dr. Plane - cost	14,000	
2015	Dr. Accum. depr. – plane	12,000		Cr. Cash		14,000
	Cr.Plane - cost		20,000			
	Cr. Deferred gain		6,000			
	Dr. Prepaid rent	1,600		Dr. Cash	1,600	
	Cr. Cash		1,600	Cr. Unearned rent revenue		1,600
Dec. 31,	Dr. Rent expense	1,600		Dr. Unearned rent revenue	1,600	
2015	Cr. Prepaid rent		1,600	Cr. Rent revenue		1,600
	Dr. Deferred gain ($6,000 / 5)	1,200		Dr. Depreciation expense	700	
	Cr. Rent expense		1,200	Cr. Accum. depr. – cargo ship ($14,000 / 20)		700

P18-40. ***Suggested solution:***

The present value of minimum lease payments (PV of MLP) discounted at 7% is computed as follows:

PV of MLP = $175,000 × PVFAD(7%,15)
PV of MLP = $175,000 × (1 + PVFA(7%,14))
PV of MLP = $175,000 × (1 + 8.7455)
PV of MLP = $1,705,457

Using BAII Plus: 2nd BGN, 2nd SET, 2nd QUIT, 15 N, 7 I/Y, 175000 PMT, CPT PV ➔ PV = -1,705,457

This amount comprises substantially all (97.45%) of the fair value of the property of $1,750,000.

The lease does not contain terms allowing ownership to pass, nor does it provide a bargain purchase option. In addition, the fair value of land at the inception of the lease is significant in relation to the total fair value of the leased property. The land and building must therefore be considered separately for the purposes of classifying the lease. The minimum lease payments must be allocated between the land and the building in proportion to their fair values. The portion of the lease applicable to land is classified as an operating lease. The entry would be:

Dr. Building under capital lease (60% × $1,705,457)	1,023,274	
Cr. Obligation under capital lease		1,023,274
Dr. Rent expense (land) (40% × $175,000)	70,000	
Dr. Obligation under capital lease (60% × $175,000)	105,000	
Cr. Cash (given)		175,000

At the end of the first year, the entries would be:

Dr. Interest expense (($1,023,274 – $105,000) × 7%)	64,279	
Cr. Lease obligation		64,279
Dr. Depreciation expense (10% × $1,023,274)	102,327	
Cr. Accumulated depreciation (building)		102,327

Since the transaction is a sale and leaseback, it must be classified as such. IFRS and ASPE require the gain on sale to be deferred and taken into income over the lease term. The portion of the gain related to the lease of the land, which is an operating lease, is amortized over the lease term. The portion of the gain related to the building must be deferred and amortized in proportion to the amortization of the leased asset. The entries at the time of sale would be:

Dr. Cash	1,750,000	
Cr. Deferred gain—building (60% × $1,500,000)		900,000
Cr. Deferred gain—land (40% × $1,500,000)		600,000
Cr.Land, building, and accumulated depreciation accounts for carrying amount of land and building		250,000

At the end of the first year, the gain would be amortized as follows:

Dr. Deferred gain—land)($600,000 / 15 years)	40,000	
Cr. Rent expense		40,000
Dr. Deferred gain—building (10% × $900,000 declining balance)	90,000	
Cr. Depreciation expense		90,000

N. Mini-Cases

Case 1: Debt Laiden Inc. ***Suggested solution:***

In order to come to a decision on the proposed transaction, we need to evaluate whether the transaction would reduce leverage on the balance sheet and improve short-term profitability, criteria that you (Ms. Laiden) have set out.

The transaction being proposed is a sale-leaseback, and there are specific accounting standards to be followed for such transactions. For such transactions, we must evaluate whether the lease is an operating or finance lease (sometimes called a capital lease), and how any gains (or losses) resulting from the sale should be allocated to different reporting periods. An operating lease would not appear on the balance sheet, while a finance lease would appear as both an asset for the equipment and a liability for future lease payments.

Operating or finance lease and impact on balance sheet
The overarching criterion for evaluating whether a lease is a finance lease is whether the lease transfers substantially all the risks and rewards of ownership in the leased property. A number of indicators help to determine whether there is such a transfer of risks and rewards.

1. Is there a transfer of ownership to lessee (Debt Laiden) or a bargain purchase option that allows the purchase of the asset at a price significantly below fair value at the end of the lease? The information provided suggests that there is neither a transfer of ownership nor a bargain purchase option. While there is an option to purchase the equipment for $500,000, that amount is the estimated fair value of the equipment at the end of the lease, so it is not a bargain price.
2. Is the lease term a major part of the economic life of the asset? The lease is for a period of 10 years, while the equipment is expected to last for 15 years. Two-thirds is a significant portion of the useful life, but generally not considered to constitute a "major part" of the economic life. A rule of thumb is that around three-quarters represents a "major part." The significant residual value at the end of 10 years corroborates the significant useful life remaining at that time.
3. Does the present value of the minimum lease payments constitute substantially all of the fair value of the leased asset? Based on my calculation, the lease payments do represent substantially all of the fair value of the equipment. A rule of thumb is that a lease that comprises at least 90% of the fair value of the lease property does constitute substantially all of the fair value.

Annual lease payments (due at end of each year)	$ 274,252
Present value factor using implicit interest rate[1] of 15% for 10 years	5.0188
Present value of minimum lease payments	$1,376,416
Fair value of equipment under lease	1,500,000
Present value of lease as a percentage of fair value	91.8%

Based on this analysis, it appears that the lease should be classified as a finance lease. The result of this classification is that the balance sheet would record an asset and a liability equal to the present value of the lease payments ($1,376,416). Entering this sale-leaseback does generate $1,500,000 immediately, which you indicated would be used to reduce debt. As a result, your liabilities would decline very modestly by the difference of $123,584.

Allocation of gains and impact on income statement

In a sale-leaseback in which the lease is classified as a finance lease, any gains or loss on the sale portion of the transaction must be deferred and recognized into income in the same manner as the asset is depreciated. For this transaction, I have computed the gain to be as follows:

Original cost, purchased two years ago	$1,000,000
Depreciation for 1st year (15% declining balance)	(150,000)
Depreciation for 2nd year	(127,500)
Carrying value when equipment sold	$ 722,500
Sale proceeds	1,500,000
Gain on sale	$ 777,500

This gain would be deferred and amortized over the 10-year term of the lease on a declining-balance basis, as that is the intended method of depreciation for the equipment.

The net effect on the income statement in the next year would be as follows (DB denotes declining balance method of depreciation or amortization):

Interest saved on repayment of $1,500,000 loan at 12%	$180,000
Depreciation expense avoided due to sale of equipment ($722,500 × 15% DB)	108,375
Interest portion of lease payments ($1,376,416 × 15%)	(206,462)
Depreciation expense on leased equipment ($1,376,416 × 15% DB)	(206,462)
Amortization of deferred gain from sale-leaseback ($777,500 × 15% DB)	116,625
Net increase (decrease) in income	$ (7,924)

Thus, there is a negligible but marginally negative effect on income.

Conclusion

The sale-leaseback transaction does not meet the objectives of decreasing leverage and increasing income. Based on these criteria, your company should not engage in this transaction. Aside from financial statement considerations, you should also perform a net present value analysis of this transaction to evaluate its merits.

[1]Mr. Fin of Sharky's Financial Services had indicated 15% to be the implicit interest rate. We can confirm this by solving for *r* in a spreadsheet that contains 10 annual payments of $274,252 and $500,000 residual value at the end of 10 years, and which sets the present value of these payments to equal $1,500,000.

Case 2: PDQ Leasing Options. ***Suggested solution:***

I have analyzed the alternatives relating to the fleet replacement and expansion program. In addition to the two leasing alternatives, I have also considered a third alternative of borrowing from the bank and purchasing the required vehicles. While you had previously excluded it from consideration, the borrow-and-buy alternative provides a benchmark for evaluating the other two alternatives.

I have analyzed the three alternatives along four dimensions: strategic and operational considerations; cost effectiveness in terms of present value; impact on the income statement; and impact on the balance sheet.

Alternative:	Short-term leases	Long-term leases	Borrow and buy
Strategic and operational fit	Short-term leases would be ideal if demand for PDQ's services is highly volatile. This could be the case if competition is fierce, causing demand to fluctuate; however, there is no information that indicates this to be the case.	Demand for parcel delivery services appear to be stable and growing. A stable fleet of vehicles would facilitate planning and scheduling.	Same as long-term lease alternative.
Cost effectiveness	This is the most costly alternative. The implicit rate on these leases is 17.8% (obtained using spreadsheet solver). At almost double the company's incremental borrowing rate, this is a high cost for flexibility. Stated differently, the present value cost of this option at the incremental borrowing rate of 9% is \$15,000 × (1 + PVFA(9%,9)) = \$15,000 × 6.9952 = \$104,928.	This is the least costly option, with an implicit rate of 7.9% (obtained using spreadsheet solver). This rate is a percentage below the incremental borrowing rate of 9%. Stated differently, the present value cost of this option at the incremental borrowing rate of 9% is \$11,000 × (1 + PVFA(9%,9)) = \$11,000 × 6.9952 = \$76,948.	The cost of this option is the incremental borrowing rate of 9%. This is less costly than the short-term lease, but slightly more costly than the long-term lease.
Impact on income	As operating leases, the only expense would be the \$15,000 for the lease payments per truck each year.	These would be finance leases. In the first year: Interest expense = (\$80,000 – \$11,000) × 7.9% = \$5,451; Depreciation = \$80,000 × 20% = \$16,000; Total = \$21,451 per truck	In the first year: Interest expense = \$80,000 × 9% = \$7,200; Depreciation = \$80,000 × 20% = \$16,000; Total = \$23,200 per truck
Impact on balance sheet	No direct impact on assets or liabilities.	On lease inception, assets and liabilities increase by \$80,000 per truck.	Assets and liabilities increase by \$80,000 per truck on date of purchase and financing.

As this analysis shows, the short-term lease option is attractive for financial reporting reasons, at least in the short term, because the lease expense is low relative to the combined expense of interest and depreciation under the other two alternatives. However, the cost of the short-term lease option in terms of cash flows is the highest, and this is as would be expected since agency costs of leasing are the highest with short-term leases. In present value terms, the short-term leases are 36% more expensive than the long-term leases (\$104,928 / \$76,948 – 1).

The long-term lease alternative is in many respects similar to the borrow-and-buy alternative. These leases would be classified as finance leases, so the accounting mimics the treatment as if the vehicles were purchased and financed by a loan. In this instance, the implicit

rate on the long-term lease alternative is only 7.9%, which is below PDQ's incremental borrowing rate. Consequently, the long-term lease is preferable to the borrow-and-buy option.

Recommendation
I recommend that you choose the long-term lease option. This option fits PDQ's growth strategy and operational characteristics. While you expressed some concern regarding investors' reaction to our reported income and leverage, I argue that this concern is not warranted. Investors will have information about the leases from the note disclosures, whether they are classified as operating or capital leases. For the long term, it is more important to focus on shareholder value in terms of the present value of cash flows rather than managing earnings and balance sheet figures for the short term.

Case 3: Lilliput Transport Authority. *Suggested solution:*

a. The annual payment per bus required by MBM is determined based on the following facts:

Present value	60,000
Discount rate	9%
# of years	9
Residual value	14,500
PMT = ?	($8,160)

A conceptual way to determine the payment value (excluding maintenance), is to follow a three step process: 1) calculate the present value of the estimated residual value of the bus; 2) subtract (1)from the current value of the bus to produce the present value of the lease and then 3) calculate the annuity payment that has present value equal to (2).

Present value of a single bus = $60,000
Present value of $14,500 to be received 9 periods from now (at discount rate of 9%) is $14,500/((1+.09)^9) = $6,676
Present value of the lease is $60,000 - $6,676 = $53,324
Can then use a financial calculator or PMT financial function in a spreadsheet program inputting the present value, number of periods and discount rate which will result in displaying the PMT = $8,160
The annual payment per bus needs to include $1,500 for maintenance, thus it is equal to 8,160 + 1,500 = $9,660 per bus. Of course, for the entire fleet of 100 busses, this annual payment would then be $966,000.

b. For LTA we need to consider the following issues to determine the classification:
   i. Is there a transfer of ownership or bargain purchase option? In this case the answer is **no**.
   ii. Is the lease term at least 75% of the economic life of leased asset? In this case it is only 69.2% (9/13), and therefore the answer is **no**.
   iii. Is the PV of minimum lease payments (excluding executory costs) is at least 90% of the fair value of the leased asset? Because the residual value is not guaranteed, it

is not included in the minimum lease payments. In this case (see below) it is 88.9%, and therefore the answer is **no**.

# of years	9
Annual payment (from part a)	($8,160)
Discount rate	9%
PV of payments	$53,324
PV as % of asset	88.9%

Because none of the criteria are met, for LTA this is an operating lease.

c. Based on the way the company and its auditor interpret IFRS, both the length of the contract criterion (69.2%>60%) and the PV of lease payment criterion (88.9%>85%) are met, and LTA will classify the deal as a finance lease.

d. Entries for LTA (Note: Below exhibits and entries are on a "per bus" basis – actual amounts will be multiplied by the fleet size of 100)

The lessee will use the amortization table (not required for the answer):

Date	Lease payment	Interest expense	Reduction in obligation	Lease obligation
1.10.2014				53,324
1.10.2014	8,160	0	8,160	45,164
1.10.2015	8,160	4,065	4,095	41,069
1.10.2016	8,160	3,696	4,464	36,605
1.10.2017	8,160	3,294	4,866	31,739
1.10.2018	8,160	2,857	5,303	26,436
1.10.2019	8,160	2,379	5,781	20,655
1.10.2020	8,160	1,859	6,301	14,354
1.10.2021	8,160	1,292	6,868	7,486
1.10.2022	8,160	674	7,486	0

October 1, 2014

Asset under capital lease	53,324	
Obligation under capital lease		53,324
Obligation under capital lease	8,160	
Prepaid maintenance	1,500	
Cash		9,660

December 31, 2014

Interest expense ((53,324 – 8,160) x 9% x 3/12)	1,016	
Accrued interest payable		1,016
Maintenance expenses ($1,500 x 3/12)	375	
Prepaid expenses		375
Amortization expense ($53,324)/9 x 3/12).....	1,481	
Accumulated amortization.....		1,481

Entries for MBM (Note: Below exhibits and entries are on a "per bus" basis – actual amounts will be multiplied by the fleet size of 100)
The lessor will use the amortization table (not required for the answer)*:*

Date	Lease payment	Interest expense	Reduction in obligation	Lease obligation
1.10.2011				60,000
1.10.2014	8,160	0	8,160	51,840
1.10.2015	8,160	4,666	3,494	48,346
1.10.2016	8,160	4,351	3,809	44,537
1.10.2017	8,160	4,008	4,152	40,385
1.10.2018	8,160	3,635	4,525	35,860
1.10.2019	8,160	3,227	4,933	30,927
1.10.2020	8,160	2,783	5,376	25,551
1.10.2021	8,160	2,300	5,860	19,691
1.10.2022	8,160	1,772	6,388	13,303
1.10.2023	14,500	1,197	13,303	0

October 1, 2014

Lease payments receivable ((8,160 x 9) + 14,500)	87,940	
Inventory		60,000
Unearned interest revenue		27,940
Cash	9,660	
Advanced maintenance		1,500
LPR		8,160

December 31, 2013

Unearned Interest revenue ((60,000 – 8,160) x 9% x 3/12)	1,166	
Interest revenue		1,166
Advanced maintenance	375	
Maintenance expense		375

e. Classification:

None of the first 3 criteria which require classification as a finance lease are met, as:

i. There is neither bargain purchase option, nor transfer of ownership in the end of the contract.

ii. The length of the contract is only 40% (8/20) of the useful life of the asset, which is less than the 60% threshold used by the company.

iii. The PV of the payments is equal to 708,995, or 70.9%, which is less than the 85% threshold used by the company.

However, as noted above, the cars are uniquely designed for the use of LTA, and will require major modifications in order to be used by others. Therefore, it is clearly in the best interest of the parties to extend the lease contract by its end, and under IFRS, LTA needs to classify it as a finance lease.

