

Chapter F Homework Solutions

Compiled by Joe Kahlig

-
1. \$5200
 2. \$860
 3. (a) 9.5%
(b) 0.79167%
 4. 9.1490%
 5. (a) 7.1247%
(b) 7.3427%
 6. (a) \$156.80
(b) \$3843.2
 7. \$ 482.94
 8. 35.2941%
 9. \$2383.33
 10. 8.6% compounded monthly is better since the effective yield is better for this option.
 11. 12.550881%
 12. (a) $N = 4*6$; $I = 5$; $PV = -1000$; $PMT = 0$; $P/Y=C/Y = 4$; Solve for FV. $FV = \$1347.35$
(b) 5.0945%
 13. $N = 5*12$; $PV = -2000$; $PMT = 0$; $FV = 8450.5$; $P/Y=C/Y=12$; Solve for I; Interest rate is 29.17%
 14. $N = 6*2$; $I = 4$; $PV = -3400$; $PMT = 0$; $P/Y=C/Y = 2$; Solve for FV; $FV = 4312.02$; Interest earned is \$912.02
 15. \$5852.77
 16. \$2014.30
 17. $N = 3*6$; $I = -15$; $PMT=0$; $FV=375.78$; $P/Y=C/Y=3$; solve for PV; $PV = \$946.04$
 18. $N = 20*1$; $I = 7$; $PMT = 0$; $FV = 10000$; $P/Y=C/Y = 1$; Solve for PV; $PV = \$2584.19$
 19. (a) $N=5812$; $I = 12$; $PV = 50000$; $PMT = 0$; $P/Y=C/Y = 12$. solving gives $FV = 90834.83$
Interest = 40,834.83
(b) $N=4*12$; $I=5$; $PV = 0$; $FV = 90834.83$; $P/Y=C/Y=12$. Solve for payment. $Pmt = \$1713.38$
 20. (a) $N = 2*20$; $I = 6.25$; $PV = 0$; $PMT = -300$; $P/Y=C/Y = 2$; Solve for FV; $FV = \$23272.27$
(b) \$12,000
(c) \$11,272.27
 21. (a) $N = 3*12$; $I = 5$; $PV = 0$; $PMT = -50$; $P/Y=C/Y = 12$; Solve for FV; $Fv = \$1937.67$
(b) \$137.67
 22. (a) $N=4*5$; $I=7$; $PV=-500$; $Pmt=solve$ for this; $Fv=6000$; $P/y = C/y=4$ Answer: \$223.30
(b) $N=15$; $I=7$; $PV=-500$; $Pmt=-223.30$; $Fv=solve$ for this; $P/y = C/y=4$ Answer: \$4441.24
(c) balance after 15 payments = 4441.24
balance after 14 payments = 4145.40

Answer: $4441.24-4145.40-223.30 = 72.54$
Method 2: balance after 14 payments * i

Answer: $4145.40 * 0.07/4 = \$72.54$
(d) balance after 12th period(end of 3rd year) = 3568.89

balance after 8th period(end of 2nd year) = 2474.17

payments made in the 3rd year: $223.30 * 4 = 893.20$
Answer: $3568.89 - 2474.17 - 893.20 = 201.52$
 23. \$4141.98
 24. $N = 2*10$; $I = 8$; $PV = 0$; $PMT = -1000$; $P/Y=C/Y=2$; Solve for FV; Future Value is \$29,778.08
 25. (a) $N = 4*12$; $I = 7$; $PMT = -100$; $FV = 7000$; $P/Y=C/Y=12$; Solve for PV; \$1118.77
(b) $N = 20$; $I = 7$; $PV = -1118.77$; $PMT = -100$; $P/Y=C/Y=12$; Solve for FV; \$3371.60
(c) balance after 20 payments = 3371.60
balance after 19 payments = 3252.62

Answer: $3371.60-3252.62-100 = 18.98$
Method 2: balance after 19 payments * i

Answer: $3252.62 * 0.07/12 = \$18.97$ (difference due to rounding)
(d) balance after 36th period(end of 3rd year) = 5372.37

balance after 24th period(end of 2nd year) = 3854.47

payments made in the 3rd year: $100 * 12 = 1200$
Answer: $5372.37-3854.47-1200 = 317.90$
 26. $N = 5*12$; $I = 7$; $PV = -30000$; $FV = 100000$; $P/Y=C/Y=12$; Solve for PMT; Payment is \$802.75
 27. (a) $N = 16*12$; $I = 6.4$; $PMT = 1500$; $FV = 0$; $P/Y=C/Y=12$; Solve for PV; PV is \$179962.30
(b) $N = 16*12$; $I = 3.4$; $PMT = 1500$; $FV = 0$; $P/Y=C/Y=12$; Solve for PV; PV is \$220281.51
(c) total of payments sold: $1500*12*16 = \$288000$

would have recieved $288000-179962.30 = \$108037.7$ if he didn't sell.
 28. 78 payments is $78/4=19.5$ years

- (a) $N = 19.5 \cdot 4$; $I = 2.5$; $PMT = 6000$; $FV = 0$; $P/Y = C/Y = 4$; Solve for PV; PV is \$369511.36
- (b) $N = 19.5 \cdot 4$; $I = 5.7$; $PMT = 6000$; $FV = 0$; $P/Y = C/Y = 4$; Solve for PV; PV is \$281407.72
- (c) total of payments sold: $6000 \cdot 78 = \$468000$

would have received $468000 - 369511.36 = \$98488.64$ if he didn't sell.

- 29. (a) Balance at the end of the 5 years is \$6383.81
Balance at the end of the next 6 years is \$15810.85
Balance at the end is \$25043.49
- (b) \$10543.49
- 30. $N = 4 \cdot 4$; $I = 8$; $PMT = 1000$; $FV = 0$; $P/Y = C/Y = 4$; Solve for PV; deposit \$1,3577.71
- 31. $N = 5 \cdot 12$; $I = 9$; $PV = 20000$; $FV = 0$; $P/Y = C/Y = 12$; Solve for PMT; $PMT = \$415.17$
- 32. (a) \$364.92
- (b) \$10274.24
- (c) amortization schedule

period	interest owed	payment	amt. toward principal	outstanding principal
0	—	—	—	16000
1	240	364.92	124.92	15875.08
2	238.13	364.92	126.79	15748.29

33. amortization schedule

period	interest owed	payment	amt. toward principal	outstanding principal
0	—	—	—	8000
1	100	300	200	7800
2	97.5	300	202.50	7597.5

- 34. (a) $N = 1.5 \cdot 12$; $I = 19.2$; $PV = 800$; $FV = 0$; $P/Y = C/Y = 12$; Solve for PMT; payment of \$51.50
- (b) \$127
- (c) amortization schedule

period	interest owed	payment	amt. toward principal	outstanding principal
0	—	—	—	800
1	12.8	51.50	38.7	761.30
2	12.18	51.50	39.32	721.98
3	11.55	51.50	39.95	682.03
4	10.91	51.50	40.59	641.44

- 35. (a) $N = 45 \cdot 12$; $I = 6$; $PV = -1000$; $PMT = -150$; $P/Y = C/Y = 12$; solve for FV
Answer: \$428,178.85
- (b) $N = 15 \cdot 12$; $I = 6$; $PV = 428178.85$; $FV = 0$; $P/Y = C/Y = 12$; solve for PMT
Answer: \$3613.22

- 36. First figure out how much money is needed in the account so he can receive these payments.
 $N = 15 \cdot 4$; $I = 6$; $PMT = 6000$; $FV = 0$; $P/Y = C/Y = 4$; Solve for PV; To receive these payments he needs 236,281.61 in the account when he turns 65.

Now figure out the payments to get to this amount. $N = 40 \cdot 4$; $I = 6$; $PV = 0$; $FV = 236281.61$; $P/Y = C/Y = 4$; Solve for PMT; He needs to make quarterly deposits of 360.61

- 37. (a) 192
- (b) \$1487.50
- 38. (a) \$2097.30
- (b) \$200846.75
- (c) \$140654.00
- 39. \$15673.71
- 40. $N = 12 \cdot 4$; $I = 5$; $PMT = 28000$; $FV = -9000$; $P/Y = C/Y = 12$; Solve for PMT; payment is \$475.06
- 41. $N = 5 \cdot 12$; $I = 4.5$; $PV =$ solve for this; $Pmt = 800$; $Fv = 0$; $P/y = C/y = 12$;
Answer: \$42911.50
- 42. $N = 12 \cdot 3$; $I = 15$; $PV =$ solve for this; $Pmt = -30$; $Fv = 0$; $P/y = C/y = 12$;
you have borrowed \$865.42 and when you add this to the down payment you get the price.
Answer: \$1465.42
- 43. \$3193.39
- 44. (a) $N = 4 \cdot 12$; $I\% = 6.5$; $PMT = -625$; $FV = 0$; $P/Y = C/Y = 12$; solve for PV.
still owes = \$26,483.25
- (b) $N = 8.5 \cdot 4$; $I\% = 4.5$; $PMT = -1500$; $FV = 0$; $P/Y = C/Y = 4$; solve for PV.
still owes = \$42,185.04
- (c) consolidated loan
 $N = 6 \cdot 12$
 $I\% = 5.1$
 $PV = 26483.25 + 42185.04$
 $PMT =$ solve
 $FV = 0$
 $P/Y = C/Y = 12$

Monthly Payment = \$1,109.09
- (d) pays back with the consolidated loan:
 $1109.09 \cdot 12 \cdot 6 = 79854.48$

pays back on original loans:
Loan 1: $625 \cdot 4 \cdot 12 = 30000$
Loan 2: $1500 \cdot 4 \cdot 8.5 = 51000$

total paid back: \$81,000

Bob will save $81,000 - 79,854.48 = \$1,145.52$

45. (a) monthly payment: \$ 1,469.56
interest owed: \$94,320.80
- (b) monthly payment: \$ 1,060.16
interest owed: \$211,457.60
- (c) Amortization schedule

period	interest owed	payment	amt. toward principal	outstanding principal
0	—	—	—	170200
1	902.06	1060.16	158.10	170041.9
2	901.22	1060.16	158.94	169882.96
3	900.38	1060.16	159.78	169723.18

- (d) \$34519.57
46. (a) \$27758.33
(b) \$64737.29
47. between \$167,274.17 and \$228,638.41
48. (a) First figure out how much he still owes on the loan.
still owe: \$74997.89
now solve for the new payments with a 15 year loan.
don't forget to add the fee to what he is borrowing.
- new payments: \$629.14
- (b) Figure out what will be paid out for the remainder of the loan with both options.
no refinance: $568.83 \cdot 12 \cdot 21 = 143345.16$
refinance: $629.14 \cdot 12 \cdot 15 = 113245.2$
- Phillip will save \$30,099.96 by refinancing.
49. (a) $I = 18$; $PV = 2000$; $PMT = -35$; $FV = 0$;
 $P/Y = C/Y = 12$; Solve for N and you get 130.697. So it will take 131 payments to pay off the balance, i.e. 10 years and 11 months.
- (b) $N = 130$; $I = 18$; $PV = 2000$; $PMT = -35$;
 $P/Y = C/Y = 12$; Solve for FV and you get that the balance will be \$24.12. But, you will still owe one more month of interest on this amount at the end of the next month.
 $N = 1$; $I = 18$; $PV = 24.12$; $FV = 0$, $P/Y = C/Y = 12$; Solve for PMT and you get \$24.48 which is your last payment to pay off the credit card.
Total paid: $35(130) + 24.48(1) = \$4574.48$
Interest paid: $4574.48 - 2000 = \$2574.48$
- (c) 5 years and 2 months.
Interest paid: \$1077.24