

KEY

FOM12
Ch2 Review

Multiple Choice

Identify the choice that best completes the statement or answers the question.

lump sum PY=1

1. Carmen must now pay \$9000 to pay off her bank loan, which she borrowed 10 years ago. The loan was compounded monthly at an interest rate of 5.2%. How much did Carmen originally borrow?

- A. \$15 121.25
- B. \$5421.07
- C. \$5356.70**
- D. \$5921.05

FV *I* *N*
CY = 12 *SOLVE for PV*

2. Dante wants to buy a truck that costs \$35 000 and he has two different options to finance the purchase.

Option A: Finance the purchase through the dealership by making regular weekly payments for 4 years at an interest rate of 5.0%, compounded daily.

Option B: Finance the purchase with a bank loan by making regular monthly payments for 4 years at an interest rate of 5.0%, compounded daily.

What is the total cost of the cheaper option?

- A. \$42 744.99
- B. \$38 634.90**
- C. \$42 731.34
- D. \$38 696.89

(A) N 1 PV PMT FV PY CY End
 4x52 5 35000 ? 0 52 365 End
 \$185.74... x 208 pymts = \$38634.90

(B) N 1 PV PMT FV PY CY End
 4x12 5 35000 ? 0 12 365 End
 \$806.18... x 48 pymts = \$38696.89

3. Garrick is purchasing equipment for his job as a builder. The equipment costs \$1000 and he wants to make monthly payments of \$125. He has two different credit cards that he can use to finance the purchase.

• Card A charges 9.9%, compounded daily, but it also charges a fee of \$65 for all purchases over \$1000 that is immediately added to the balance.

• Card B charges 13.3%, compounded daily.

What is the total cost of the cheaper option?

- A. \$1053.24**
- B. \$1109.01
- C. \$1125.00
- D. \$1000.00

(A) N 1 PV PMT FV PY CY
 ? 9.9 1065 -125 0 12 365 End
 8.87... payments x \$125 = \$1109.01

(B) N 1 PV PMT FV PY CY
 ? 13.3 1000 -125 0 12 365 End
 8.42... payments x \$125 = \$1053.24

4. Cormac wants to pay off all his debts in 4 years. He has two credit cards on which he makes monthly payments:

- Card A has a balance of \$3002.91 and an interest rate of 17.6%, compounded daily.
- Card B has a balance of \$4712.01 and an interest rate of 15.9%, compounded daily.

Cormac wants to consolidate his debts into a line of credit with an interest rate of 8.9%, compounded monthly. How much will Cormac save by consolidating his debts?

- closest →
- A. \$1420.32
 - B. \$29.59
 - C. \$1488.46
 - D. \$2908.70

	N	I	PV	PMT	FV	PY	CY	Payment
Credit cards	48	17.6	3002.91	?	0	12	365	\$87.78 × 48
	48	15.9	4712.01	?	0	12	365	\$133.55 × 48
								Total \$10623.61
LOC	48	8.9	7714.92	?	0	12	12	\$191.62 × 48
								Total \$9197.76

5. Vennie has purchased a statue from an artist in Italy. The statue costs \$19 750 and the cost to safely ship the statue is \$975. He wants to pay off the debt in 4 years with regular monthly payments. He has two options to finance the purchase.

- (A) Finance the cost through the artist at an interest rate of 20%, compounded monthly, with the incentive that the artist will pay the shipping cost.
 - (B) Finance the cost through the bank at an interest rate of 15.7%, compounded monthly.
- What is the total cost of the cheaper option?

- A. \$20 725.00
- (B) \$28 040.30
- C. \$28 847.98
- D. \$26 721.15

	N	I	PV	PMT	FV	PY	CY	Payment
(A)	48	20	19750	?	0	12	12	\$601 × 48 mos = \$28848
(B)	48	15.7	20725	?	0	12	12	\$584.17 × 48 = \$28040 mos

6. Johanna currently rents an apartment that costs \$250 per week. She is planning to buy a new house and rent 2 of the rooms. She has found a 3-bedroom house that costs \$280 000. She can pay a 10% down payment and get a mortgage for the rest. She has negotiated with the bank an interest rate of 3.9%, compounded semi-annually. The term of the mortgage is 15 years and it requires regular monthly payments. If she rents the 2 other rooms in her house for \$500 a month each, how much will she have saved compared to renting the apartment, to the nearest dollar?

- A. \$1 830
- B. \$2 830
- C. \$9 170
- D. \$10 170

Renting	Buying	Difference
\$250	\$28000 down payment	= \$14,455.40
× 52	+ (\$1847.47 × 12 × 15)	
× 15	- (\$1000 × 12 × 15)	
<u>\$195000</u>	<u>\$180,544.60</u>	

N	I	PV	PMT	FV	PY	CY
15 × 12	3.9	252000	?	0	12	2

Short Answer

$$I = 17600(0.029)(7) = \boxed{\$3572.80}$$

1. Saul took out a loan from the bank to buy a new car that costs \$17 600. The bank offered him a simple interest rate of 2.9%. The loan is to be repaid in 7 years. how much interest did Saul pay?
2. Vladimir is buying a house that costs \$375 000. He has negotiated a mortgage with the bank that requires a down payment of 12% of the cost of the house. He will pay off the mortgage with regular monthly payments over 25 years at an interest rate of 2.8%, compounded semi-annually. How much will he pay in total?

N	I	PV	PMT	FV	PY	CY
25x12	2.8	88% of 375000	?	0	12	2

\$1528.04 x 300 = \$458,412

3. Arianna needs to buy supplies for her business. The supplies cost \$3900 and she intends to pay for the cost by using a credit card and by making regular monthly payments of \$225. She has two different credit cards:
 - Card A charges 15.7%, compounded daily, but Arianna gets 2% off of all purchases.
 - Card B charges 13.4%, compounded daily.

Interest:

What is the least amount of interest that she can pay?

A - (19.35... pymts x \$225) - (3900) = \$532.59

B - (19.38... pymts x \$225) - (3900) = \$461.53

N	I	PV	PMT	FV	PY	CY
?	15.7	98% of 3900	-225	0	12	365
?	13.4	3900	-225	0	12	365

+ down pymt of 45,000 = \$503,412

Problem

1. Irwin borrowed \$4600 at an interest rate of 5.9%, compounded monthly, to pay for a vacation. The loan is to be repaid in 3 years and he will pay it off by making regular monthly payments.
 - a) How much will each monthly payment be? Show your work.
 - b) When will half the loan be paid off? Show your work.
 - c) How much interest will Irwin pay in total? Show your work.
2. Melinda and Milan both need a place to live. Melinda has decided to rent a house for \$1200 per month. Milan has decided to buy a house for \$210 000 which he will finance with a 18-year mortgage at 3.9%, compounded semi-annually. Milan must make a down payment of \$17 000 and he will pay off the mortgage with regular monthly payments. The house appreciates at a rate of 2%. Melinda and Milan both move out after 7 years.
 - a) What are Melinda's costs? Show your work.
 - b) What are Milan's costs? Show your work.

**FOM12 Ch2 Test
Answer Section**

MULTIPLE CHOICE

SHORT ANSWER

1.C 2.B 3.A 4.A 5.B 6.B 1.\$3572.80 2.\$503 412.80 3.\$461.53

PROBLEM

1. a) The present value is \$4600.
The regular payment amount is unknown.
 The payments are made 12 times per year.
 The number of payments is 12(3) or 36.
 The payments are made at the end of the payment periods.
 The annual interest rate is 5.9%.
 The compounding frequency is 12 times per year.
 The future value is \$0.
 Using the financial application on a graphing calculator, the regular monthly payment amount will be 139.732..., or \$139.73.
 Each monthly payment will be \$139.73.

- b) The present value is \$233 750.
 The regular payment amount is \$139.732...
 The payments are made 12 times per year.
The number of payments is unknown.
 The payments are made at the end of the payment periods.
 The annual interest rate is 5.9%.
 The compounding frequency is 12 times per year.

The future value is $\frac{\$4600}{2}$, or \$2300.

Using the financial application on a graphing calculator, the number of payments is 18.793...
 Half the loan will be paid off in 19 months.

- c) $I = A - P$
 $I = (36)(139.732...) - 4600$
 $I = 430.372...$
 Irwin will pay \$430.37 in interest.

2. a) Total cost = (number of payments)(payment amount)
 Total cost = $(7)(12)(1200)$
 Total cost = \$100 800
 It will cost Melinda \$100 800 to rent a house for 7 years.

- b) The present value is \$210 000 – \$17 000, or \$193 000.
The regular payment amount is unknown.
 The payment frequency is 12 times a year.
 The number of payments is 18(12), or 216.
 The payments are made at the end of the payment periods.
 The annual interest rate is 3.9%.
 The compounding frequency is 2 times a year.
 The future value is \$0.
 Using the financial application on a graphing calculator, the regular payment amount is 1241.826..., or \$1241.83.

Buying cost over 7 years = (payment amount)(number of payments) + down payment
 Buying cost over 7 years = $(1241.826...)(7)(12) + 17\ 000$
 Buying cost over 7 years = 121 313.454...

The present value is \$210 000 – \$17 000, or \$193 000.
 The regular payment amount is \$1241.826...
 The payment frequency is 12 times a year.
 The number of payments is 7(12), or 84.
 The payments are made at the end of the payment periods.
 The annual interest rate is 3.9%.
 The compounding frequency is 2 times a year.
The future value is unknown.
 Using the financial application on a graphing calculator, the future value is 133 333.091..., or \$133 333.09.
 After 7 years, \$133 333.09 will still be remaining on the mortgage.

Value of house after 7 years = (initial value)(appreciation rate)
 Value of house after 7 years = $210\ 000(1.02)^7$
 Value of house after 7 years = 241 223.990...

Profit on sale of house = value of house after 7 years – mortgage remaining after 7 years
 Profit on sale of house = $241\ 223.990... - 133\ 333.091...$
 Profit on sale of house = 107 890.898...

Actual cost = buying cost over 7 years – profit on sale of house
 Actual cost = $121\ 313.454... - 107\ 890.898...$
 Actual cost = 13 422.555...
 It will cost Milan \$13 422.56 to purchase the house if he moves out after 7 years.