Foundations 12

Name: _____

Ch. 2 Review

Block: _____

1. Ryan borrowed $5000 to pay for a new roof on his garage. He borrowed at 7% compounded quarterly for 2 years. He will repay the loan in a single payment at the end of the term.

   a) What is the total paid?

$i = \frac{0.07}{4} = 0.0175$ $n = 4 \times 2 = 8$

$A = 5000(1+0.0175)^8 = \$5744.41$

   b) What is the interest paid?

$5744.41 - 5000 = \$744.41$

   c) Suppose that the interest compounding was semi-annually instead of quarterly. How much is saved in total?

$i = \frac{0.07}{2} = 0.035$ $n = 2 \times 2 = 4$

$A = 5000(1+0.035)^4 = \$5737.62$

$5744.41 - 5737.62 = \$6.79$ saved

   d) Ryan decided to make regular monthly loan payments instead. If the interest is calculated quarterly and Ryan wanted the loan to be paid off in 2 years, what would the monthly payment be?

N = 24	FV = 0
I = 7	P/Y = 12
PV = 5000	C/Y = 4
★ PMT =	END

$\$223.77$/month

   e) How much would Ryan end up paying after making these monthly payments for 2 years?

$223.77 \times 24 = \$5370.48$

2. Paula bought a used car 5 years ago. She took out a loan with an interest rate of 6.5% compounded annually and repaid the loan with a single payment at the end of the 5 years. If Paula paid $12 475, what was the original cost of the car?

$\frac{12475}{1.065^5} = \frac{P(1.065)^5}{1.065^5}$

$P = \$9105.26$

3. Greg is planning a week at a fishing lodge. The cost for the week is $4875. He needs to use his credit card which has an interest rate of 14.5% compounded daily.

   a) If he can afford monthly payments of $300, how long will it take him to repay the loan?

★ N =	FV = 0
I = 14.5	P/Y = 12
PV = 4875	C/Y = 365
PMT = −300	END

18.2 months

   b) How much will he end of paying altogether?

$300 \times 18.2 = \$5460$

4. A family takes out a mortgage for $350 000 amortized over 25 years. The mortgage is set for a five-year term at 3.8% p.a. compounded semi-annually and will require a 10% down payment. Answer the following questions:

a) What is the down payment?

350 000 (0.10) = $35 000

b) What is the total amount borrowed?

350 000 - 35 000 = $315 000

c) What is the monthly payment?

N = 25×12 = 300
I = 3.8
PV = 315 000
★ PMT =
FV = 0
P/Y = 12
C/Y = 2
END

$1622.99

d) What is the total paid?

1622.99 × 300 = $486 897

e) What is the interest paid?

486 897 − 315 000 = $171 897

f) How much is still owing on the mortgage after the 5 year term?

N = 5×12 = 60
I = 3.8
PV = 315 000
PMT = −1622.99
★ FV =
P/Y = 12
C/Y = 2
END

$273 256.52

5. Maria wants to visit her parents in Thunder Bay at Christmas. The return airplane ticket costs $1055. Maria has two options for payment:
   - A bank loan with an interest rate of 5.6% compouned monthly
   - A credit card that offers a $100 rebate and has a rate of 16.9% compounded daily

She plans to make monthly payments of $250. Which option should she choose?

Bank Loan

★ N =
I = 5.6
PV = 1055
PMT = −250
FV = 0
P/Y = 12
C/Y = 12

4.27 months

Credit Card

★ N =
I = 16.9
PV = 955
PMT = −250
FV = 0
P/Y = 12
C/Y = 365

3.96 months

★ choose credit card!

6. Jordan and Taylor are remodeling their house and have purchased the materials on their two credit cards. They have only manahed to make minimum payments until now. They plan to consolidate their debt into a line of credit at 7.3% compounded monthly, and pay off the full amount in 2 years. Currently they owe $4196.17 on card A which has an interest rate of 18.9% compounded daily, and $2756.46 on card B which has an interest rate of 19.9% compounded daily. How much will they save each month if they were to consolidate their debt on the line of credit, rather than simply paying on their credit cards in the next 2 years?

Card A	Card B	Line of Credit
N = 24	N = 24	N = 24
I = 18.9	I = 19.9	I = 7.3
PV = 4196.17	PV = 2756.46	PV = 6952.63
★ PMT =	★ PMT =	★ PMT =
FV = 0	FV = 0	FV = 0
P/Y = 12	P/Y = 12	P/Y = 12
C/Y = 365	C/Y = 365	C/Y = 12
$211.61	+ $140.37	$312.23
	= $351.98 total	

351.98
-312.23
$39.75 saved per month

7. Casey works as a handyman, and helps remove snow in the winter. He shoveled snow for 58 days last winter, so this year he wants to get a snowplow. He has three options. Which would you recommend?

a) Rent a snowplow of $70 a day. Assume he'll need the snow plow for 58 days each year, for the next 2 years.

$70 \times 58 = \$4060$/year $\times 2 =$ $8120

Cheapest Option

b) Buy a snowplow for $6400 and pay with his line of credit at 4.9% compounded monthly, and make monthly payments over 2 years.

N = 24	FV = 0
I = 4.9	P/Y = 12
PV = 6400	C/Y = 12
★ PMT =	END

$280.49 × 24 = $6731.76

c) Lease a snowplow for a down payment of $2500 and monthly payments of $200 for 2 years.

~~N =~~	~~FV =~~
~~I =~~	~~P/Y =~~
~~PV =~~	~~C/Y =~~
~~PMT =~~	~~END~~

$200 \times 12 = 2400$/year
$\times 2$
$= 4800$/2 years
+
2500 down payment
= $7300