

Grab a calculator & finish!

p. 530: #4, #~~7~~⁸-10, ~~13~~, 15, ~~16~~, 17

N=total # of payments [compounded x term]
 I%= interest rate [enter as a %]
 PV= loan amount [subtract down payment if given]
 PMT= payment amount [negative #]
 FV= set equal to zero...pay loan off after end of term
 P/Y= number of payments per year
 C/Y= compounding period per year
 PMT: END BEGIN

7. Sara and Sylvie have found a small house in the St. Norbert neighbourhood of Winnipeg. They can buy the house for \$179 900. After negotiating with their bank, they have been offered a mortgage for 90% of the cost at 4.5% compounded semi-annually, with regular weekly payments for 15 years.
- How much will the down payment be?
 - How much will the principal of the mortgage be?
 - What will the regular payment amount be?
 - How long will it take before they have paid off half the loan?
 - How much interest will they pay in all?

10% Down
 a) $0.10 \times 179900 = 17990$
 b) $PV = 179900 - 17990 = 161910$

d) weeks or 8.7 years APP → c)

N=453.9094308
 I%=4.5
 PV=161910
 PMT=-284.63044...
 FV=-80955
 P/Y=52
 C/Y=2
 PMT: END BEGIN

N=780
 I%=4.5
 PV=161910
 PMT=-284.63044...
 FV=0
 P/Y=52
 C/Y=2
 PMT: END BEGIN

e) Pay → $780 \times 284.63 = 222011.40$
 $N \times PMT = 222011.40$
 $I = 222011.40 - 161910 = 60101.40$

8. Lissa, the owner of a health food store, was advanced \$15 000 by an investor. She signed a promissory note that stated the conditions of the loan: interest will accumulate at a rate of 2.6%, compounded quarterly, and payments of \$1200 will be made at the end of every 3-month period.

- a) How long will it take Lissa to repay her investor?
- b) How much interest will Lissa pay?

```

a)
N=13.07943693
I%=2.6
PV=15000
PMT=-1200
FV=0
P/Y=4
C/Y=4
PMT: [ ] [ ] [ ] BEGIN
    
```

Payments

$$\frac{13.08}{4} = 3.27$$

b)

```

13.08*1200    15696
Ans-15000     696
    
```

Pay Interest

13

Violet wants to go to college to become a diesel mechanic. Violet estimates that she will need \$10 000 to pay for tuition and books and \$1500 monthly, for 8 months, to cover her expenses. Her bank has offered her a loan at 1.1%, compounded monthly.

- a) Suppose that Violet pays off her loan in a single payment a year after she finishes her course. How much interest will she pay?
- b) Suppose that Violet makes monthly payments of \$500, starting the month after she finishes the course, until the loan is repaid.
 - i) How long will it take her to pay off the loan?
 - ii) How much interest will she pay?

$$\begin{aligned}
 a) \quad A &= P \left(1 + \frac{r}{n} \right)^{nt} \\
 &= 22000 \left(1 + \frac{0.011}{12} \right)^{12 \times \frac{8}{12}}
 \end{aligned}$$

$A =$

22000(1+0.011/12)
)^8
22161.85189
Ans-22000
161.8518945

← I

b) i)

N=44.93252008
I%=1.1
PV=22000
PMT=-500
FV=0
P/Y=12
C/Y=12
PMT: <input type="checkbox"/> END <input checked="" type="checkbox"/> BEGIN

44.93 months OR 3.74 years

ii)

44.93*500	22465
Ans-22000	465
■	

Pay Interest

16. Elise is the owner of Café Patisserie. She needs to upgrade her coffee-making equipment. She has two loan options:
- Her bank has offered her a loan of \$3000 at 4.7%, compounded monthly, with monthly payments of \$125.
 - Her investors have offered her the \$3000 at 5%, compounded monthly, with monthly payments of \$250.
- What is the term of each loan option?
 - How much interest would Elise need to pay for each loan option?
 - What is the total she would pay, including principal and interest, for each loan?
 - What would you advise Elise to do? Justify your recommendation.

a)

25.25 months

12.34 months

Term

```

N=25.25340403
I%=4.7
PV=3000
PMT=-125
FV=0
P/Y=12
C/Y=12
PMT: [ ] BEGIN
    
```

```

N=12.33601953
I%=5
PV=3000
PMT=-250
FV=0
P/Y=12
C/Y=12
PMT: [ ] BEGIN
    
```

b)

```

25.25*125      3156.25
Ans-3000      156.25
    
```

```

12.34*250      3085
Ans-3000      85
    
```

Pay (C)
Interest

Pick this

9.2

Exploring Credit Card Use

GOAL PAGE 536

Compare credit options that are available to consumers.

EXPLORE the Math

Jayden saw the new sound system he wanted on sale for \$2623.95, including taxes. He had to buy it on credit and had two options:

- Use his new bank credit card, which has an interest rate of 14.5%, compounded daily. (Because this credit card is new, he has no outstanding balance from the previous month.)
- Apply for the store credit card, which offers an immediate rebate of \$100 on the price but has an interest rate of 19.3%, compounded daily.

As with most credit cards, Jayden would not pay any interest if he paid off the balance before the due date on his first statement. However, Jayden cannot afford to do this. Both cards require a minimum monthly payment of 2.1% on the outstanding balance, but Jayden is confident that he can make regular monthly payments of \$110.



Which credit card is the better option for Jayden, and why?

Solution is given below...

```

N=28.3411992
I%=14.5
PV=2623.95
PMT=-110
FV=0
P/Y=12
C/Y=365
PMT: [ ] BEGIN
    
```

```

28.34*110      3117.4
Ans-2623.95    493.45
    
```

Best

```

N=28.92467766
I%=19.3
PV=2523.95
PMT=-110
FV=0
P/Y=12
C/Y=365
PMT: [ ] BEGIN
    
```

```

28.92*110      3181.2
Ans-2523.95    657.25
    
```

In Summary**PAGE 536****Key Ideas**

- Incentives or promotions are sometimes offered to entice people to use credit cards. For example, an immediate cash rebate may be offered on the first purchase using a credit card. Low interest rates, rewards, or no annual fees may also be offered.
- The full cost of borrowing should be considered before making a decision about using a credit card. This includes the total interest charged, as well as the total payments and the time it will take to pay off the balance.

Need to Know

- Credit cards usually have a minimum amount that must be paid each month, based on a percent of the outstanding balance. If there is no outstanding balance from the previous month and the new balance is paid off in full by the payment due date, no interest is charged.
- If a credit card does not have an outstanding balance and it is used for a single purchase, it can be treated as a loan. The purchase price is the principal borrowed, and regular payments can be made until the balance is paid off.
- The cost of using credit is not just the amount of interest charged. There are incentives, such as cash rebates, that reduce the principal. This may end up costing more in interest but result in a lower total loan payment amount.

HOMEWORK...

Use the TVM-Solver for each of the following...

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NOTE: Have screenshots ready if not done!

Cash Rebate - \$ given back at the end
of fixed amount of time...can be used
towards paying off a purchase