

Question 7???

c) ✓

```

N=780
I%=4.5
PV=162000
PMT=-284.78865...
FV=0
P/Y=52
C/Y=2
PMT: [ ] [ ] BEGIN
    
```

d) ✗

```

N=453.9094308
I%=4.5
PV=162000
PMT=-284.78865...
FV=-81000
P/Y=52
C/Y=2
PMT: [ ] [ ] BEGIN
    
```

I forgot the negative...
\$ out of my pocket!

```

453.9094308/52
8.729027515
.729027515*52
37.90943078
.90943078*7
6.36601546
    
```

8 years
37 weeks
6 days !!!

Problem Solving 101...
If you are not getting the correct answer - TRY to figure why in order to arrive at the correct answer!

e) $n \times PMT$

```

780*284.79
222136.2
Ans-162000
60136.2
    
```

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

$$\text{time} = \frac{13.079}{4}$$

$$= 3.27 \text{ years}$$

$$= 3 \text{ yrs } 3 \text{ months}$$

b)

```

13.079*1200
Ans-15000 15694.8
        694.8
    
```

Paid 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.

time = 20 months

- 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?

a) $A = 22000 \left(1 + \frac{0.011}{12}\right)^{12 \times \frac{20}{12}}$

```
A = 22000(1+0.011/12)^20
22406.86509
Ans-22000
406.8650879
I = 406.87
```

b) i) $N = 44.93252008 \rightarrow 45 \text{ months}$

```
N=44.93252008
I%=1.1
PV=22000
PMT=-500
FV=0
P/Y=12
C/Y=12
PMT: [ ] BEGIN
```

ii)

```
44.933*500
22466.5
Ans-22000
466.5
```

Paid Interest

15. For the upcoming season, Mike plans to buy a new biathlon rifle that costs \$2152.



Handwritten: Sporting

N=36
I%=16.5
PV=2152
PMT=-76.190231...
FV=0
P/Y=12
C/Y=12
PMT: <input type="checkbox"/> END <input checked="" type="checkbox"/> BEGIN

Handwritten: Payment

36*76.19	2742.84
Ans-2152	590.84
.	.

Handwritten: Paid Interest

- The sporting goods store has offered to finance the purchase at 16.5%, compounded monthly, for a term of 3 years with payments at the end of each month.
 - Mike could also borrow the money from a bank at 8.5%, compounded weekly, for a term of 2 years with weekly payments.
- How much would the rifle cost if he financed it through the store?
 - How much would the rifle cost if he financed it through the bank?
 - What is the difference in the amount of interest that Mike would pay for the two loans?
 - What features of the loan from the sporting goods store might encourage Mike to choose it over the bank loan?

Handwritten: Payment

N=104
I%=8.5
PV=2152
PMT=-22.517830...
FV=0
P/Y=52
C/Y=52
PMT: <input type="checkbox"/> END <input checked="" type="checkbox"/> BEGIN

Handwritten: Paid Interest

104*22.52	2342.08
Ans-2152	190.08
■	

Handwritten: c)

590.84 - 190.08
400.76
■

Handwritten: d) Convenience

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...

With TVM-Solver...

```
A) N= SOLVE...28.34
I% = 14.5
PV = 2623.95
PMT = -110
FV = 0
P/Y = 12
C/Y = 365
PMT: [ ] [ ] BEGIN
```

He pays...

28.34 x 110 = \$3117.40 **BETTER OPTION**

```
B) N= SOLVE...28.92
I% = 19.3
PV = 2523.95
PMT = -110
FV = 0
P/Y = 12
C/Y = 365
PMT: [ ] [ ] BEGIN
```

He pays...

28.92 x 110 = \$3181.20

By hand...

Handwritten calculations for the credit card options:

ONE MONTH

(A) $A = P(1 + \frac{i}{n})^{nt}$
 $= 2623.95(1 + \frac{0.145}{365})^{\frac{365}{12}}$

(B) $2523.95(1 + \frac{0.193}{365})^{\frac{365}{12}}$

Calculator screens show the results of these calculations. The result for (A) is 2655.842021, and for (B) is 2684.860824. The difference between the two is 28.91882353, which is labeled as "Interest paid".

Handwritten notes include "Better option" with an arrow pointing to the result for option (A).

Bank *Payments months* *Store*

<p>▪ N=28.3411992 I%=14.5 PV=2623.95 PMT=-110 FV=0 P/Y=12 C/Y=365 PMT:<input type="checkbox"/> <input checked="" type="checkbox"/> BEGIN</p>	<p>▪ N=28.92467766 I%=19.3 PV=2523.95 PMT=-110 FV=0 P/Y=12 C/Y=365 PMT:<input type="checkbox"/> <input checked="" type="checkbox"/> BEGIN</p>
<p>28.34*110 3117.4 Ans-2623.95 493.45 ■ <u>BEST</u></p>	<p>28.925*110 3181.75 Ans-2523.95 657.8 ■</p>

Paid Interest

In Summary

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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.

Copy highlighted information into your notes titled 'Credit Cards'

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