

# Grab a calculator and FINISH...

1. Rilla bought a new chair for \$526.83. She paid for the chair with her credit card at 19.7%, compounded daily.
  - a) If Rilla repays the loan in 1 year, how much will her payments be?
  - b) When Rilla checked her mail, she had an offer for a new bank credit card with a \$100 rebate and an interest rate of 16.7%, compounded daily.
    - i) If she had used the new credit card instead, what would her payments have been?
    - ii) How much would she have saved with the new credit card?

a)

N=12
I%=19.7
PV=526.83
PMT=-48.766835...
FV=0
P/Y=12
C/Y=365
PMT: [ ] [ ] BEGIN

\$ 48.77

b) i)

N=12
I%=16.7
PV=426.83
PMT=-38.891029...
FV=0
P/Y=12
C/Y=365
PMT: [ ] [ ] BEGIN

ii)

48.77-38.89
9.88
Ans*12
118.56

4. While Cassie was in the Caribbean, she used her credit card and her cellphone. When she got home, she received a cellphone bill for \$1450 and a credit card statement with a balance of \$3465.47. She considered these options for being debt-free in 10 months:
  - She could pay the \$1450 cellphone bill with her credit card (which already has a balance of \$3465.47) at 14.3%, compounded daily, and then pay off the entire balance on the credit card in 10 months.
  - She could consolidate both debts using her line of credit at 9.95%, compounded monthly, and pay it off in 10 months.
  - a) What would her monthly payments be for each option?
  - b) How much interest will she have to pay for each option?

a) #1

N=10
I%=14.3
PV=4915.47
PMT=-524.52910...
FV=0
P/Y=12
C/Y=365
PMT: [ ] [ ] BEGIN

524.53

10*524.53
5245.3
Ans-4915.47
329.83

Pay Interest

#2

N=10
I%=9.95
PV=4915.47
PMT=-514.24121...
FV=0
P/Y=12
C/Y=12
PMT: [ ] [ ] BEGIN

\$ 514.24

10*514.24
5142.4
Ans-4915.47
226.93

Pay Interest

## 9.4

### Buy, Rent, or Lease?

#### lease

A contract for purchasing the use of property, such as a building or vehicle, from another, the lessor, for a specified period.

#### equity

The difference between the value of an item and the amount still owing on it; can be thought of as the portion owned. For example, if a \$25 000 down payment is made on a \$230 000 home, \$205 000 is still owing and \$25 000 is the equity or portion owned.

#### asset

An item or a portion of an item owned; also known as property. Assets include such items as real estate, investment portfolios, vehicles, art, and gems.

**LEARN ABOUT the Math**

Amanda is a civil engineer. She needs a vehicle for work, on average, 12 days each month. She has been renting a vehicle when she needs it.



The advantage to renting is that she simply fills the gas tank and drops off the vehicle when she is done with it. The disadvantage is that she has to spend time arranging for the rental, picking up the vehicle, and getting home after dropping it off. She is wondering if renting is the most economical choice and is considering her options:

- She could **lease** a vehicle, which requires a down payment of \$4000 and lease payments of \$380 per month plus tax. She would need insurance at \$1220 each year (which could be paid monthly) and would have to pay for repairs and some maintenance, which would average \$50 each month. For the 4-year lease she is looking at, she would have no **equity** in the vehicle at the end of the term, since the car would belong to the leasing company.
- She could buy a vehicle for \$32 800 and finance it for a 4-year term at 4.5% interest, compounded monthly. She would have the same insurance, repair, and maintenance costs that she would have with leasing. However, the equity of the vehicle would be considered an **asset**.
- She could continue to rent at \$49.99 per day, plus tax, with unlimited kilometres.

Lease?

Buy?

Rent?

Which option would you recommend for Amanda, and why?

Rent

$$49.99 * 1.15 * 12 * 12 * 4 = 33113.376$$

Lease  
PMT

$$380 * 1.15 * 12 * 4 + 4000 + 1220 * 4 + 50 * 12 * 4 = 32256$$

Best

Down

Buy

$$N=48, I\%=4.5, PV=32800, PMT=-747.95434..., FV=0, P/Y=12, C/Y=12, PMT:BEGIN$$

$$747.95 * 48 + 1220 * 4 + 50 * 48 = 43181.6$$

Repairs

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**APPLY the Math**

**depreciation**  
Decrease in the value of an asset over time.

**appreciation**  
Increase in the value of an asset over time.

**EXAMPLE 2 Solving a problem that involves vehicle depreciation**

A luxury vehicle rental company depreciates the value of its vehicles each year over 5 years. At the end of the fifth year, the company writes off a vehicle for its scrap value. The company uses a depreciation rate of 40% a year.

*x 0.60*

- a) What is the scrap value of each car below?
  - i) Car A, which is currently 2 years old and has a value of \$43 200
  - ii) Car B, which is currently 1 year old and has a value of \$75 600
- b) What was the original purchase price of each car?

*ex Tax x 1/15*  
*App => Price x 1 + % as decimal*  
*Dep => Price x 1 - % as decimal*

*a)*  
*2nd A*  

43200 * 0.6	
	25920
Ans * 0.6	
	15552
	9331.2

*3rd 4th 5th*

*1st B*  

75600 * 0.6	
	45360
Ans * 0.6	
	27216
	16329.6
	9797.76

*2nd 3rd 4th 5th*

*b)*  

43200 / 0.6	
	72000
Ans / 0.6	
	120000

*1st New*

75600 / 0.6	
	126000

*New*

**EXAMPLE 3** p. 562 Solving a problem that involves leasing or buying a water heater

The 10-year-old hot water heater in Tom's home stopped working, so he needs a new one. Tom works for minimum wage. After paying his monthly expenses, he has \$35 **disposable income** left. He has an unused credit card that charges 18.7%, compounded daily. He has two options:



- Tom could lease from his utility company for \$17.25 per month. This would include parts and service.
  - He could buy a water heater for \$712.99, plus an installation fee of \$250, using his credit card. He could afford to pay no more than \$35 each month.
- a) What costs are associated with buying and leasing?
  - b) What do you recommend for Tom? Justify your recommendation.
  - c) Suppose that the life expectancy of a water heater is 8 years. Would this change your recommendation? Explain.

**disposable income**  
The amount of income that someone has available to spend after all regular expenses and taxes have been deducted.

$17.25 \times 12$

Ans+207	207	$N=41.97204398$ $I\%=18.7$ $PV=1069.9385$ $PMT=-35$ $FV=0$ $P/Y=12$ $C/Y=365$ $PMT: [ ] [ ] BEGIN$
Ans+207	414	
	621	
	828	
	1035	

1 year

5 years

$41.97 \times 35$	1468.95
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**In Summary****Key Ideas**

- When deciding whether to rent, buy (with or without financing), or lease, each situation is unique. A cost and benefit analysis should take everything into account.
  - Costs include initial costs and fees, short-term costs, long-term costs, disposable income, the cost of financing, depreciation and appreciation, penalties for breaking contracts, and equity.
  - Benefits include convenience, commitments, flexibility, and personal needs or wants, such as how often you want to buy a new car.
- Since each situation is unique, it is impossible to generalize about whether renting, leasing, or buying is best.

**Need to Know**

- When renting, leasing, and buying, you often need to make payments up front. Some payments go toward the overall cost, such as a down payment on a house or a lease deposit and the first and last month's rent. Other deposits, such as a rental damage deposit, are refunded at a later date.
- Appreciation and depreciation affect the value of a piece of property and should be considered when making decisions about renting, buying, or leasing, based on the particular situation. They are usually expressed as a rate per annum.
- Equity can make buying a house a form of investment.

**HOMEWORK...**

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