

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.

Lease? *p.s.s.s*
Buy?
Rent?

- 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.

? Which option would you recommend for Amanda, and why?

Rent (No Asset)

| | | |
|--------------|-----------|-----------------|
| 49.99*1.15 | 57.4885 | <i>with tax</i> |
| Ans*12*48 | 33113.376 | |
| <i>Total</i> | | |

Lease (No Asset)

| | | |
|-------------------|-------|-----------------|
| 380*1.15 | 437 | <i>with tax</i> |
| Ans*48+4000 | 24976 | |
| Ans+1220*4+50*48 | 32256 | <i>Payment</i> |
| <i>Total Cost</i> | | |

BEST

Buy

| | |
|---|--|
| N=48 | |
| I% =4.5 | |
| PV=32800 | |
| PMT= 747.95434... | |
| FV=0 | |
| P/Y=12 | |
| C/Y=12 | |
| PMT: <input type="checkbox"/> END <input checked="" type="checkbox"/> BEGIN | |

Payment 747.95

| | | |
|------------------|---------|----------------|
| 747.95*48 | 35901.6 | <i>Payment</i> |
| Ans+1220*4+50*48 | 43181.6 | |
| <i>Total</i> | | |

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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.

- 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?

a) **(A)** 2nd

| | | |
|------------|--------|-----------------|
| 43200 * .6 | 25920 | 3 rd |
| Ans * .6 | 15552 | 4 th |
| Ans * .6 | 9331.2 | 5 th |

(B)

| | |
|------------|---------|
| 75600 * .6 | 45360 |
| Ans * .6 | 27216 |
| | 16329.6 |
| | 9797.76 |

b)

| | | |
|------------|--------|-----------------|
| 43200 / .6 | 72000 | 1 st |
| Ans / .6 | 120000 | NEW |

75600 / 0.6 = 126000 NEW

depreciation

Decrease in the value of an asset over time.

Multiply by $1 - \%$ decimal

Ex: Vehicle down
20% / year
 $\times 0.80$

appreciation

Increase in the value of an asset over time.

Multiply by $1 + \%$ as decimal

Ex: Sales Tax (HST)
 $\times 1.15$

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.
- What costs are associated with buying and leasing?
 - What do you recommend for Tom? Justify your recommendation.
 - 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.

Rent

| | |
|-------------------|------|
| $17.25 * 12 * 10$ | 2070 |
|-------------------|------|

Buy

| |
|--|
| <ul style="list-style-type: none"> ■ $N=36$ $I\%=18.7$ $PV=962.99$ $PMT=-35$ $FV=0$ $P/Y=12$ $C/Y=365$ $PMT: \text{BGN}$ BEGIN |
|--|

Buy

| | |
|--------------|---------|
| $35 * 36.31$ | 1270.85 |
|--------------|---------|

EXAMPLE 5 Solving a problem that involves renting or buying a house

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Two couples made different decisions about whether to rent or buy:

- Helen and Tim bought a house for \$249 900. They have negotiated a mortgage of 95% of the purchase price, so they will need a 5% down payment. The mortgage is compounded semi-annually at 5.5%, has a 20-year term, and requires monthly payments.
- Don and Pat are renting a house for \$1600 per month. They plan to renew the lease yearly.

After 3 years, both couples decide to move. Helen and Tim discover that the value of their house has depreciated by 10% over the 3 years.

Compare each couple's situation after 3 years.

Buy
 5% of 249900
 0.05×249900
 $\$12495$

Payment \rightarrow $\$1624.78$
Pay Out \rightarrow $\$58492.08$

RENT (No Asset)

| | |
|------------------|---------|
| 1600×36 | 57600 |
|------------------|---------|

```
N=240
I%=5.5
PV=237405
PMT=-1624.7791...
FV=0
P/Y=12
C/Y=2
PMT: [ ] BEGIN
```

Value of the house...

```
249900 * 0.9^3
182177.1
```

Bank Owe...

```
N=36
I%=5.5
PV=237405
PMT=-1624.7791...
FV=215992.5556
P/Y=12
C/Y=2
PMT: [ ] BEGIN
```

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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