

# Buy, Rent, or Lease?

## Example 1: Solving a Problem that Involves Leasing, Buying, or Renting a Vehicle

Amanda is a civil engineer. She needs a vehicle for work an average of 12 days each month. She is considering the following options:

- She could **lease** a vehicle, which requires a down payment of \$4000 and lease payments of \$380 plus 15% tax per month. She would need insurance at \$1220 each year. She 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. The vehicle would depreciate by 20% in the first year, then by 15% each year after. Note that the equity of the vehicle would be considered an asset. (*Equity is the difference between the value of an item and the amount still owing on it; it can be thought of as the portion owned.*)
- She could **rent** a vehicle when she needs it at \$49.99 per day with unlimited kilometers.

Which option would you recommend for Amanda and why?

Leasing (4-year term)	Buying (4-year term)	Renting
Down payment =	PV = \$32 800 $r = 0.045$ , $n = 12$ , $t = 4$ years	Monthly cost =
Lease payments =	R =	=
=		
Insurance =		
=		
Repairs & maintenance =	Monthly payments =	
=	=	
Total cost =	Insurance =	
Monthly cost =	Repairs & maintenance =	
=	Equity =	
	=	
	*After 4 yrs. the car would be paid off, so the entire value of the vehicle would be equity.	
	Total cost =	
	=	
	Monthly cost =	
	=	

I recommend that Amanda \_\_\_\_\_ a vehicle since the monthly cost is the lowest.

## 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 30% a year.

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

### Solution:

- a. The cars depreciate by 30% each year, which means they *retain* \_\_\_\_\_ of their value each year.
  - i. Scrap value of Car A =
  - ii. Scrap value of Car B =
- b. To determine the original purchase price, work backward.
  - i. Original purchase price of Car A =
  - ii. Original purchase price of Car B =

### Example 3: Solving a Problem that Involves Leasing or Buying Office Space

Lance started his own construction business two years ago. His business has grown quickly, and his home office is no longer big enough. He is considering these two options:

- He could sign a 3-year renewable lease on office space, with monthly rental payments of \$2000.
  - He could purchase a house for \$285 000 and renovate so it could be used as office space. A 5% down payment would be required, and he would take out a 15-year mortgage at 5.2%, compounded monthly, with monthly payments. Assume appreciation of 2% yearly.
- a. What are the costs of leasing over 15 years?    b. What are the costs of buying over 15 years?  
c. What do you recommend for Lance? Justify your advice.

#### Solution:

**a. Cost of Leasing (over 15 years):**

Leasing cost = Payment amount  $\times$  Number of payments per year  $\times$  Number of years

=

=

**b. Cost of Buying (over 15 years):**

Down payment = 5% of \$285 000

=

=

Present Value = PV =

$n =$  \_\_\_\_\_,  $r =$  \_\_\_\_\_,  $t =$  \_\_\_\_\_

Mortgage payment = R =

Buying cost = Down payment + Mortgage payments

=

=

Value of house\* = Initial value  $\times$  Appreciation rate

=

=

\* After 15 years, the mortgage would be paid off, so the entire value of the house would be equity.

Actual cost = Buying cost – Equity

=

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- c. Recommendation:** Lance should buy because it is more economical and his equity will grow.