

Review from lessons before the break...
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9. While training for a triathlon, Jayce bought new shoes for running and bicycling, a new wetsuit, and a new bicycle. Altogether, the cost was \$2756.43. He has the following two credit options and plans to pay the minimum payment each month:
- A line of credit at 8.9%, compounded monthly, with a minimum monthly payment of \$50
 - A credit card at 15.2%, compounded daily, with a minimum monthly payment of \$60
- a) How long would it take Jayce to pay off the line of credit? How long would it take him to pay off the credit card?
- b) Which credit option do you think Jayce should choose? Explain.
- c) If Jayce wants to pay off the loan in a year, what will his payments have to be?

a) *Line of Credit* *71.15 months* *69.54 months* *Credit Card*

<pre> N=71.14614272 I%=8.9 PV=2756.43 PMT=-50 FV=0 P/Y=12 C/Y=12 PMT: [] [] [] BEGIN </pre>	<pre> N=69.54038484 I%=15.2 PV=2756.43 PMT=-60 FV=0 P/Y=12 C/Y=365 PMT: [] [] [] BEGIN </pre>
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b) *Pay out Interest*

<pre> 50*71.15 3557.5 Ans=-2756.43 801.07 </pre> <p style="text-align: center;"><i>Better Less Interest</i></p>	<pre> 60*69.54 4172.4 Ans=-2756.43 1415.97 </pre>
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c) *NEW*

<pre> N=12 I%=8.9 PV=2756.43 PMT=-240.92606... FV=0 P/Y=12 C/Y=12 PMT: [] [] [] BEGIN </pre>	<pre> N=12 I%=15.2 PV=2756.43 PMT=-249.17259... FV=0 P/Y=12 C/Y=365 PMT: [] [] [] BEGIN </pre>
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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?

Rental...

$$49.99 \times 1.15 \times 12 \times 12 \times 4 = 33113.376$$

Lease...

$$4000 + 380 \times 1.15 \times 12 \times 4 + 1220 \times 4 + 50 \times 48 = 32256$$

NO ASSET

Buy...

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

$$747.95 \times 48 + 1220 \times 4 + 50 \times 48 = 43181.6$$

Asset

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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) *Year 2*

43200×0.6	25920	<i>Year 3</i>
Ans $\times 0.6$	15552	<i>Year 4</i>
Ans $\times 0.6$	9331.2	<i>Year 5</i>

b) *Year 1*

75600×0.6	45360	<i>2</i>
Ans $\times 0.6$	27216	<i>3</i>
	16329.6	<i>4</i>
	9797.76	<i>5</i>

b) *Year 2*

$43200 \div 0.6$	72000	<i>Year 1</i>
Ans $\div 0.6$	120000	<i>NEW</i>

NEW

$75600 \div 0.6$	126000
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depreciation

Decrease in the value of an asset over time.

ex Car depreciates 25% a year
 $\times 0.75$

Multiply by ...
 $1 - \% \text{ as a decimal}$

appreciation

Increase in the value of an asset over time.

ex Tax 15%
 $\times 1.15$

Multiply by ...
 $1 + \% \text{ as a decimal}$

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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