

# Buying a Car



*What do you want your first car to be like?...*



What costs are there in buying and operating a car?

Once

purchase  
(full price)

Fixed

insurance  
maintenance  
car payments  
licence plate

Variable

gas  
windshield washer  
repair

Do you buy a new or used?

If used, how old?

**New**

reliable  
your choices  
(extras)  
warranty  
high price  
fast depreciation

**Used**

breaks down  
as is  
no warranty  
cheaper

*... realistically it might look like:*



... or if you are **REALLY** lucky:



In 5-10 years,  
and 5-10 crappy cars later...

... when you're finally ready  
to buy a decent new (or gently used) car,  
you'll need to know how to finance it.



## Buying a "new" car



**Sale Price = \$19,995** (before taxes)

Financing terms → 4.9% annual interest, compounded monthly

→ a \$4000 down payment

→ a 5 year payment plan

a) Calculate the total cost of the car, including taxes.

$$19995(1.13) = 22594.35$$

b) Determine the amount that is to be financed?

$$22594.35 - 4000 = 18594.35$$

c) Determine your regular monthly payment.

\*\*\* **Do not copy** \*\*\*

The "old-school" way (pencil, paper, and a formula):

$$A = 18594.35$$

$$i = 0.049 \div 12$$

$$= 0.00408\bar{3}$$

$$n = 5 \times 12$$

$$= 60$$

$$R = ?$$

$$R = A \left[ \frac{i}{1 - (1+i)^{-n}} \right]$$

$$= 18594.35 \left[ \frac{0.00408\bar{3}}{1 - (1 + 0.00408\bar{3})^{-60}} \right]$$

$$= 18594.35 \left[ \frac{0.00408\bar{3}}{1 - 0.783095} \right]$$

$$= 18594.35 \left[ \frac{0.00408\bar{3}}{0.2169} \right]$$

$$= 18594.35 (0.0188254)$$

$$= \$350.05$$

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c) Determine your regular monthly payment. (using technology)

$N = 5(12)$  (the total # of payments to be made)

$I(\%) = 4.9$  (the annual interest rate - as a %, not a decimal)

$PV = 18594.35$  (the \$ amount to be financed - Present Value)

$Pmt = ?$  (the regular monthly \$ payment - **leave as zero**)

$FV = 0$  (the \$ amount after 5 years - Future Value)

Annual? *monthly*

$PpY = 12$  (the # of payments per year)

$CpY = 12$  (the # of compounding periods per year)

$PmtAt = END$  (is the payment made at the beginning or end of the period?)

**$\therefore$  the monthly payment is \$350.05**

d) Determine the TOTAL amount that you will end up paying for the car after 5 years.

$$350.05(12)(5) = 21003$$

*payments*  
*year*      *5 years*

Total = downpayment + installments

$$= 4000 + 21003$$

$$= 25003$$

$\therefore$  total cost is \$25003

### Fuel Costs

Brandon's new car uses 8.5 L/100 km and  
gas costs \$ 1.20 /L.

If he drives for 1500 km/month, how much will his fuel cost be for a month?

**Total Cost = cost x Fuel Consumption x Distance**

$$= 1.2 \left( \frac{8.5}{100} \right) (1500)$$
$$= 153.00$$

### *Other costs to consider:*

- **insurance** (monthly payments)
  - > depends on: age, sex, marital status, avg. mileage claims history, credit history, where you live, the vehicle itself
  - > approx. \$75-100/month
- **maintenance** (a few times a year)
  - > oil change (approx. every 3 months)
  - > accidental damage
  - > etc.
- **depreciation**
  - > the older (and more used) the car gets, the less it's worth
  - > drops by about ~15-20% each year
  - \* starting as soon as you drive it off the lot!

Total Cost for a month

Payments 350 /month

Insurance 100 /month

License Plate/Drive clean test 150 /year ←

Gas 150 /month

12.50

Maintenance 30 /month

Total : \$ 642.50

Seatwork

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