

Name: _____

Financing a Car

Whether you decide to buy a used car or a new car, you may find it necessary to pay for your purchase by *instalments*.



Bette buys a used car from a dealer for a total price of \$4350 plus sales tax at 7%. She makes a down payment of \$1000 and agrees to make 24 monthly payments of \$190 to clear the debt.

There are several questions that Bette should consider before she signs the contract with the dealer.

What is the total cash price?

$$\begin{aligned} & \$4350 + 7\% \text{ of } \$4350 \\ &= \$4350 + 304.50 \\ &= \$4654.50 \end{aligned}$$

What is the instalment price?

$$\begin{aligned} & \text{Down payment} + \text{Instalment payments} \\ &= \$1000 + (\$190 \times 24) \\ &= \$1000 + \$4560 \\ &= \$5560 \end{aligned}$$

What is the finance charge?

$$\begin{aligned} & \text{Instalment price} - \text{Cash price} \\ &= \$5560 - \$4654.50 \\ &= \$905.50 \end{aligned}$$

24 payments of \$190 each

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What is the interest rate being charged?

There is a formula that Bette can use to calculate the true interest rate of this instalment purchase.

$$r = \frac{200NC}{P(n+1)} \%$$

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r is the true interest rate per year;

N is the number of payment intervals per year;

C is the finance charge (total instalment price minus cash price);

P is the principal (cash price minus down payment);

n is the number of payments.

First find the values of the variables to substitute into the formula.

$$N = 12$$

$$C = \$905.50$$

$$\begin{aligned} P &= \text{Cash price} - \text{Down payment} \\ &= \$4654.50 - \$1000 \\ &= \$3654.50 \end{aligned}$$

$$n = 24$$

Now substitute.

$$\begin{aligned} r &= \frac{200NC}{P(n+1)} \% \\ &= \frac{(200)(12)(905.50)}{(3654.50)(24+1)} \% \\ &= 23.8\% \end{aligned}$$

The true rate of interest on the purchase is 23.8%.

Payments are monthly and there are 12 months a year

of payments in a year

Total number of payments made

Total # of payments made

Exercise

- B 1. For each used car shown below, determine:
- the cash price (sales tax is at 15%);
 - the instalment price;
 - the finance charge.

(a)

A GREAT BUY!
ONLY \$3695 cash
AND IT'S YOURS!
(OR PAY \$500 DOWN AND
\$177.95/MONTH FOR
24 MONTHS)

(b)

EXCELLENT CONDITION
Drive it away for
only \$4999⁰⁰
OR PAY \$800 DOWN
PLUS 36 MONTHLY
PAYMENTS OF \$162.55

(c)

BUY OF THE WEEK
\$2800⁰⁰ cash
or pay \$287.26/month for
1 year - NO money down!

(d)

JUST WHAT YOU'VE
BEEN LOOKING FOR!
\$6250⁰⁰ CASH
OR \$1000 DOWN PLUS \$242.97
A MONTH FOR THREE YEARS -
ask for Louie.

2. Calculate the true interest rate for each part of Question 1.

3. Ruth buys a used car for \$5200 with sales tax at 15%. She pays \$2000 down, then pays off the rest of the debt by making 18 monthly payments of \$246.21.

- (a) Determine the finance charge.
(b) Calculate the true rate of interest Ruth is paying.

4. Judith purchases a new car whose sticker price is \$8714.65, plus sales tax at 15%. She makes a down payment of 30% followed by 24 monthly payments of \$313.90.

- (a) Calculate the finance charge.
(b) What rate of interest is Judith paying?

5. José purchases a new car with the following options.

- PDI and freight \$345.09
- Automatic transmission 483.95
- Power steering 250.00
- Sunroof 367.80
- Radio option ③ 334.45
- Wire wheel covers and locks 235.50
- Extended warranty A 375.00

- (a) Use the base price and Options List above to determine the total cash price of the car (5% tax).
8761.00
(b) If José puts \$3800 down, and pays the remainder in 36 monthly payments of \$270.57, calculate the true rate of interest he is paying.