11.4 - Installment Buying

VOCABULARY

OPEN-END INSTALLMENT LOAN
A loan on which you can make variable payments each month, like credit cards.

FIXED INSTALLMENT LOAN
A loan on which you pay a fixed amount of money for a set number of payments, like car loans, student loans, or mortgages.

ANNUAL PERCENTAGE RATE (APR)
The true rate of interest charged for the loan.

FINANCE CHARGE
The total amount of money the borrower must pay for its use.

TOTAL INSTALLMENT PRICE
The sum of all the monthly payments and the down payment, if any.

ACTUARIAL METHOD and RULE OF 78s
Two methods by which to determine the finance charge when you repay the loan early. The actuarial method uses the APR tables and is used more frequently.

UNEARNED INTEREST
The interest saved by paying off the loan early.

UNPAID BALANCE METHOD
The borrower is charged interest or a finance charge on the unpaid balance from the previous charge period.

AVERAGE DAILY BALANCE METHOD
A balance is determined when there is a transaction and the borrower is charged a pro-rated interest based on how long a certain balance was held.

Example 1: John wishes to buy a HDTV for $4500. The store is advertising a financing option of no down payment and 7% APR for 24 months. Determine the finance charge and monthly payment.

Borrow, APR, mo

$$\text{Finance Charge} = \frac{\text{Borrow}}{100}\left(\text{APR/mo in table}\right)$$

$$= \frac{4500}{100}\left(24 \rightarrow \overset{7\%}{\downarrow} 7.45\right)$$

$$= 45\ (7.45)$$

$$= \$335.25$$

$$\text{mo pmt} = \frac{\text{Borrow} + \text{FC}}{\text{mo}}$$

$$= \frac{4500 + 335.25}{24}$$

$$= \$201.47$$

Example 2: Al and Jill are purchasing a piano for $5000, including taxes. They decide to make a $1000 down payment and finance the balance. The loan states that the monthly payment is $121 per month for 36 months. Determine the finance charge and APR.

2nd way to find FinChg

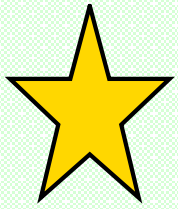
Know: Borrow + pmts

↳ pay for borrow + finchg

pays	−	borrow
(121)(36)		4000
4356	− 4000	= $356 FinChg

Find APR 90

$$\text{FinChg} = \frac{\text{Borrow}}{100}\left(\#\text{ in table}\right)$$



$$356 = \frac{4000}{100}\left(\#\text{ in table}\right)$$

8.90 = # in table

APR 5.90

36 mo → 8.9 (8.71)

Example 3: Tino borrowed $9800 to purchase a 65 Ford Mustang. If his payments are $237 for 48 months, what is the APR?

$$\text{Finchg} = \text{Pay} - \text{Borrow}$$
$$= 237(48) - 9800$$
$$= 1576$$

$$\text{Finchg} = \frac{\text{Borrow}}{100}\left(\#\text{ in table}\right)$$

$$1576 = \frac{9800}{100}\left(\#\text{ in table}\right)$$

$$16.08 = \#\text{ in table}$$

48 $\longrightarrow$ 16.08

7.5% APR

Example 4: If Tino decides to pay off his loan on the 30th payment, using the actuarial method how much interest will he save? What is the total amount due on the 30th payment to pay off the loan?

$$u = \frac{npv}{100+v}$$

$$= \frac{18(237)(16.06)}{116.06}$$

$u = \$590.32$ saves

Tino

Borrow 9800

APR < 7.5%

48 mo

pay 237

1-29 ✓ 30 31-48 Skip n (18)

Final pmt = All remaining pmts − saves

$= (19)(237) - 590.32$

$= \$3912.68$

Example 5: If Tino decides to pay off his loan on the 30th payment, using the rule of 78s method how much interest will he save? What is the total amount due on the 30th payment to pay off the loan?

$$u = \frac{f\,k(k+1)}{n(n+1)}$$

$$= \frac{1576(18)(19)}{48(49)}$$

$u = \$229.16$

Tino

Borrow 9800

APR < 7.5%

48 mo

pay 237

finchg 1576

1–29 ✓ 30 31–48 Skip

n (18)

final pay = Remaining pay − saves

$= 19(237) - 229.16$

$= \$4273.84$