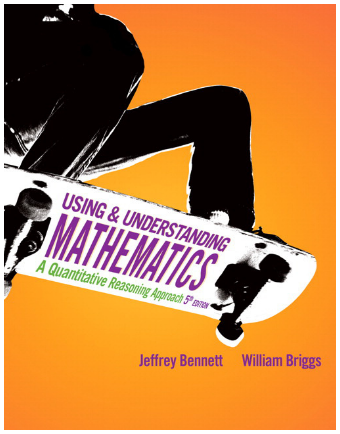
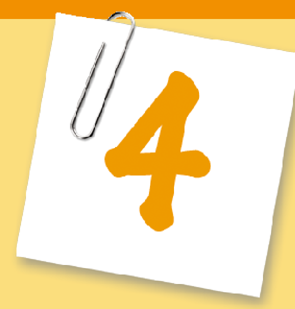


Managing Your Money



PEARSON

Unit 4D

Loan Payments, Credit Cards, and Mortgages

Loan Basics

- The **principal** is the amount of money owed at any particular time.
- An **installment loan** (or amortized loan) is a loan that is paid off with equal regular payments.
- An **amortization schedule** is a table of principal and interest payments over the life of a loan.

Loan Payment Formula (Installment Loans)

$$\text{PMT} = \frac{P \times \left(\dfrac{\text{APR}}{n} \right)}{\left[1 - \left(1 + \dfrac{\text{APR}}{n} \right)^{(-nY)} \right]}$$

PMT = regular payment amount
P = starting loan principal (amount borrowed)
APR = annual percentage rate
n = number of payment periods per year
Y = loan term in years

Principal and Interest for Installment Loans

The portions of installment loan payments going toward principal and toward interest vary as the loan is paid down.

- Early in the loan term, the portion going toward interest is relatively high and the portion going toward principal is relatively low.
- As the term proceeds, the portion going toward interest gradually decreases and the portion going toward principal gradually increases.

Loan Amortization Example

TABLE 4.9 Interest and Principal Portions of Payments on a $7500 Loan (10-year term, APR = 9%)

End of . . .	Interest = 0.0075 × Balance	Payment Toward Principal	New Principal
Month 1	0.0075 × $7500 = $56.25	$95.01 − $56.25 = $38.76	$7500 − $38.76 = $7461.24
Month 2	0.0075 × $7461.24 = $55.96	$95.01 − $55.96 = $39.05	$7461.24 − $39.05 = $7422.19
Month 3	0.0075 × $7422.19 = $55.67	$95.01 − $55.67 = $39.34	$7422.19 − $39.34 = $7382.85

Credit Cards

Credit cards differ from installment loans in that you are not required to pay off your balance in any set period of time.

- A minimum monthly payment is required.
- Monthly payment generally covers all the interest but very little principal.
- It takes a very long time to pay off a credit card loan if only the minimum payments are made.

Credit Card Debt

Example: You have a credit card balance of $2700 with an annual interest rate of 23%. How much will you need to pay each month in order to pay off your balance over 1 year?

Solution:

$$\text{PMT} = \frac{P \times \left(\frac{\text{APR}}{n}\right)}{\left[1-\left(1+\frac{\text{APR}}{n}\right)^{(-nY)}\right]} = \frac{\$2700 \times \left(\frac{0.23}{12}\right)}{\left[1-\left(1+\frac{0.23}{12}\right)^{(-12\times 1)}\right]} = \$254.01$$

You must pay $254.01 per month to pay off the balance in 1 year.

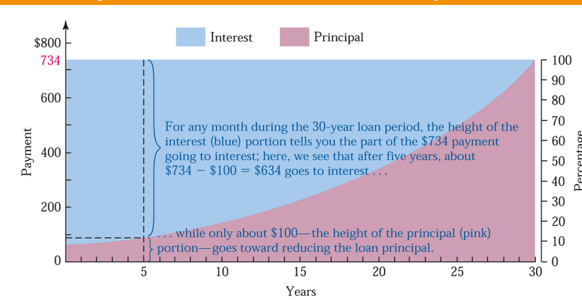
Mortgages

- A home **mortgage** is an installment loan designed specifically to finance a home.
- The **down payment** is the amount of money you must pay up front in order to be given a mortgage or other loan.
- **Closing costs** are fees you must pay in order to be given the loan. These include
  - direct costs, or fees charged as points, where each point is 1% of the loan amount.

Mortgages

- A **fixed rate mortgage** is one in which the interest rate is guaranteed not to change over the life of the loan.
- An **adjustable rate mortgage** is one where the interest rate changes based on the prevailing rates.

The Relationship Between Principal and Interest for a Payment



Portions of monthly payments going to principal and interest over the life of a 30-year $100,000 loan at 8%