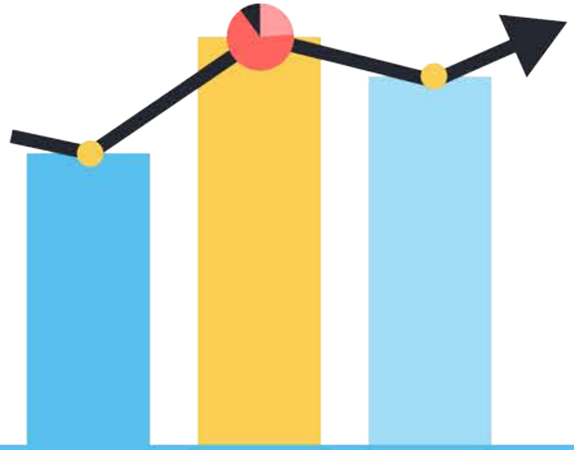
Financial Instruments

Mortgages



Learning Objectives

- **Calculate mortgage payments** based on given mortgage rate and amortization period
- Define and distinguish between **mortgage term** and **amortization period**

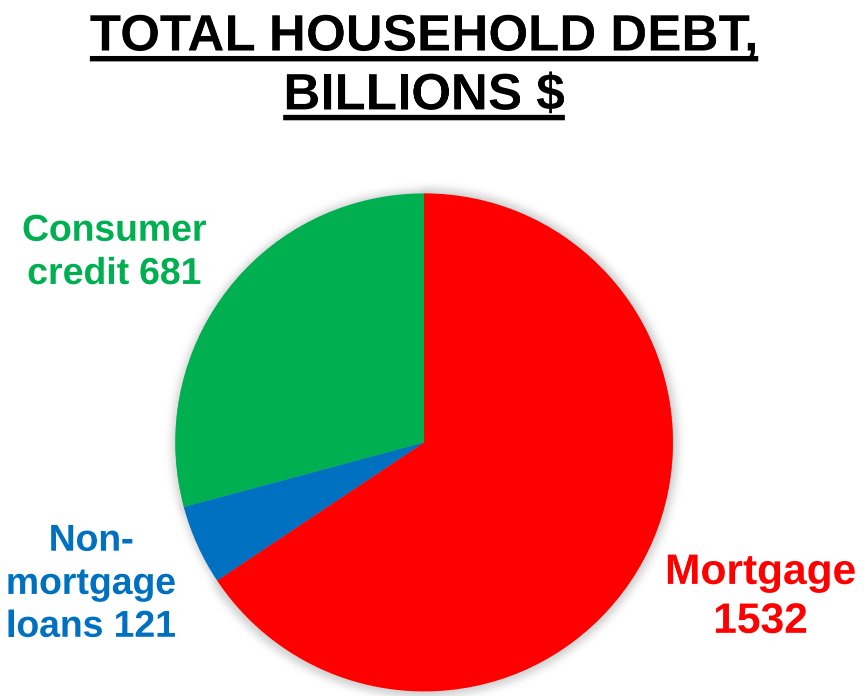
Mortgage Loans

- A loan secured by real property (i.e. borrow money and use real property as a collateral)

- A French law term that means "death contract" – the pledge ends when the obligation is fulfilled
  - "mort-" means death

Importance of Mortgage

- Mortgage is the most common way to finance your home



New purchases with mortgage exceed those not needing mortgage by a factor of 6 (source: Canada Mortgage and Housing Corporation)

Source: https://www150.statcan.gc.ca/t1/tbl1/en/cv.action?pid=3810023801

Mortgage Terminology (part 1)

- You need to buy a house for $500,000
- You can borrow up to a certain fraction of that amount (say 80%, or $400,000) → **Principal**
- The rest of it ($100,000) you need to pay yourself → **Down Payment**
- The ratio of the mortgage loan to the value of the house ($400,000/$500,000 = 0.8) is called loan-to-value ratio (or LTV)

Mortgage Terminology (part 2)

- A bank will loan you the money (principal $400,000) and charge you an interest rate → **mortgage rate** (e.g. annual rate of 5%)

- An agreed time horizon is set for repayment → **amortization period** (e.g. 25 years)

- The amount of each regular payment (e.g. monthly) is calculated

Mortgage terminology (part 3)

- The agreed upon interest rate is usually fixed for a shorter period of time (e.g. 5 years) → **term**
- After the term is over, the monthly payments may change as a result of changes in interest rate

!!!

The payments are calculated based on the amortization period, NOT the term!

Mortgage Example

- $500,000 home, with a 20% down payment; Mortgage rate is 5%, 5 year term, 25 year amortization period

a) What is your monthly payment during this term?

b) After the end of the term, the new mortgage rate is 6%, what is your new monthly payment?

Mortgage Example

- $500,000 home, with a 20% down payment; Mortgage rate is 5%, 5 year term, 25 year amortization period

a) What is your monthly payment during this term?

Mortgage Example

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b) After the end of the term, the new mortgage rate is 6%, what is your new monthly payment?

Some Canadian mortgage rules

- Since 2012, amortization periods of up to 25 years are allowed
- For amortization periods of 25 years, down payment must be at least 20%
- For shorter amortization periods, down payment may be smaller (< 20%), but mortgage insurance is required

Real-life mortgages can be more complicated

- Interest rates can be variable within a term
- You can pay down your mortgage quicker
- …

Summary

1. Mortgages are loans backed by real property (most common way to finance a home)
2. Mortgage payments are calculated based on the amount of principal, mortgage rate, and amortization period
3. At the end of each term, the next set of mortgage payments are determined by:
   - the amount still owed,
   - new mortgage rate, and
   - remaining amortization period