

# FM 30 2.1 -Analyzing Loans and Amortization

## What Is a Loan?

A \_\_\_\_\_ is money that is borrowed and must be paid back over time. The original amount borrowed is called the \_\_\_\_\_. When you borrow money, you are charged \_\_\_\_\_, which is the cost of borrowing.

## Interest and Compounding

Most real-world loans use \_\_\_\_\_, meaning interest is calculated on the principal *and* on previously earned interest. How often interest is added is called the **compounding** \_\_\_\_\_ (monthly, quarterly, annually, etc.). More frequent compounding generally means more interest paid.

## Regular Payment Loans

Many loans are repaid through **regular** \_\_\_\_\_ (such as monthly payments). Each payment includes: - \_\_\_\_\_ **paid** (based on the current balance) - \_\_\_\_\_ **paid** (the part that reduces the loan balance)

At the start of a loan, a larger portion of each payment goes toward interest. Over time, as the balance decreases, more of each payment goes toward paying off the principal.

An \_\_\_\_\_ **table** shows how a loan is paid off over time.

	A	B	C	D	E
1	Payment Period (month)	Payment (\$)	Interest Paid (\$)	Principal Paid (\$)	Balance (\$)
2	0				12000
3	1	350	50	300	11700
4	2	350	48.75	301.25	11398.75

Amortization tables help borrowers understand how long a loan will take to repay and how much total interest will be paid.

## Key Ideas to Remember

- Higher interest rates → \_\_\_\_\_ interest paid
- Longer loan terms → \_\_\_\_\_ interest paid
- Larger or more frequent payments → \_\_\_\_\_ interest paid
- As time passes: interest paid \_\_\_\_\_, principal paid increases

Understanding loans helps people make better financial decisions about borrowing money.

## Examples

### EXAMPLE 2 Solving for the future value of a loan with a single loan payment

Trina's employer loaned her \$10 000 at a fixed interest rate of 6%, compounded annually, to pay for college tuition and textbooks. The loan is to be repaid in a single payment on the maturity date, which is at the end of 5 years.

- a) How much will Trina need to pay her employer on the maturity date? What is the accumulated interest on the loan?



### EXAMPLE 4 Solving for the payment and interest of a loan with regular payments

Jose is negotiating with his bank for a **mortgage** on a house. He has been told that he needs to make a 10% down payment on the purchase price of \$225 000. Then the bank will offer a mortgage loan for the balance at 3.75%, compounded semi-annually, with a term of 20 years and with monthly mortgage payments.

- a) How much will each payment be?
- b) How much interest will Jose end up paying by the time he has paid off the loan, in 20 years?
- c) How much will he pay altogether?

#### **mortgage**

A loan usually for the purchase of real estate, with the real estate purchased used as collateral to secure the loan.

# Assignment: Analyzing Loans

Total: 25 Marks

## Section B: Fill in the Blanks (7 marks)

Use the word bank below. Each word is used **once**. Two words will not be used.

1. The original amount borrowed is called the \_\_\_\_\_.
2. The cost of borrowing money is known as \_\_\_\_\_.
3. A loan that uses interest on both the principal and previous interest uses \_\_\_\_\_ interest.
4. A table that shows each loan payment and the remaining balance is an \_\_\_\_\_ table.
5. The amount of the loan still owed is called the \_\_\_\_\_.
6. When payments are made more often, the total interest paid usually \_\_\_\_\_.
7. The part of a payment that reduces the loan balance is the \_\_\_\_\_ paid.

**Word Bank:** principal, balance, compound, amortization, interest, principal portion, decreases, investment, simple

## Section C: Multiple Choice (6 marks)

Write the correct letter in the space provided for each question.

1. \_\_\_\_\_ What happens to the principal portion of a payment over time? A. It stays the same B. It increases C. It decreases D. It disappears
2. \_\_\_\_\_ Which factor would most likely increase the total interest paid on a loan? A. Making larger payments B. Shortening the loan term C. Increasing the interest rate D. Paying more frequently
3. \_\_\_\_\_ What does an amortization table show? A. Only the total interest paid B. Only the monthly payment C. The value of an investment D. How a loan balance changes over time
4. \_\_\_\_\_ Which type of interest is most commonly used in bank loans? A. Simple interest B. Flat interest C. Compound interest D. Fixed interest
5. \_\_\_\_\_ Why is more interest paid at the beginning of a loan? A. Payments are smaller B. The balance is higher C. The interest rate increases D. The principal is increasing

6. \_\_\_\_\_ Which action would reduce the total cost of a loan? A. Extending the term  
B. Increasing the interest rate C. Making smaller payments D. Making extra payments

---

---

## Section A: Broad Understanding (6 marks)

Answer each question in **one sentence or less**.

1. What is the difference between principal and interest?

---

---

2. Why does the amount of interest paid decrease over time in a regular payment loan?

---

---

3. How does an amortization table help someone understand a loan?

---

---

---

---

---

---

---

---