3-2
LOANS

You will need:

- **Student Notes**
- **Highlighter**
- **Textbook**
- **Calculator**
- **3-1 Notes**
- **Notebook Paper**
- **Pen or Pencil**

OBJECTIVES

Compute monthly payments from a table.

Compute monthly payments using a formula.

Compute interest (finance fees) on loans.

Your car has broken down and you have decided to buy a different car.

You don’t have enough money saved so you need to borrow some money.

How much will it cost you each month?

Today, We will learn how to determine your monthly payment.

Table of monthly payments per $1,000 of principal

Monthly Payment per $1,000 of Loan

Interest Rate (APR)	2-Year Loan	3-Year Loan	4-Year Loan	5-Year Loan
1%	$42.10	$28.21	$21.26	$17.09
2%	$42.54	$28.64	$21.70	$17.53
3%	$42.98	$29.08	$22.13	$17.97
4%	$43.42	$29.52	$22.58	$18.42
5%	$43.87	$29.97	$23.03	$18.87
6%	$44.32	$30.42	$23.49	$19.33
7%	$44.77	$30.88	$23.95	$19.80

If you borrowed $1,000 for 2 years at 5% what would be your monthly payment?

$43.87

Example 1

Monthly Payment per $1,000 of Loan

Interest Rate (APR)	2-Year Loan	3-Year Loan	4-Year Loan	5-Year Loan
1%	$42.10	$28.21	$21.26	$17.09
2%	$42.54	$28.64	$21.70	$17.53
3%	$42.98	$29.08	$22.13	$17.97
4%	$43.42	$29.52	$22.58	$18.42
5%	$43.87	$29.97	$23.03	$18.87
6%	$44.32	$30.42	$23.49	$19.33
7%	$44.77	$30.88	$23.95	$19.80

What is the monthly payment for a $4,000 two-year car loan with an APR of 4%?

Monthly payment from a table = table # x $\frac{\text{amount borrowed}}{1{,}000}$

= 43.42 x 4,000/1,000

= **$173.68**

Example 1 – You try it!

Monthly Payment per $1,000 of Loan

Interest Rate (APR)	2-Year Loan	3-Year Loan	4-Year Loan	5-Year Loan
1%	$42.10	$28.21	$21.26	$17.09
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Juan is borrowing $41,000 for a 5 year car loan at an APR of 3%. What is the monthly payment?

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7%	$44.77	$30.88	$23.95	$19.80

Juan is borrowing $41,000 for a 5 year car loan at an APR of 3%. What is the monthly payment?

Monthly payment from a table = table # x $\frac{\text{amount borrowed}}{1{,}000}$

= 17.97 x 41,000/1,000

= **$736.77**

Steps to Find the Interest Paid (Total Finance Fees) (With NO Down Payment)

When would you use the 3-1 steps and when would you use the 3-2 steps?

How are the steps different?

Example 2

Monthly Payment per $1,000 of Loan

Interest Rate (APR)	2-Year Loan	3-Year Loan	4-Year Loan	5-Year Loan
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2%	$42.54	$28.64	$21.70	$17.53
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6%	$44.32	$30.42	$23.49	$19.33
7%	$44.77	$30.88	$23.95	$19.80

What is the total interest you will have to pay for a $4,000, two-year car loan with an APR of 4%?

a) Monthly payment from a table = table # x $\frac{\text{amount borrowed}}{1{,}000}$

= 43.42 x 4,000/1,000

= $173.68

Example 2

Monthly Payment per $1,000 of Loan

Interest Rate (APR)	2-Year Loan	3-Year Loan	4-Year Loan	5-Year Loan
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What is the total interest you will have to pay for a $4,000, two-year loan with an APR of 4%?

b) Total monthly payments = monthly payment x # of years x 12

= 173.68 x 2 x 12

= **$4,168.32**

Example 2

Monthly Payment per $1,000 of Loan

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What is the total interest you will have to pay for a $4,000, two-year loan with an APR of 4%?

c) Total interest =

total monthly payments – original principal

= 4,168.32 – 4,000

= **$168.32**

Example 4

- Mark bought a new car.
- The total amount he needs to borrow is $28,716.
- He plans on taking out a 4-year loan at an APR of 3.12%.
- What is the monthly payment?

Why can't I use the table?

Monthly Payment per $1,000 of Loan

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Example 4

- Mark bought a new car.
- The total amount he needs to borrow is $28,716.
- He plans on taking out a 4-year loan at an APR of 3.12%.
- What is the monthly payment?

$$M = \frac{P\left(\frac{r}{12}\right)\left(1+\frac{r}{12}\right)^{12t}}{\left(1+\frac{r}{12}\right)^{12t}-1}$$

M = monthly payment **M**

***P* =** Principal **28,716.**

***r* =** annual interest rate (converted) **.0312**

***t* =** length of loan in years **4**

Example 4

- Mark bought a new car.
- The total amount he needs to borrow is $28,716.
- He plans on taking out a 4-year loan at an APR of 3.12%.
- What is the monthly payment?

$$M = \frac{28,716\left(\frac{.0312}{12}\right)\left(1+\frac{.0312}{12}\right)^{12(4)}}{\left(1+\frac{.0312}{12}\right)^{12(4)}-1}$$

M = monthly payment **M**

***P* =** Principal **28,716.**

***r* =** annual interest rate (converted) **.0312**

***t* =** length of loan in years **4**

$637.13

Example 4 - You try it!

Find the monthly payment for a $1,000, one-year loan at an APR of 2.5%.

Example 4 - You try it!

Find the monthly payment for a $1,000, one-year loan at an APR of 2.5%.

$$M = \frac{P\left(\frac{r}{12}\right)\left(1+\frac{r}{12}\right)^{12t}}{\left(1+\frac{r}{12}\right)^{12t}-1}$$

M = monthly payment ___M___

***P* =** Principal ___1,000___

***r* =** annual interest rate (converted) ___.025___

***t* =** length of loan in years ___1___

Example 4 - You try it!

Find the monthly payment for a $1,000, one-year loan at an APR of 2.5%.

$$M = \frac{1{,}000\left(\frac{.025}{12}\right)\left(1+\frac{.025}{12}\right)^{12(1)}}{\left(1+\frac{.025}{12}\right)^{12(1)}-1}$$

M = monthly payment **M**

***P* =** Principal **1,000**

***r* =** annual interest rate (converted) **.025**

***t* =** length of loan in years **1**

$84.47

Example 5

Natasha needs to borrow $400 until her next paycheck to purchase a wedding gift.

She goes to Friendly Fred's Payday Loans Store which lends her the $400 for 3 weeks.

Fred charges her $70 in interest and fees for the 3 weeks.

What is the APR for this loan?

$$\text{Payday APR \%} = \left(\frac{\text{Loan Interest}}{\text{Loan Amount}}\right) \div \left(\frac{\text{Loan Length in Days}}{365}\right) x100$$

$$\text{Payday APR \%} = \left(\frac{70}{400}\right) \div \left(\frac{3x7}{365}\right) x100$$

304%

Example 5 - You try it!

Harrison's Loan Stars loaned Nicole $900 that she needed for an unexpected car repair.

She must repay the loan in 30 days.

The interest and fees are $100.

What is the APR for this loan, to the nearest percent?

Example 5 - You try it!

Harrison's Loan Stars loaned Nicole $900 that she needed for an unexpected car repair.

She must repay the loan in 30 days.

The interest and fees are $100.

What is the APR for this loan, to the nearest percent?

$$\text{Payday APR \%} = \left(\frac{\text{Loan Interest}}{\text{Loan Amount}}\right) \div \left(\frac{\text{Loan Length in Days}}{365}\right) x100$$

$$\text{Payday APR \%} = \left(\frac{100}{900}\right) \div \left(\frac{30}{365}\right) x100$$

135%

Please work on you assignment.
It is due at the end of next class.

Grade goes here	Read Pg: 157 to 161 Do Pg 162: #2-7, 9-12, 14, 15, 17, 18c-h	**Last First P__ A:3-2**