

## Lesson Plan

**Text: Financial Algebra**

**Volume: 1**

**Chapter: Consumer Credit**

**Section number: 4-2**

**Title of unit: Loans**

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**Date: June 26, 2012**

**Short Description (Be sure to include where in your unit this lesson takes place):**

This lesson covers Chapter 4 Section 2 which helps students understand loans and how to accurately calculate monthly payments, finance charges and loan comparison.

### LESSON PLAN

**TEACHER: Lisa Williksen**

- **Lesson Objectives:**
  - Understand the key financial terms for Loans
  - Understand how to use monthly payment calculators to determine
    - monthly payment when provided interest rate, principal and length of loan
    - total amount of monthly payments
    - finance charge on a loan
  - Understand how to determine the benefits of different loans when comparing loan offers
- **List of prerequisite skills needed:**
  - Understanding of credit, interest, finance charges and monthly payments
- **Vocabulary:**
  - 1) **Cosigner** – the person who agrees to pay back the loan if the borrower is unable to do so
  - 2) **Life Insurance** – creditors often require a borrower to have life insurance that will cover the loan in the event the borrower dies before the loan is paid in full
  - 3) **Prepayment Privilege** – allows the borrower to make payments before the due date to reduce the amount of interest
  - 4) **Prepayment Penalty** – requires borrowers to pay a fee if they wish to pay back an entire loan before the due date.
  - 5) **Wage Assignment** – voluntary deduction from an employee's paycheck, used to pay off debts.
  - 6) **Promissory Note** – agreement that states the conditions of the loan.
  - 7) **Principal** – Amount of money borrowed
  - 8) **Annual Percentage Rate (APR)** – interest rate you pay on the loan

- 9) **Wage Garnishment** – Involuntary form of wage assignment, often enforced by court order
- 10) **Balloon Payment** – The last monthly payment on some loans can be much higher than the previous payment
- 11) **Collateral** – Security, such as personal belongings, car or boat, stock certificate, that a loan will be repaid.
- 12) **Lending Institutions** – Organizations that extend loans for a profit
  - a) **Banks** – most common organizations for consumers with good credit ratings to apply for a loan
  - b) **Credit Unions** – provide loans to their members only (usually require good credit rating)
  - c) **Consumer Finance Companies** – organizations that loan to people with poor credit ratings at a high interest rate
  - d) **Life Insurance Companies** – life insurance companies will make loans to their policyholders based on the amount of life insurance purchased and the length of time the policy has been held. Usually good interest rate.
  - e) **Pawnshops** – known for small, quick loans. A customer who needs money leaves a personal belonging (collateral) with the pawn broker in exchange for the loan. Most are 30, 60 or 90 days in length.

- **State Standards addressed:** *(You may use your District's Power Standards if applicable, Highlight "Green" Standards)*

**Math:** (Common Core State Standards)

**A-SSE Interpret the structure of expressions**

1b – Interpret complicated expressions by viewing one or more of their parts as a single entity

2 – Use the structure of an expression to identify ways to rewrite it.

**A-SSE Write expressions in equivalent forms to solve problems**

3c – Use the properties of exponents to transform expressions for exponential functions.

**F-IF Analyze functions using different representations**

8b – Use the properties of exponents to interpret expressions of exponential functions.

**F-LE Construct and compare linear and exponential models and solve problems**

5 – Interpret the parameters in a linear or exponential function in terms of a content.

**Reading:** (Common Core State Standards)

Integrate and evaluate multiple sources of information presented in different media or formats (e.g., visually, quantitatively) as well as in words in order to address a question or solve a problem.

**Leadership:**

1.1 - Student will analyze, refine & apply decision-making skills through classroom, family, community, and business and industry experiences.

1.4 - Student will be involved in activities that require applying theory, problem-solving, and using critical & creative thinking skills while understanding outcomes of related decisions.

- **Teacher Preparation:** *(What materials and set-up are required for this lesson?)*
  1. Table of Monthly Payments for \$1,000 of Principal (page 183 in text)
  2. Access to computer websites for usage of online payment calculators
  3. Monthly Payment Formula to show students the formula used by the website to generate payments
- **Content Delivery:** *(How will the lesson be delivered? List any grouping and instructional strategies as well.)*
  1. Discussion on why and when to take out a loan.
  2. Review of the vocabulary listed above.
  3. Direct Instruction of Example 1 on page 183 with multiple examples on how to use the table at the top of page 183
  4. Now explain to students that the limitation of the table is the flexibility to calculate a wider variety of interest rates (such as 5.34%). Have students turn to Example 4 on page 184 to show them the formula used to calculate monthly payments. Once they get over complaining that its too hard... inform students that there are multiple computer websites that perform the calculation for you. Have students search the web or app store for websites/applications that calculate loan payments for you.
  5. Two payment calculations websites that you can have students look at are:
    1. [www.intererst.com](http://www.intererst.com)
    2. [www.bankrate.com](http://www.bankrate.com)
  6. Using practice problems have students use the calculator website/app they want to calculate a variety of loan payments verifying their answers to your answers to verify that the students can use the website correctly.
  7. Directly instruct Example 2 and discuss why the total amount of payments made isn't the same as the principal amount borrowed.
  8. Direct instruct Example 3 and discuss what the finance charge represents.
  9. Using a website or application monthly payment calculator have students complete the Application problems #1-14 all and 16.

- **Instructional Documents** *(Please attach any Worksheet, Quiz, Reading Guide, etc)*

- FA 4-2 Car Loan Worksheet
- Financial Algebra 4-2 Application problems on p. 185-186

- **Assessment Tool used in this Lesson** *(scoring method, guide, or rubric)*

- FA 4-2 Quiz
- FA 4-2 Vocabulary Quiz

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- **Reinforcement/Intervention/Extension Activities**

- Several websites that can be used as extensions/introductions to this lesson are:
  - TedTalks -  
[http://www.ted.com/talks/lang/en/john\\_gerzema\\_the\\_post\\_crisis\\_consumer.html](http://www.ted.com/talks/lang/en/john_gerzema_the_post_crisis_consumer.html)
  - Khan Academy
    - <http://www.khanacademy.org/finance-economics/core-finance/v/introduction-to-interest>
    - <http://www.khanacademy.org/finance-economics/core-finance/v/introduction-to-mortgage-loans>
    - <http://www.khanacademy.org/finance-economics/core-finance/v/payday-loans>
    - <http://www.khanacademy.org/finance-economics/core-finance/v/annual-percent-age-rate--apr--and-effective-apr>
  - Loan Payment Calculators
    - [www.intererst.com](http://www.intererst.com)
    - [www.bankrate.com](http://www.bankrate.com)
- **Career Applications** (*When will this be used in “real life”?*)
  - The majority of students will take out multiple loans throughout their personal lives and students need to know how to read promissory note documents and to be able to calculate all of the finances involved in their particular loan. Some students may also take out commercial loans for business usage too.

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Name \_\_\_\_\_



Date \_\_\_\_\_

## Buying a Car - Loan Introduction

 <b>Toyota Celica</b> Price \$20,207	FINANCING Per Month \$561 Down Payment \$2,021 36 Months	 <b>Nissan Sentra</b> Price \$22,544	FINANCING Per Month \$626 Down Payment \$2,254 36 Months
4 dr, 6 Cyl, automatic, power locks, AM/FM Radio, tinted glass.		2 dr, 4 Cyl, manual, power locks, AM/FM Radio, tinted glass.	
 <b>Pontiac Grand Prix</b> Price \$25,795	FINANCING Per Month \$537 Down Payment \$2,580 48 Months	 <b>Nissan Altima</b> Price \$16,848	FINANCING Per Month \$702 Down Payment \$1,685 24 Months
4 dr, 4 Cyl, manual, power steering, AM/FM CD, tinted glass.		4 dr, 4 Cyl, manual, power steering, AM/FM cassette, wheel covers.	

1. How much would Michael save by purchasing the Nissan Altima and paying cash instead of taking a loan?	2. What is the price difference for paying cash for the Pontiac Grand Prix compared to taking a loan?
3. Paige wants to take out a loan to purchase the Pontiac Grand Prix. How much will Paige need for a down payment?	4. How much more would Derreck pay per month for the Nissan Sentra than the Toyota Celica?
5. How much less would Tyler pay per month for the Pontiac Grand Prix than the Nissan Altima?	6. For how many years will Madison make car payments if Madison buys the Pontiac Grand Prix?

ANSWERS

1. \$1,685.00

2. \$2,561.00

3. \$2,580.00

4. \$65.00

5. \$165.00

6. 4

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Name: \_\_\_\_\_

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Period: \_\_\_\_\_

# Washington

Financial Algebra

## Chapter 4 Consumer Credit Section 2 Loans

1. Lisa is purchasing a car for \$8,560 and is trying to determine which loan to accept. Loan option #1 is through her bank with a  $3\frac{1}{2}$  year loan at 6.99% interest. Loan option #2 is through the car dealer directly with a 4 year loan at 7.5%. Using a monthly payment calculator website or app, please answer the following questions
  - a. What is the monthly payment for loan #1?
  - b. What is the monthly payment for loan #2?
  - c. What is the total amount of the monthly payments for loan #1?
  - d. What is the total amount of the monthly payments for loan #2?
  - e. What is the finance charge for loan #1?
  - f. What is the finance charge for loan #2?
  - g. Which loan should Lisa select and why? Justify your answer with mathematical calculations and data.
  
2. A Consumer Finance Company offered Lisa a special deal of \$150 per month for 72 months.
  - a. What is the interest rate they are charging for the loan?
  - b. What is the total amount of the monthly payments for the loan?
  - c. What is the finance charge for the loan?
  - d. Should Lisa select this loan offer? Justify your answer with calculations and mathematical data.

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Answer Key

1a) \$230.35

b) \$206.97

c) \$9,674.70

d) \$9,934.56

e) \$1,114.70

f) \$1,374.56

g) Students could justify either loan. Below are examples of explanations for each choice:

- I would select the loan #1 because I would save \$259.86 in total finance charges and I would only have to pay for 42 months instead of 48 months

- I would select the loan #2 because my monthly payment would be \$23.38 lower per month. Yes overall I will pay \$259.86 more in total finance charges, but when divided over the 48 months, that's just an extra \$5.41 per month.

2a) 8%

b) \$10,800

c) \$2,240

d) Students could justify both loans, yet they should be discouraged from the second loan.

- No I would not select this third loan option because while the monthly payments are lower, I would be paying on the car for 6 years instead of 3 ½ or 4 years. The interest rate is higher 8% vs. 7.5% and 6.99% than the other 2 options and the total finance charges are twice as much too (\$2,240 vs. \$1,374.56 or \$1,114.70)

- Yes I would select this loan because even though I will be paying significantly higher finance charges I desperately need a car and my monthly budget can only afford \$150 per month in payment and both of the other payments are over \$200. *If students reply with this answer be sure to have a classroom discussion on what other options students have such as purchase a less expensive car so payments are \$150 or less, save up money for more of a down payment before purchasing a car, or find other ways to save \$50 in the monthly budget.*

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Name: \_\_\_\_\_

Date: \_\_\_\_\_

Period: \_\_\_\_\_

# Washington

Financial Algebra

## Chapter 4 Consumer Credit, Section 2 Loans

### Vocabulary Quiz

From the list of vocabulary words at the bottom, fill in the appropriate word to complete each statement.

1. The \_\_\_\_\_ on a loan is responsible for paying back a loan if the borrower defaults.
2. \_\_\_\_\_ is when employees are required by court order to have loan payments withdrawn from their paychecks.
3. \_\_\_\_\_ will cover the balance of a loan if a creditor dies before the loan is paid in full.
4. \_\_\_\_\_ allows a borrower to make payments before the due date to reduce the amount of interest, while \_\_\_\_\_ requires borrowers to pay a fee if they wish to pay back an entire loan before the due date.
5. The \_\_\_\_\_ is the agreement that states the conditions of a loan.
6. The amount of money borrowed on a loan is called the \_\_\_\_\_.
7. APR stands for \_\_\_\_\_ which is the \_\_\_\_\_ you will pay on the loan.
8. If the last monthly payment to pay off a loan is significantly higher than the previous monthly payments, then it is called a \_\_\_\_\_.
9. \_\_\_\_\_ is the financial term for a personal item given to the bank as a security that a loan will be repaid.
10. There are many different organizations that extend loans for a profit. \_\_\_\_\_ are the most common for consumers with good credit, while \_\_\_\_\_ are organizations that loan to people with poor credit ratings and \_\_\_\_\_ provide loans in exchange for a personal belonging.

**Annual Percentage Rate**

**Balloon Payment**

**Banks**

**Collateral**

**Consumer Finance Companies**

**Cosigner**

**Credit Unions**

**Interest Rate**

**Life Insurance**

**Life Insurance Companies**

**Pawnshops**

**Prepayment Penalty**

**Prepayment Privilege**

**Principal**

**Promissory Note**

**Wage Assignment**

**Wage Garnishment**

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**Answer Key**

From the list of vocabulary words at the bottom, fill in the appropriate word to complete each statement.

1. The **Cosigner** on a loan is responsible for paying back a loan if the borrower defaults.
2. **Wage Garnishment** is when employees are required by court order to have loan payments withdrawn from their paychecks.
3. **Life Insurance** will cover the balance of a loan if a creditor dies before the loan is paid in full.
4. **Prepayment Privilege** allows a borrower to make payments before the due date to reduce the amount of interest, while **Prepayment Penalty** requires borrowers to pay a fee if they wish to pay back an entire loan before the due date.
5. The **Promissory Note** is the agreement that states the conditions of a loan.
6. The amount of money borrowed on a loan is called the **Principal**.
7. APR stands for **Annual Percentage Rate** which is the **interest rate** you will pay on the loan.
8. If the last monthly payment to pay off a loan is significantly higher than the previous monthly payments, then it is called a **Balloon Payment**.
9. **Collateral** is the financial term for a personal item given to the bank as a security that a loan will be repaid.
10. There are many different organizations that extend loans for a profit. **Banks** are the most common for consumers with good credit, while **Consumer Finance Companies** are organizations that loan to people with poor credit ratings and **Pawn Shops** provide loans in exchange for a personal belonging.
  - a.

**Annual Percentage Rate**

**Balloon Payment**

**Banks**

**Collateral**

**Consumer Finance Companies**

**Cosigner**

**Credit Unions**

**Interest Rate**

**Life Insurance**

**Life Insurance Companies**

**Pawnshops**

**Prepayment Penalty**

**Prepayment Privilege**

**Principal**

**Promissory Note**

**Wage Assignment**

**Wage Garnishment**