

# 16.1 Repaying Loans

**TEKS**  
**Personal financial literacy—8.12.A** Solve real-world problems comparing how interest rate and loan length affect the cost of credit. Also 8.12.B, 8.12.E



## ESSENTIAL QUESTION

How do you calculate the cost of repaying a loan?

## Comparing Interest Rates

How much does it cost to borrow money? When you use a credit card or get a loan from a bank, the cost of borrowing the money depends on two factors. The first is the interest rate that you pay. The second is the time that you take to pay off the total amount.

**Interest** is the money that you pay to borrow money or use credit. The interest rate determines in part the cost of a loan or of purchases on a credit card.



### EXAMPLE 1



**TEKS** 8.12.A, 8.12.B

- A** In September, Alex charged his textbooks, clothes, and some downloads on his credit card. He received a bill from his credit card company for \$1000. The interest rate on his card is 21%. He is going to pay in 3 monthly payments. He wants to know how much this loan will cost him in interest.

Use an online calculator. Enter these numbers:

Loan amount: \$1000

Loan term: 3 months

Interest rate: 21% per year

*The calculator converts to 0.25 year.*

Click CALCULATE.

Monthly payment: \$345.07

What is Alex's total repayment?

$$\$345.07 \text{ monthly payment} \times 3 \text{ months} = \$1035.21$$

The credit card company loaned Alex \$1000, and he paid \$1035.21 back to the credit card company. What was the cost of this loan?

$$\text{Interest paid} = \$1035.21 - \$1000 = \$35.21$$

*The cost of the loan*

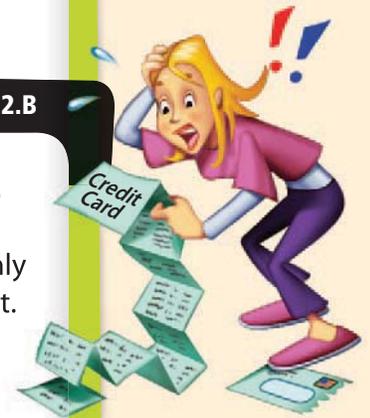
- B** Barry takes out a loan from his bank for \$1000 to buy a bicycle. The interest rate on his loan is 9%. He is going to pay the total amount in 3 monthly payments. Use an online calculator to find the cost of his loan.

What is Barry's total repayment and the cost of his loan?

$$\$338.35 \text{ monthly payment} \times 3 \text{ months} = \$1015.05$$

$$\text{Interest paid} = \$1015.05 - \$1000 = \$15.05$$

*The cost of the loan*



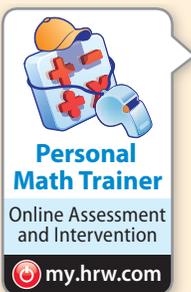
### Math Talk

**Mathematical Processes**

In addition to the interest you pay to borrow money, what other costs may there be when you take out a loan?

## Reflect

- 1. What if?** If Alex had saved \$333.34 a month for 3 months, how much money would he have? If he had used his savings instead of his credit card, how much less would his purchases have cost him?  
\_\_\_\_\_
- 2.** How much less did Barry's loan, at an interest rate of 9%, cost than Alex's loan at 21%?  
\_\_\_\_\_
- 3.** Barry looks into the cost of repaying an easy access loan for \$1000. The up-front cost of the loan is \$3 for every \$20 borrowed, plus Barry will owe \$1000 at the end of the loan. How much will this loan cost Barry?  
\_\_\_\_\_



## YOUR TURN

Use an online calculator to fill in the blanks for the easy access loans.

- |                               |                        |
|-------------------------------|------------------------|
| <b>4.</b> Loan amount: \$5000 | Monthly payment: _____ |
| Loan term: 2 years            | Total repayment: _____ |
| Interest rate: 7%             | Interest paid: _____   |
| <b>5.</b> Loan amount: \$5000 | Monthly payment: _____ |
| Loan term: 2 years            | Total repayment: _____ |
| Interest rate: 21%            | Interest paid: _____   |



## Comparing Loan Lengths

You saw in Example 1 how the interest rate affects the cost of borrowing money. The time taken to repay the loan also affects the cost.

### EXAMPLE 2



**TEKS 8.12.A, 8.12.B**

- A** Susan has a balance of \$1000 on her credit card. She stops using her card and pays the minimum monthly amount until the loan is paid off.

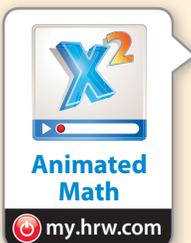
Use an online calculator. Enter these numbers:

Loan amount: \$1000  
Loan term: 93 months  
Interest rate: 18% per year

Click CALCULATE. Monthly payment: \$20.01



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What is Susan's total repayment?

$$\text{\$20.01 monthly payment} \times 93 \text{ months} = \text{\$1860.93}$$

What was the cost of this loan?

$$\text{Interest paid} = \text{\$1860.93} - \text{\$1000} = \text{\$860.93} \quad \textit{The cost of the loan}$$

- B** Laura also has a balance of \$1000 at 18% interest on her credit card. She stops using her card. She wants to pay as much as she can each month to pay off the loan as quickly as she can.

Use an online calculator. Enter these numbers:

Loan amount: \$1000

Loan term: 3 years

Interest rate: 18% per year

Click CALCULATE. Monthly payment: \$36.15

What is Laura's total repayment?

$$\text{\$36.15 monthly payment} \times 36 \text{ months} = \text{\$1301.40}$$

What was the cost of this loan?

$$\text{Interest paid} = \text{\$1301.40} - \text{\$1000} = \text{\$301.40} \quad \textit{The cost of the loan}$$

## Reflect

- 6. What If?** If Susan had put \$20 in her savings account each month, how long would it take her to save a total of \$1000? Compare this to the time she took to pay off her credit card loan of \$1000.

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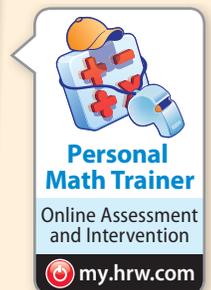
- 7.** Laura paid off her debt in 36 months while Susan took 93 months to pay off her debt of the same amount. How much less did Laura pay in interest than Susan paid?

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## YOUR TURN

Use an online calculator to fill in the blanks.

- 8.** Loan amount: \$5000      Monthly payment: \_\_\_\_\_  
Loan term: 2 years      Total repayment: \_\_\_\_\_  
Interest rate: 15%      Interest paid: \_\_\_\_\_
- 9.** Loan amount: \$5000      Monthly payment: \_\_\_\_\_  
Loan term: 4 years      Total repayment: \_\_\_\_\_  
Interest rate: 15%      Interest paid: \_\_\_\_\_



## Guided Practice

1. Kyle is going to take out a loan for \$1500 for 2 years. He wants to know how much more it will cost him in interest if he uses his credit card, at 20% interest, instead of borrowing from the bank at 11% interest. Find the difference in the cost of these two choices. (Example 1)

Enter the numbers in an online calculator and fill in the blanks.

### Credit Card

Loan amount: \$ \_\_\_\_\_

Loan term: \_\_\_\_\_ months

Interest rate: \_\_\_\_\_% per year

Monthly payment: \$ \_\_\_\_\_

\$ \_\_\_\_\_  $\times$  24 months =

Total repayment: \$ \_\_\_\_\_

Interest paid: \$ \_\_\_\_\_

### Bank Loan

Loan amount: \$ \_\_\_\_\_

Loan term: \_\_\_\_\_ months

Interest rate: \_\_\_\_\_% per year

Monthly payment: \$ \_\_\_\_\_

\$ \_\_\_\_\_  $\times$  24 months =

Total repayment: \$ \_\_\_\_\_

Interest paid: \$ \_\_\_\_\_

Kyle would pay \$ \_\_\_\_\_ less in interest if he borrows from the bank than if he borrows using his credit card.

2. How much less will Kyle pay in interest if he borrows \$1500 at 11% for 1 year instead of for 2 years? (Example 2)

Monthly payment: \$ \_\_\_\_\_

\$ \_\_\_\_\_  $\times$  \_\_\_\_\_ months = Total repayment: \$ \_\_\_\_\_

Interest paid: \$ \_\_\_\_\_

Kyle will pay \$ \_\_\_\_\_ less for a loan that lasts 1 year instead of 2.



### ESSENTIAL QUESTION CHECK-IN

3. How do you calculate the cost of repaying a loan using an online calculator?

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