

LESSON
16-1

Repaying Loans

Reteach

Two features of making loans and repaying them are important in controlling your financial decisions. You can use an online calculator to compare interest amounts, rates, and terms.

Interest rates

Compare the compound interest paid on a \$1,000 loan for 12 months at 25% and 27% interest rates.

Interest is calculated monthly.

Solution

The interest on a \$1,000 loan for 12 months at 25% interest is \$280.73.

The interest on a \$1,000 loan for 12 months at 27% interest is \$306.05

This makes sense, but the relationship of the interest amount to the original loan amount is not a simple direct proportion.

The fact that the interest is **compounded** over different time periods changes the amount expected with a simpler relationship.

Loan length

Compare the compound interest paid on a \$1,000 loan for 12 months and 36 months at 25% interest.

Interest is calculated monthly.

Solution

The interest on a \$1,000 loan for 12 months at 25% interest is \$280.73.

The interest on a \$1,000 loan for 36 months at 25% interest is \$1,100.75.

The relationship between the two amounts is not a simple proportion. If it were, the amount of interest on the 36-month loan would be \$842.19 or 3 times the 12 month amount.

Answer the questions or supply the missing information.

- The skateboard shop owner wants to buy inventory for the upcoming season. The owner needs \$14,000. One bank will loan it to her for 24 months at 17.5 percent interest. One of her suppliers can loan it as inventory for 36 months at 12 percent interest. Use the information below to decide which would be the better choice. Explain.

\$14,000 for 24 months at 17.5 percent interest would cost \$5,816.79.

\$14,000 for 36 months at 12 percent interest would cost \$6,030.76.

- The printer needs to borrow \$3,750 to pay for supplies for the spring formal photographs at the local high school. He can borrow from the bank at 18 percent interest for 1 year or from the teachers credit union at 12 percent interest for 1 year. The interest for the two choices is shown here:

\$3,750 for 1 year at 18 percent is \$733.57

\$3,750 for 1 year at 12 percent is \$475.59

What other factors should the photographer take into account in selecting the source of the loan?

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Practice and Problem Solving: C

An online financial calculator gives the following data for a \$3,500 loan for 12 months at 6 percent interest. Compute the missing data in Exercises 1 and 2.

Amount Borrowed	Interest Rate	Months to Pay	Monthly Payments	Total Interest to be Paid
\$3,500	6%	12	\$301.23	\$ _____

2. Total amount to be repaid: \$ _____

Use the table and the description below to complete Exercises 3–6.

Month	Balance	Interest	Principal	Payment
1	\$3,500.00	\$17.50	\$283.73	\$301.23
2	\$3,216.27	\$16.08	\$285.15	\$301.23
3	\$2,931.12	\$14.66	\$286.58	\$301.23

The table shows the balance, interest, and payments for the first three months of the loan repayment schedule of a loan at 6% interest. Explain how each of the following amounts from the table are derived.

3. \$17.50

4. \$283.73

5. \$3,216.27

6. \$16.08

Solve.

7. A formula for calculating the amount of the monthly payment is $M = \left[r + \frac{r}{(1+r)^{n-1}} \right] \times A$

where M is the monthly payment, r is the interest rate expressed as a decimal, n is the number of months, and A is the amount borrowed. Use the data and a calculator that calculate powers of numbers to see if the formula gives the \$301.23 monthly payment.