

Credit Cost Choices

Compare simple-interest loans by rate and time.

GRADE 8 • TEKS 8.12.A

8.12.A "solve real-world problems comparing how interest rate and loan length affect the cost of credit;"

NAME _____

DATE _____

FIND THE TOTAL COST

For simple interest, use $I = P \times r \times t$, where P is the amount borrowed, r is the annual rate written as a decimal, and t is the number of years. Add I to P to find the total repaid. When loans have the same principal, the loan with less interest costs less.

WORKED EXAMPLE

A \$375 loan has a simple interest rate of 8% per year for 3 years. Find the interest and total repaid.

1. Write the rate as a decimal: $r = 0.08$.
2. Use $I = P \times r \times t$: $I = 375 \times 0.08 \times 3$.
3. Calculate the interest: $I = 90$.
4. Add the principal: $375 + 90 = 465$.

Answer: Interest: \$90. Total repaid: \$465.

PRACTICE 6 problems

- 1** A \$200 loan has simple interest of 5% per year for 2 years. Find the interest and total repaid.

ANSWER _____

- 2** A \$600 loan has simple interest of 4% per year for 1 year. Find the interest and total repaid.

ANSWER _____

- 3** Loan A is \$400 at 6% simple interest for 2 years. Loan B is \$400 at 4% simple interest for 4 years. Which loan costs more in interest, and how much more?

ANSWER _____

- 4** Two \$500 loans both have a simple interest rate of 7%. One lasts 2 years, and one lasts 4 years. Find each total repaid. How much more does the longer loan cost?

ANSWER _____

- 5** Loan A is \$900 at 2% simple interest for 5 years. Loan B is \$900 at 5% simple interest for 2 years. Which loan has the lower total cost?

ANSWER _____

- 6** Loan A is \$1,000 at 6% simple interest for 1 year. Loan B is \$1,000 at 4% simple interest for 2 years. Which loan has the lower total repaid, and by how much?

ANSWER _____

APPLY IT Show your work

- 1** A store offers two simple-interest payment plans for a \$600 electric scooter. Plan A charges 5% per year for 2 years. Plan B charges 4% per year for 4 years. Which plan should you choose to pay the least total, and how much would you save?

WORK SPACE

ANSWER _____

- 2** You are comparing simple-interest loans for \$900 of music equipment. Loan A charges 2% per year for 5 years. Loan B charges 6% per year for 1 year. Which loan costs less overall, even though it has a higher interest rate?

WORK SPACE

ANSWER _____

CHALLENGE One step up

A \$1,000 simple-interest loan at 4% for 5 years has the same total repaid as another \$1,000 simple-interest loan for 2 years. What annual interest rate does the second loan have? Show how you know.

WORK SPACE AND ANSWER

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	A \$200 loan has simple interest of 5% per year for 2 years. Find the interest and total repaid.	Interest: \$20. Total repaid: \$220.
2	A \$600 loan has simple interest of 4% per year for 1 year. Find the interest and total repaid.	Interest: \$24. Total repaid: \$624.
3	Loan A is \$400 at 6% simple interest for 2 years. Loan B is \$400 at 4% simple interest for 4 years. Which loan costs more in interest, and how much more?	Loan B costs more. Loan A interest is \$48, and Loan B interest is \$64, so Loan B costs \$16 more.
4	Two \$500 loans both have a simple interest rate of 7%. One lasts 2 years, and one lasts 4 years. Find each total repaid. How much more does the longer loan cost?	The 2-year loan total is \$570. The 4-year loan total is \$640. The longer loan costs \$70 more.
5	Loan A is \$900 at 2% simple interest for 5 years. Loan B is \$900 at 5% simple interest for 2 years. Which loan has the lower total cost?	They have equal total costs. Each loan has \$90 interest and a total repaid of \$990.
6	Loan A is \$1,000 at 6% simple interest for 1 year. Loan B is \$1,000 at 4% simple interest for 2 years. Which loan has the lower total repaid, and by how much?	Loan A has the lower total repaid. Loan A totals \$1,060, Loan B totals \$1,080, and Loan A costs \$20 less.

PART 2 • APPLY IT

- Choose Plan A. Plan A totals \$660, Plan B totals \$696, so Plan A saves \$36.** Find each interest with $I = P \times r \times t$. Add each interest amount to \$600, then compare the totals.
- Loan B costs less overall. Loan A totals \$990, and Loan B totals \$954, so Loan B costs \$36 less.** Loan A has \$90 interest, while Loan B has \$54 interest. Add the interest to the principal and compare the total amounts repaid.

CHALLENGE

The second loan has a 10% annual interest rate. The first loan has interest of \$200, so $1,000 \times r \times 2 = 200$. Therefore, $r = 0.10 = 10\%$.

Accept equivalent decimal or percent forms for rates. For comparison items, accept answers that include correct interest amounts or correct total repaid amounts, as long as the stated comparison is correct.