

Interest Choices

Compare simple and compound interest in savings and loan plans.

GRADE 8 • TEKS 8.12

8.12 "Personal financial literacy. The student applies mathematical process standards to develop an economic way of thinking and problem solving useful in one's life as a knowledgeable consumer and investor..."

NAME _____

DATE _____

HOW INTEREST GROWS

For simple interest, use $I = P \times r \times t$, where P is the starting amount, r is the rate written as a decimal, and t is time in years. Add the interest to the starting amount to find the total. For interest compounded annually, use $A = P(1 + r)^t$, then subtract P from A to find the interest earned or charged.

WORKED EXAMPLE

A savings account has \$135 at 7% simple interest for 9 years. Find the interest and the total amount.

1. Write the rate as a decimal: $7\% = 0.07$.
2. Find the interest: $I = 135 \times 0.07 \times 9 = 85.05$.
3. Add the interest: $135 + 85.05 = 220.05$.

Answer: Interest: \$85.05. Total amount: \$220.05.

PRACTICE 6 problems

- 1** Find the simple interest and total amount for \$240 at 5% simple interest for 2 years.

ANSWER _____

- 2** Find the simple interest and total amount for \$300 at 6% simple interest for 4 years.

ANSWER _____

- 3** A savings account starts with \$100 and earns 10% interest compounded annually for 2 years. Find the total amount and interest earned.

ANSWER _____

- 4** A deposit of \$400 earns 5% interest compounded annually for 2 years. Find the total amount and interest earned.

ANSWER _____

- 5** A \$250 deposit earns 8% interest for 2 years. Compare simple interest with interest compounded annually. Find both total amounts and tell how much more one earns.

ANSWER _____

- 6** A savings account starts with \$50 and earns 20% interest compounded annually for 2 years. Find the total amount and interest earned.

ANSWER _____

APPLY IT Show your work

- 1** Sam wants a used bike and compares two loans for \$600. Loan A charges 4% simple interest for 2 years. Loan B charges 6% simple interest for 1 year. Find the total cost of each loan. Which loan costs less, and by how much?

WORK SPACE

ANSWER _____

- 2** Maya puts \$400 into a college savings account for 2 years at 5% interest. Compare the total if the account uses simple interest with the total if it compounds annually. Which account gives Maya more money?

WORK SPACE

ANSWER _____

CHALLENGE One step up

A family compares two ways to borrow \$400 for school supplies. Plan A charges 10% simple interest for 2 years. Plan B charges 5% interest compounded annually for 3 years. Find the total cost of each plan. Which plan costs less, and by how much?

WORK SPACE AND ANSWER

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Find the simple interest and total amount for \$240 at 5% simple interest for 2 years.	Interest: \$24. Total amount: \$264.
2	Find the simple interest and total amount for \$300 at 6% simple interest for 4 years.	Interest: \$72. Total amount: \$372.
3	A savings account starts with \$100 and earns 10% interest compounded annually for 2 years. Find the total amount and interest earned.	Total amount: \$121. Interest earned: \$21.
4	A deposit of \$400 earns 5% interest compounded annually for 2 years. Find the total amount and interest earned.	Total amount: \$441. Interest earned: \$41.
5	A \$250 deposit earns 8% interest for 2 years. Compare simple interest with interest compounded annually. Find both total amounts and tell how much more one earns.	Simple-interest total: \$290. Compound-interest total: \$291.60. Compound interest earns \$1.60 more.
6	A savings account starts with \$50 and earns 20% interest compounded annually for 2 years. Find the total amount and interest earned.	Total amount: \$72. Interest earned: \$22.

PART 2 • APPLY IT

- Loan A costs \$648. Loan B costs \$636. Loan B costs \$12 less.** Use $I = P \times r \times t$ for each loan. Loan A has \$48 interest, and Loan B has \$36 interest.
- Simple-interest total: \$440. Compound-interest total: \$441. The compound-interest account gives Maya \$1 more.**
Simple interest is $400 \times 0.05 \times 2 = \40 . For compound interest, multiply 400 by 1.05 twice to get \$441.

CHALLENGE

Plan A costs \$480. Plan B costs \$463.05. Plan B costs \$16.95 less.

Accept equivalent calculations that show the correct interest and total amount. For money, accept answers written with or without a dollar sign when the value is correct to the nearest cent.