

8.50 - Questions Handout #s 1 - 13

Key Ideas

- Simple interest is calculated when money is borrowed or lent.
- The formula for simple interest is $I = P \times r \times t$, where

I is the interest, in dollars
 P is the principal, in dollars
 r is the interest rate per year, in decimal form
 t is the time, in years

- The total amount is found by adding the interest to the principal.

Communicate the Ideas

- Describe three factors that affect the amount of interest your money earns in a simple interest account.
- How can you use a fraction to express each time in years?
a) 6 months b) 4 months c) 9 months
- What's wrong? Kim deposits \$100 into an account that pays 6% per year. Kim says, "Hey, if I leave this money in for 5 years, I'll earn over \$3000 in interest! Look, I worked it out." Here is Kim's calculation:
 $I = P \times r \times t$
 $I = \$100 \times 6 \times 5$
 $I = \$3000$
 - Find the error in Kim's solution and show a correct one.
 - How can you tell Kim in a bad news/good news way about her mistake?

Check Your Understanding

Practise

For help with questions 4 to 6, refer to Example 1.

- Suppose you deposit \$250 into an account for 2 years. The account earns 5% interest per year.
 - How much interest is earned in 2 years?
 - What does the deposit amount to after 2 years?
- Kelly buys a \$500 bond that matures in 4 years. The bond pays 6% interest per year.
 - Determine the total interest earned.
 - What is the value of the bond after 4 years?

6. Tom leaves a deposit of \$420 in a savings account for 3 years. The account earns 4.5% interest per year.
- How much interest is earned in 3 years?
 - How much does the deposit amount to after 3 years?

For help with questions 7 to 9, refer to Example 2.

7. Pat deposits \$325 into an account that earns 2.5% interest per year. Find
- the interest after 6 months
 - the value of the deposit after 6 months
8. Cleo borrows \$670 for 9 months. The loan company charges $12\frac{1}{2}\%$ interest per year.
- How much interest does Cleo owe?
 - How much will she need to pay off the loan after 9 months?
9. Suppose you borrow \$200 from a friend. Your friend charges $9\frac{1}{2}\%$ interest per year. You repay the loan after 3 months.
- How much interest will you have to pay?
 - How much in total will you have to pay back?

Apply

10. You lend \$1500 to a friend for 4 months, at an interest rate of $4\frac{3}{4}\%$ per year. What total amount will your friend have to pay back?
11. Eric deposits \$175 for 6 months into an account that pays 7% interest per year. He deposits \$200, for 6 months, into another account that pays 4% interest per year. Which account will earn more interest? Explain how you know.

12. Karen has \$500 to invest for 4 years. Her bank offers two options.
- Account A: earns 5.5% interest per year
- Account B: earns $5\frac{3}{4}\%$ interest per year



Which account will pay me more interest?

- Which account should Karen invest in?
- How much more interest does it pay than the other account?



13. Suppose you purchase a \$500 Canada Savings Bond that earns 5.4% interest per year.

- What will the value of the bond be when it matures in 4 years?
- If you cash in the bond after 3 years, the bank reduces the interest rate by 1%. What is the value of the bond in this case?

Extend

14. When you check your options at the bank, you find an account that earns 5.5% compound interest. The teller explains that compound interest is calculated using the balance in your account after each year.
- Use a table to find out the amount for a deposit of \$500 after 4 years.

Year	Principal	Rate	Interest	Amount
1	\$500.00	0.055	\$27.50	\$527.50
2	\$527.50	0.055		
3				
4				

- What is the total amount of interest earned? Explain how you found this.
- How much more does compound interest provide than simple interest, at the same rate?