

LESSON **Percents**

6-6B **Practice A: Simple Interest**

Write the formula to compute the missing value. Do not solve.

1. principal = \$100
 rate = 4%
 time = 2 years
 interest = ?

2. principal = \$150
 rate = ?
 time = 2 years
 interest = \$9

3. principal = \$200
 rate = 5%
 time = ?
 interest = \$10

4. principal = ?
 rate = 3%
 time = 4 years
 interest = 30

5. Jules borrowed \$500 for 3 years at a simple interest rate of 6%. How much interest will be due at the end of 3 years? How much will Jules have to repay?

6. Karin maintained a balance of \$250 in her savings account for 8 years. The financial institution paid simple interest of 4%. What was the amount of interest earned?

Complete the table.

	Principal	Rate	Time	Interest
7.	\$300	3%	4 years	
8.	\$450		3 years	\$67.50
9.	\$500	4.5%		\$112.50
10.		8%	2 years	\$108
11.	\$700	4%	3 years	
12.	\$750		2 years	\$90
13.	\$800	2.5%		\$100

LESSON **Percents**

6-6B **Practice B: Simple Interest**

Find the missing value.

1. principal = \$125
 rate = 4%
 time = 2 years
 interest = ?

2. principal = ?
 rate = 5%
 time = 4 years
 interest = \$90

3. principal = \$150
 rate = 6%
 time = ? years
 interest = \$54

4. principal = \$200
 rate = ?%
 time = 3 years
 interest = \$30

5. principal = \$550
 rate = ?%
 time = 3 years
 interest = \$57.75

6. principal = ?
 rate = $3\frac{1}{4}\%$
 time = 2 years
 interest = \$63.05

7. Kwang deposits money in an account that earns 5% simple interest. He earned \$546 in interest 2 years later. How much did he deposit? _____

8. Simon opened a certificate of deposit with the money from his bonus check. The bank offered 4.5% interest for 3 years of deposit. Simon calculated that he would earn \$87.75 interest in that time. How much did Simon deposit to open the account? _____

9. Douglas borrowed \$1000 from Patricia. He agreed to repay her \$1150 after 3 years. What was the interest rate of the loan? _____

10. What is the interest paid for a loan of \$800 at 5% annual interest for 9 months? _____

LESSON

Percents

6-6B

Practice C: Simple Interest

Find the interest and the total amount to the nearest cent.

1. \$345 at 4% per year for 3 years

2. \$782 at 3.5% per year for 4 years

3. \$6125 at 7% per year for 2.5 years

4. \$9875 at $3\frac{1}{4}\%$ per year for 5 years

5. \$2065 at 5.5% per year for 42 months

6. \$1750 at $6\frac{1}{8}\%$ per year for 33 months

7. \$900 at 11% per year for 3 months

8. \$8417 at 18% per year for 1 month

9. Will deposited \$1550 in an account that pays $8\frac{3}{4}\%$ annually. How much would be in the account at the end of 24 months?

10. What is the annual interest rate if \$7200 is invested for 15 months and earns \$855 interest?

11. How long will it take a deposit of \$4500 at an annual rate 5.75% to earn \$1035?

12. Noah bought a new car costing \$25,350. He made a 20% down payment on the car and financed the remaining cost of the car for 5 years at 6.5%. How much interest did Noah pay on his car loan?

13. Mr. Silva earned \$196.50 in interest in a year for an account that paid 3% interest per year. If he did not take any money out of the account during the year, how much was in the account at the start of the year?

LESSON Percents

6-6B Review for Mastery: Simple Interest

Interest is money paid on an investment.
 A borrower pays the interest. An investor earns the interest.

Simple interest, I , is earned when an amount of money, the *principal* P , is borrowed or invested at a *rate of interest* r for a *period of time* t .

$$\text{Interest} = \text{Principal} \cdot \text{Rate} \cdot \text{Time}$$

$$I = P \cdot r \cdot t$$

Situation 1: Find I given P , r , and t .

Calculate the simple interest on a loan of \$3500 for a period of 6 months at a yearly rate of 5%.

Write the interest rate as a decimal.
 Write the time period in terms of years.

$$5\% = 0.05$$

$$6 \text{ months} = 0.5 \text{ year}$$

$$I = P \cdot r \cdot t$$

$$I = 3500 \cdot 0.05 \cdot 0.5 = \$87.50 \quad \leftarrow \text{interest earned}$$

Find the interest in each case.

1. principal $P = \$5000$; time $t = 2$ years; interest rate $r = 6\%$

$$I = P \cdot r \cdot t = \underline{\hspace{2cm}} \cdot 0.06 \cdot \underline{\hspace{2cm}} = \$ \underline{\hspace{2cm}}$$

2. principal $P = \$2500$; time $t = 3$ months; interest rate $r = 8\%$

$$I = P \cdot r \cdot t = \underline{\hspace{2cm}} \cdot \underline{\hspace{2cm}} \cdot \underline{\hspace{2cm}} = \$ \underline{\hspace{2cm}}$$

Situation 2: Find t given I , P , and r .

An investment of \$3000 at a yearly rate of 6.5% earned \$390 in interest. Find the period of time for which the money was invested.

$$I = P \cdot r \cdot t$$

$$390 = 3000 \cdot 0.065 \cdot t$$

$$390 = 195t$$

$$\frac{390}{195} = \frac{195t}{195}$$

$$2 = t$$

The investment was for 2 years.

Find the time in each case.

3. $I = \$1120$; $P = \$4000$; $r = 7\%$

$$I = P \cdot r \cdot t$$

$$1120 = \underline{\hspace{2cm}} \cdot 0.07 \cdot t$$

$$1120 = \underline{\hspace{2cm}} t$$

$$\underline{\hspace{2cm}} = \underline{\hspace{2cm}} t$$

_____ years = t

4. $I = \$812.50$; $P = \$5000$; $r = 6.5\%$

$$I = P \cdot r \cdot t$$

$$812.50 = \underline{\hspace{2cm}} \cdot \underline{\hspace{2cm}} \cdot t$$

$$812.50 = \underline{\hspace{2cm}} t$$

$$\underline{\hspace{2cm}} = \underline{\hspace{2cm}} t$$

_____ years = t

LESSON Percents

6-6B Review for Mastery: Simple Interest (continued)

Situation 3: Find r given I , P , and t .

\$2500 was invested for 3 years
and earned \$450 in interest.
Find the rate of interest.

$$I = P \cdot r \cdot t$$

$$450 = 2500 \cdot r \cdot 3$$

$$450 = 7500r$$

$$\frac{450}{7500} = \frac{7500r}{7500}$$

$$0.06 = r$$

The interest rate was 6%.

Find the interest rate in each case.

5. $I = \$1200$; $P = \$6000$; $t = 4$ years

$$I = P \cdot r \cdot t$$

$$1200 = \underline{\hspace{2cm}} \cdot r \cdot 4$$

$$1200 = \underline{\hspace{2cm}} r$$

$$\underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

$$\underline{\hspace{2cm}} = r$$

The interest rate was _____ %

6. $I = \$325$; $P = \$2000$; $t = 2.5$ years

$$I = P \cdot r \cdot t$$

$$325 = \underline{\hspace{2cm}} \cdot r \cdot \underline{\hspace{2cm}}$$

$$325 = \underline{\hspace{2cm}} r$$

$$\underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

$$\underline{\hspace{2cm}} = r$$

The interest rate was _____ %.

The total amount A of money in an account after interest has been earned, is the sum of the principal P and the interest I .

Amount = Principal + Interest
 $A = P + I$

Find the amount of money in the account after \$3500 has been invested for 3 years at a yearly rate of 6%.

First, find the interest earned.

$$I = P \cdot r \cdot t$$

$$I = 3500 \cdot 0.06 \cdot 3 = \$630 \quad \longleftarrow \text{ interest earned}$$

Then, add the interest to the principal. $3500 + 630 = 4130$

So, the total amount in the account after 3 years is \$4130.

Find the total amount in the account.

7. principal $P = \$4500$; time $t = 2.5$ years; interest rate $r = 5.5\%$

$$I = P \cdot r \cdot t = \underline{\hspace{2cm}} \cdot \underline{\hspace{2cm}} \cdot \underline{\hspace{2cm}} = \$ \underline{\hspace{2cm}}$$

$$\text{Total Amount} = P + I = 4500 + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

So, after 2.5 years, the total amount in the account was \$ _____.

LESSON
6-6B

Percents

Challenge: Feather Your Nest

In these exercises, you will solve an investment problem algebraically.

Problem Nancy invested a sum of money at 6%.
 She invested a second sum, \$500 more than the first, at 8%.
 The total interest earned for the year was \$180.
 How much did Nancy invest at each rate?

1. Let x represent the sum Nancy invested at 6%.
 Write an expression in terms of x for the interest she earned after 1 year from the 6%-investment.

2. x represents the sum Nancy invested at 6%.
 - a. Write an expression in terms of x for the sum she invested at 8%.

 - b. Write an expression in terms of x for the interest she earned after 1 year from the 8%-investment.

3. Using your results from Exercises 1 and 2b, write an equation in terms of x to show that the total of the interest earned from the two investments is equal to \$180.

4. Follow these steps to solve your equation for x .
 - a. Apply the Distributive Property. _____
 - b. Collect like terms on the left side. _____
 - c. Subtract. _____
 - d. Divide to find x . _____

So, the sum invested at 6% is \$ _____
 and the sum invested at 8% is \$ _____
5. Explain how to check your result.

LESSON

Percents**6-6B****Problem Solving: Simple Interest**

Write the correct answer.

1. Joanna's parents agree to loan her the money for a car. They will loan her \$5,000 for 5 years at 5% simple interest. How much will Joanna pay in interest to her parents?

2. How much money will Joanna have spent in total on her car with the loan described in exercise 1?

3. A bank offers simple interest on a certificate of deposit. Jaime invests \$500 and after one year earns \$40 in interest. What was the interest rate on the certificate of deposit?

4. How long will Howard have to leave \$5000 in the bank to earn \$250 in simple interest at 2%?

Jan and Stewart Jones plan to borrow \$20,000 for a new car. They are trying to decide whether to take out a 4-year or 5-year simple interest loan. The 4-year loan has an interest rate of 6% and the 5-year loan has an interest rate of 6.25%. Choose the letter for the best answer.

5. How much will they pay in interest on the 4-year loan?
A \$4500 C \$5000
B \$4800 D \$5200
6. How much will they repay with the 4-year loan?
F \$24,500 H \$25,000
G \$24,800 J \$25,200
7. How much will they pay in interest on the 5-year loan?
A \$5000 C \$6250
B \$6000 D \$6500
8. How much will they repay with the 5-year loan?
F \$25,000 H \$26,250
G \$26,000 J \$26,500
9. How much more interest will they pay with the 5-year loan?
A \$1000 C \$1500
B \$1450 D \$2000
10. If the Stewarts can get a 5-year loan with 5.75% simple interest, which of the loans is the best deal?
F 4 year, 6%
G 5 year, 5.75%
H 5 year, 6.25%
J Cannot be determined

LESSON **Percents**

6-6B **Reading Strategies: Focus on Vocabulary**

Interest is the amount of money the bank pays you to use your money, or the amount of money you pay the bank to borrow its money.

Principal is the amount of money you save or borrow from the bank.

Rate of interest is the percent rate on money you save or borrow.

Time is the number of years the money is saved or borrowed.

Use this information to answer Exercises 1–3:

You put \$800 in a savings account at 4% interest and leave it there for five years.

1. What is the principal?

2. What is the interest rate?

3. What is the amount of time the money will stay in the account?

You can find out how much interest you would earn on that money by using this formula:

Interest	=	principal	•	rate	•	time	←	words
<i>I</i>	=	<i>p</i>	•	<i>r</i>	•	<i>t</i>	←	symbols
<i>I</i>	=	\$800	•	4%	•	5		
<i>I</i>	=	\$800	•	0.04	•	5	←	Change % to decimal.
<i>I</i>	=	\$160					←	Multiply to solve.

4. To find out how much interest you will earn by keeping your money in a bank, what three things do you need to know?

LESSON **Percents**

6-6B

Puzzles, Twisters & Teasers: Your Lucky Number!

Fill in the blanks to complete the chart.

Use the letters next to the answers to solve the riddle.

\$ amount	Interest Rate	Years	Interest	Total Amount
\$225	5%	3	\$33.75	S
\$4250	7%	1.5	L	\$4696.25
\$397	5%	1	R	\$416.85
\$700	6.25%	2	\$87.50	
\$775	8%	1	\$62.00	O
\$650	4.5%	2	E	\$708.50
\$2975	6%	1	I	\$3153.50
\$500	9%	3	\$135.00	T
\$1422	3%	5	G	\$1635.30
\$1500	3.85%	6	N	\$1846.50

Why did the banker quit his job?

Because he was

_____ S _____ N _____
 446.25 837.00 178.50 213.30

I _____ E _____ T.
 346.50 635.00 58.50 19.85 258.75

