

Section 9.R.4 Working with Formulas

Go to Section 9.R.4 Learn mode in Hawkes to follow along!

Evaluating Formulas

Formulas are general rules or _____ stated _____.

▣ Example 1 Application: Evaluating Formulas

The formula for calculating simple interest is:

$$I = Prt \quad \text{where,}$$

I = **interest** (earned or paid)

P = **principal** (the amount invested or borrowed)

r = **rate of interest** (stated as an annual or yearly rate in percent form)

t = **time** (in years)

The rate of interest is usually given in percent form and converted to decimal or fraction form for calculations.

Maribel loaned \$5000 to a friend for 3 months at an annual interest rate of 8%. How much will her friend pay her at the end of the 3 months?

Solution

Exercises

Refer to Example 1 for information concerning simple interest and the related formula $I = Prt$. (**Note:** Use 365 days in a year and 12 months in each year.)

Simple Interest

1. You want to borrow \$4000 at 12% for only 146 days. How much interest would you pay?
2. For how many days must you leave \$1000 in a savings account at 5.5% to earn \$11.00 in interest?
3. What principal would you need to invest to earn \$450 in simple interest in 6 months if the interest rate was 9%?
4. After one month, Gustav received \$25 in simple interest on his savings account of \$12,000. What was the interest rate?
5. A savings account of \$3500 is left for 9 months and draws simple interest at a rate of 7%.
 - a. How much interest is earned?
 - b. What is the balance in the account at the end of the 9 months?
6. Tim just deposited \$2562.50 to pay off a 3 month loan of \$2500.
 - a. How much of what he deposited was interest on the loan?
 - b. What rate of interest was he charged?

Solving Formulas for Different Variables

We say that the formula $d = rt$ is _____ d _____ r and t . Similarly, the formula $A = \frac{1}{2}bh$ is solved for _____ in terms of _____, and the formula $P = R - C$ (profit is equal to revenue minus cost) is solved for _____ in terms of _____.

▮ Example 6 Solving for Different Variables

Given $V = \frac{k}{P}$, solve for P in terms of V and k .

Solution

Exercises

Solve each formula for the indicated variable.

7. $P = a + b + c$; solve for b .

12. $L = 2\pi rh$; solve for h .

8. $P = 3s$; solve for s .

13. $A = \frac{m+n}{2}$; solve for m .

9. $F = ma$; solve for m .

14. $P = a + 2b$; solve for a .

10. $P = R - C$; solve for C .

15. $R = \frac{E}{I}$; solve for E .

11. $v = k + gt$; solve for k .

16. $P = a + 2b$; solve for b .