Problem Solving—Finding Interest

You can use the following steps to solve word problems.

Step 1   Read the problem; underline key words.

Step 2   Make a plan to solve the problem.

Step 3   Find the solution.

Step 4   Check the answer.

Many times, making a plan means to translate words into algebraic expressions and formulas. Use the following information to make a plan for finding interest.

> **Interest** is the amount paid for the use of money. The amount of money that is borrowed is the **principal.**

> Interest = principal × interest rate × time (in years); the formula is $I = prt$.

Examples

A. Find the interest on $1,200 borrowed at 12% for 2 years.

Step 1   The key words are **interest** on **$1,200** borrowed at **12%** for **2 years.**

Step 2   To find the interest, use the formula, $I = prt$. The principal is $1,200; the rate, 12%; and the time, 2 years.

Step 3   Remember to write the formula; then substitute the values before calculating.

$I = prt$
$I = \$1,200(12\%)(2)$
$I = \$1,200(.12)(2)$
$I = \$288$

Step 4   The cost of borrowing $1,200 at 12% for 2 years is $288. Substitute the solution into the equation.

$I = prt$
$\$288 = \$1,200\,(12\%)(2)$
$\$288 = \$288$

B. What would be the total amount to be repaid for the loan in Example A?

Total amount = Principal + Interest
$\$1,488 \quad = \quad \$1,200 \quad + \quad \$288$

Solve.

1. (1) Find the interest on $3,000 borrowed at 12% for 2 years.

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(2) What is the amount to be repaid?

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2. (1) What is the interest on $500 borrowed at 15% for 3 months?

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(2) What is the amount to be repaid?

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3. (1) Find the interest on $5,000 at 13% for $1\frac{1}{2}$ years.

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(2) What is the amount to be repaid?

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4. (1) Find the interest on $2,500 borrowed at 15% for 3 years.

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(2) What is the amount to be repaid?

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5. (1) Find the interest on $250 borrowed at 12% for 3 months.

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(2) What is the amount to be repaid?

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6. A $1\frac{1}{2}$% monthly interest charge on the unpaid balance of a charge account results in an annual interest rate of 18% ($1\frac{1}{2}$% × 12 months). Your average monthly charge balance is $100. How much interest will you pay for the entire year?

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7. A bank charges 12% interest annually. How much could you save by borrowing the $100 in Problem 6 from a bank?

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