6.7 Simple Interest

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When you keep money in a savings account, your money earns *interest.* **Interest** is an amount that is collected or paid for the use of money. For example, the bank pays you interest to use your money to conduct its business. Likewise, when you borrow money from the bank, the bank collects interest on its loan to you.

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One type of interest, called **simple interest**, is money paid only on the *principal.* The **principal** is the amount of money deposited or borrowed. To solve problems involving simple interest, you can use the following formula.

Interest — $I = P \cdot r \cdot t$ — Principal

r: Rate of interest per year (as a decimal)

t: Time in years that the money earns interest

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Interest — $I = P \cdot r \cdot t$ — Principal

r: Rate of interest per year (as a decimal)

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Find the missing value.

I = ☐, P = $575, r = 8%, t = 3 years

$I = P \cdot r \cdot t$

$I = 575 \cdot 0.08 \cdot 3$ *Substitute. Use 0.08 for 8%.*

$I = \$138$ *Multiply.*

The simple interest is $138.00.

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Find the missing value.

I = $204, P = $1,700, r = ☐, t = 6 years

$I = P \cdot r \cdot t$

$204 = 1700 \cdot r \cdot 6$

$\frac{204}{10200} = \frac{10200r}{10200}$

$r = 0.02$

$r = 2\%$

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Find the missing value.

I = ☐, P = $525, r = 7%, t = 2 years

$I = P \cdot r \cdot t$

$I = 525 \cdot 0.07 \cdot 2$

$I = 73.5$

$I = \$73.50$

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Find the missing value.

I = \$600, P = \$2,000, r = ☐, t = 3 years

$I = P \cdot r \cdot t$

$600 = 2{,}000 \cdot r \cdot 3$

$\frac{600}{6000} = \frac{6000r}{6000}$

$r = 0.10$

$r = 10\%$

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Avery deposits \$6,000 in an account that earns 4% simple interest. How long will it take for his account balance to reach \$6,800? $I = 6800 - 6000$

$I = 800 \quad P = 6{,}000 \quad r = 0.04 \quad t =$

$800 = 6000 \cdot 0.04 \cdot t$

$\frac{800}{240} = \frac{240t}{240}$

$t = 3.3$ year $3\frac{1}{3}$ years

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Linda deposits \$10,000 in an account that earns 8% simple interest. How long will it take for the total amount in her account to reach \$12,000? $I = 12{,}000 - 10{,}000$

$I = 2{,}000 \quad P = 10{,}000 \quad r = 0.08 \quad t =$

$2{,}000 = 10{,}000 \cdot 0.08 \cdot t$

$\frac{2{,}000}{800} = \frac{800t}{800}$

$t = 2\frac{1}{2}$ years

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1. I = ☐, P = \$800, r = 10%, t = 3 years

$I = 800 \cdot 0.1 \cdot 3$

$I = \$240$

2. I = \$18, P = \$150, r = ☐, t = 2 years

$18 = 150 \cdot r \cdot 2$

$\frac{18}{300} = \frac{300r}{300}$ $r = 0.06$

$r = 6\%$

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3. I = \$640, P = ☐, r = 4%, t = 8 years

$640 = P \cdot 0.04 \cdot 8$

$\frac{640}{.32} = \frac{0.32P}{0.32}$ $P = \$2{,}000$

4. I = \$120, P = \$600, r = 5% t = ☐

$120 = 600 \cdot 0.05t$

$\frac{120}{30} = \frac{30t}{30}$ $t = 4$

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5. Dennis deposits \$6,000 in an account that earns 5.5% simple interest. How long will it take before the total amount is \$8,000?

$I = 2{,}000 \quad P = 6000 \quad r = 0.055 \quad t =$

$2000 = 6000 \cdot 0.055 \cdot t$

$\frac{2000}{330} = \frac{330t}{330}$

$t = 6.06$ years

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