# Simple Interest

| Name: _____ | Date: _____ | Score: _____ / 17 |
|---|---|---|

**Simple interest** is the friendliest kind of interest because it only grows on the *original* amount—no compounding, no surprises! The formula $I = P \times r \times t$ shows exactly how principal, rate, and time team up: plug in the numbers, multiply, and you are done. This makes it easy to figure out how much you would earn in a savings account or owe on a loan over a set period. Understand this formula now and you will have a solid foundation for the more advanced interest topics ahead!

## Key Concepts & Quick Review

**Simple Interest Formula:** $I = P \cdot r \cdot t$ ($P$ = principal, $r$ = annual rate as decimal, $t$ = time in years).

**Total amount:** $A = P + I = P(1 + rt)$. **Find $P$:** $P = \dfrac{I}{rt}$. **Find $r$:** $r = \dfrac{I}{Pt}$. **Find $t$:** $t = \dfrac{I}{Pr}$.

## Examples

① Find the simple interest and total amount for $P = \$1{,}500$, $r = 4\%$, $t = 3$ years.

**Think It Through:** $I = 1{,}500 \times 0.04 \times 3 = \$180$. Total: $A = 1{,}500 + 180 = \$1{,}680$.

**Answer:** $I = \$180$; $A = \$1{,}680$

② A student borrows money at $6\%$ simple interest per year. After $2.5$ years the interest owed is $\$270$. What was the original amount borrowed? What is the total amount owed?

**Think It Through:** $P = \dfrac{I}{rt} = \dfrac{270}{0.06 \times 2.5} = \dfrac{270}{0.15} = \$1{,}800$. Total owed: $A = 1{,}800 + 270 = \$2{,}070$.

**Answer:** *Principal:* $\$1{,}800$; *total owed:* $\$2{,}070$

## Practice Problems

*Use $I = Prt$ to find the missing value.*

1. Use $I = Prt$ to find the interest for principal \$500, rate $3\%$, and time $2$ years. _____
2. Use $I = Prt$ to find the interest for principal \$800, rate $5\%$, and time $3$ years. _____
3. Use $I = Prt$ to find the interest for principal \$1,200, rate $4\%$, and time $5$ years. _____
4. Use $I = Prt$ to find the interest for principal \$600, rate $2\%$, and time $4$ years. _____
5. Use $I = Prt$ to find the interest for principal \$2,000, rate $6\%$, and time $1.5$ years. _____
6. Use $I = Prt$ to find the interest for principal \$450, rate $8\%$, and time $2$ years. _____
7. The interest is \$90, the rate is $3\%$, and the time is $2$ years. Find the principal. _____
8. The interest is \$160, the rate is $4\%$, and the time is $2$ years. Find the principal. _____

**9.** The interest is \$120, the rate is $5\%$, and the time is $3$ years. Find the principal. _____

**10.** The interest is \$75, the principal is \$500, and the time is $3$ years. Find the rate. _____

**11.** The interest is \$200, the principal is \$1,000, and the time is $4$ years. Find the rate. _____

**12.** The interest is \$54, the principal is \$600, and the time is $3$ years. Find the rate. _____

**13.** The interest is \$100, the principal is \$500, and the rate is $5\%$. Find the time in years. _____

**14.** The interest is \$180, the principal is \$900, and the rate is $4\%$. Find the time in years. _____

**15.** A loan has principal \$3,000, rate $7\%$, and time $3$ years. Find the total amount after simple interest. _____

## Study Tips

- Always convert the rate to a **decimal** before substituting: $5\% = 0.05$. Forgetting this step is the most common error.
- Time $t$ must be in **years**. If given months, divide by $12$ first: $18$ months $= 1.5$ years.
- $I$ is the **interest only**. The **total amount** $A = P + I$. Be sure the problem is asking for $I$ or $A$ — they are different.

## Word Problems

**16.** Maya deposits $\$2{,}400$ into a savings account that earns $3.5\%$ simple interest per year. How much interest will she earn in $4$ years? What will her total balance be? If she wants a total balance of $\$3{,}000$, how many years will she need to leave the money in the account? _____

**17.** Jordan borrows $\$3{,}600$ at a simple interest rate of $8\%$ per year for $18$ months. Find the total interest and the total amount owed. If he can only afford to repay $\$150$ per month, how many months will it take to pay off the full amount owed? _____

# Answer Keys

**1)** \$30.00
**2)** \$120.00
**3)** \$240.00
**4)** \$48.00
**5)** \$180.00
**6)** \$72.00
**7)** \$1,500.00
**8)** \$2,000.00
**9)** \$800.00
**10)** 5%
**11)** 5%
**12)** 3%
**13)** 4 yr
**14)** 5 yr
**15)** \$3,630.00
**16)** Interest \$336; amount \$2,736; about $7.14$ years
**17)** $1.5$ yr; interest \$432; total \$4,032; $27$ months

## Step-by-Step Explanations

**Strategy:** For Graphing Proportional Relationships, use a point on the line to find $k = \frac{y}{x}$, then connect the graph back to $y = kx$. Keep the graph point and the equation connected so $k$ has a visual meaning.

**Practice 1:** The point $(2, 6)$ lies on a proportional graph. Find the constant of proportionality $k$. **Answer:** 3
In the first example, use the marked point as a clean ratio, $k = y/x$, before thinking about the whole line.

**Practice 15:** In the proportional relationship $y = kx$, use $k = \frac{3}{5}$ and $x = 15$ to find $y$. **Answer:** 9
Toward the end, substitute into $y = kx$; the graph idea and the equation idea are the same multiplier.

**Word-problem notes:**

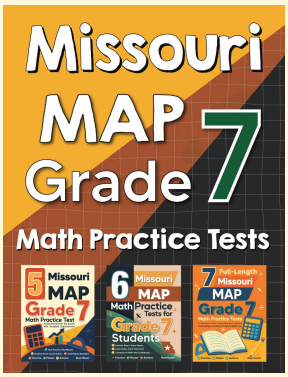
**16. Answer:** $k = \$12.50$/hr; $y = 12.5x$; $10\,hr$: \$125; $40\,hr$: \$500.
Since the graph passes through the origin, the relationship is proportional. Use the point $(4, 50)$ to find the constant of proportionality: $k = \frac{50}{4} = 12.5$. So the driver earns \$12.50 per hour, and the equation is $y = 12.5x$. For $10$ hours, $y = 12.5 \times 10 = 125$. For $40$ hours, $y = 12.5 \times 40 = 500$. Once you know $k$, the equation makes any future amount easy to find.

**17. Answer:** A: $k = 15\,mph$; B: $k = 13\,mph$; after $5\,hr$: $75 - 65 = 10\,mi$ apart.
Find each speed by dividing $y$ by $x$. For Cyclist A, $k = \frac{30}{2} = 15\,mi$ per hour, so the equation is $y = 15x$. For Cyclist B, $k = \frac{39}{3} = 13\,mi$ per hour, so the equation is $y = 13x$. After $5$ hours, Cyclist A travels $15 \times 5 = 75\,mi$ and Cyclist B travels $13 \times 5 = 65\,mi$. Because they started together and rode in the same direction, the distance between them is the difference: $75 - 65 = 10\,mi$.

**18. Answer:** $\ell_1$: $k = 1$, $y = x$, \$1/lb; $\ell_2$: $k = 0.5$, $y = 0.5x$, \$0.50/lb; $\ell_1$ fruit is more expensive (steeper line).
Use $k = \frac{y}{x}$ on each marked point. For $\ell_1$, $k = \frac{3}{3} = 1$, so $y = x$. For $\ell_2$, $k = \frac{2}{4} = 0.5$, so $y = 0.5x$. The steeper line ($\ell_1$, with the larger $k$) represents the more expensive fruit at \$1 per pound, while $\ell_2$ costs \$0.50 per pound.

# Want Even More Practice?

## Check Out Our Other Missouri MAP Test Books!




### Missouri MAP Grade 7 Math Preparation Bundle

18 full-length practice tests across three books (5 + 6 + 7)

No repeated questions—maximum practice value!

**18 Tests!**
**3 Books**
**One Bundle**

**Important:** All our test books contain **unique, completely different tests** from each other! Each book offers fresh practice questions—no repeats!

### 5 Practice Tests

- ✓ 5 complete practice tests with detailed explanations
- ✓ Perfect foundation for MAP test preparation
- ✓ Builds confidence and test-taking skills
- ✓ High-quality questions aligned with state standards

**Start your practice journey!**

### 6 Practice Tests

- ✓ 6 complete practice tests with detailed explanations
- ✓ **Unique tests**—different from the 5 tests book
- ✓ Perfect for more practice after mastering 5 tests
- ✓ Builds even more confidence and test-taking skills
- ✓ Same high-quality questions aligned with standards

**Take your practice to the next level!**

### 7 Practice Tests

- ✓ 7 complete practice tests for maximum preparation
- ✓ **Unique tests**—different from 5 and 6 tests books
- ✓ The most comprehensive practice for Grade 7
- ✓ Ideal for students aiming for top scores
- ✓ Extensive practice builds mastery and confidence

**Go all the way with comprehensive practice!**