

Simple Interest

Name: _____

Date: _____

Score: _____ / 24

Q Quick Review

Simple interest is the extra money you earn (or owe) for using someone's money for a while. It is found with the formula $I = Prt$, where P is the **principal** (the starting amount), r is the yearly **interest rate** written as a *decimal*, and t is the **time** in years. To turn a percent into a decimal, divide by 100 — so 5% becomes 0.05. Once you have the interest I , the **total amount** is just $A = P + I$. The word “simple” means the interest is always figured on the *original* principal — it never piles up on itself.

◇ **Example:** Find the simple interest on a \$1,200 deposit at 4% per year for 3 years.

⇒ Let's line up the three ingredients first. The principal is $P = \$1,200$, the rate is $4\% = 0.04$, and the time is $t = 3$ years. Now just multiply them together in the formula: $I = Prt = 1200 \times 0.04 \times 3$. Take it in steps — $1200 \times 0.04 = 48$, and $48 \times 3 = 144$. So the account earns \$144 in interest. If the question asked for the total, you would add it back on: $\$1,200 + \$144 = \$1,344$.

Answer: $I = \$144$

PRACTICE

Find the simple interest. Use $I = Prt$ with the rate as a decimal.

- | | | | |
|---|-------|--|-------|
| 1. $P = \$500, r = 6\%, t = 2$ yr | _____ | 11. $P = \$4,000, r = 4.5\%, t = 3$ yr | _____ |
| 2. $P = \$800, r = 5\%, t = 3$ yr | _____ | 12. $P = \$900, r = 5\%, t = 6$ yr | _____ |
| 3. $P = \$1,000, r = 4\%, t = 1$ yr | _____ | 13. $P = \$1,800, r = 3.5\%, t = 4$ yr | _____ |
| 4. $P = \$1,500, r = 3\%, t = 4$ yr | _____ | 14. $P = \$5,000, r = 3\%, t = 2$ yr | _____ |
| 5. $P = \$2,000, r = 2.5\%, t = 2$ yr | _____ | 15. $P = \$250, r = 10\%, t = 3$ yr | _____ |
| 6. $P = \$600, r = 7\%, t = 5$ yr | _____ | 16. $P = \$3,200, r = 5.25\%, t = 2$ yr | _____ |
| 7. $P = \$2,500, r = 4\%, t = 3$ yr | _____ | 17. Find r : $I = \$90, P = \$600, t = 3$ yr | _____ |
| 8. $P = \$1,200, r = 5.5\%, t = 2$ yr | _____ | 18. Find t : $I = \$240, P = \$2,000, r = 4\%$ | _____ |
| 9. $P = \$3,000, r = 6\%, t = \frac{1}{2}$ yr | _____ | 19. Find P : $I = \$180, r = 6\%, t = 2$ yr | _____ |
| 10. $P = \$750, r = 8\%, t = 2$ yr | _____ | 20. Total A : $P = \$1,500, r = 4\%, t = 5$ yr | _____ |

◆ Word Problems

21. Maya puts \$2,000 in a savings account that pays 6% simple interest per year. How much interest does she earn after 4 years, and what is her total balance? _____
22. Liam borrows \$1,000 from a credit union at 5% simple interest. He pays it all back after 2 years. How much does he repay in total? _____
23. A bond pays \$300 in simple interest over 5 years on a principal of \$1,500. What yearly interest rate does the bond pay? _____
24. Grandpa wants Nora's \$2,500 gift to grow to \$2,950 using an account that pays 6% simple interest. How many years must the money stay in the account? _____



Answer Keys

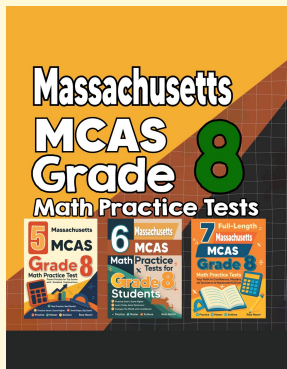
- | | |
|-----------------|------------------------------|
| 1. $I = \$60$ | 13. $I = \$252$ |
| 2. $I = \$120$ | 14. $I = \$300$ |
| 3. $I = \$40$ | 15. $I = \$75$ |
| 4. $I = \$180$ | 16. $I = \$336$ |
| 5. $I = \$100$ | 17. $r = 5\%$ |
| 6. $I = \$210$ | 18. $t = 3 \text{ yr}$ |
| 7. $I = \$300$ | 19. $P = \$1,500$ |
| 8. $I = \$132$ | 20. $A = \$1,800$ |
| 9. $I = \$90$ | 21. $I = \$480; A = \$2,480$ |
| 10. $I = \$120$ | 22. $\$1,100$ |
| 11. $I = \$540$ | 23. $r = 4\%$ |
| 12. $I = \$270$ | 24. $t = 3 \text{ years}$ |

Step-by-Step Explanations

1. Change 6% to 0.06, then $I = 500 \times 0.06 \times 2 = 60$.
2. Here $I = 800 \times 0.05 \times 3$. Since $800 \times 0.05 = 40$, the interest is $40 \times 3 = 120$.
3. For one year, $I = 1000 \times 0.04 \times 1 = 40$.
4. $1500 \times 0.03 = 45$ each year, and $45 \times 4 = 180$.
5. $2.5\% = 0.025$, so $I = 2000 \times 0.025 \times 2 = 100$.
6. $600 \times 0.07 = 42$ per year, then $42 \times 5 = 210$.
7. $2500 \times 0.04 = 100$, and $100 \times 3 = 300$.
8. $5.5\% = 0.055$, so $I = 1200 \times 0.055 \times 2 = 132$.
9. Half a year means $t = 0.5$, so $I = 3000 \times 0.06 \times 0.5 = 90$.
10. $750 \times 0.08 = 60$ each year, then $60 \times 2 = 120$.
11. $4.5\% = 0.045$, so $I = 4000 \times 0.045 \times 3 = 540$.
12. $900 \times 0.05 = 45$ per year, and $45 \times 6 = 270$.
13. $3.5\% = 0.035$, so $I = 1800 \times 0.035 \times 4 = 252$.
14. $5000 \times 0.03 = 150$ each year, then $150 \times 2 = 300$.
15. $250 \times 0.10 = 25$ per year, and $25 \times 3 = 75$.
16. $5.25\% = 0.0525$, so $I = 3200 \times 0.0525 \times 2 = 336$.
17. Rearrange to $r = \frac{I}{Pt} = \frac{90}{600 \times 3} = 0.05 = 5\%$.
18. Solve $t = \frac{I}{Pr} = \frac{240}{2000 \times 0.04} = 3 \text{ years}$.
19. Solve $P = \frac{I}{rt} = \frac{180}{0.06 \times 2} = 1500$.
20. First $I = 1500 \times 0.04 \times 5 = 300$, then $A = 1500 + 300 = 1800$.
21. Use $I = Prt = 2000 \times 0.06 \times 4 = 480$. Then add the interest back to the principal: $\$2,000 + \$480 = \$2,480$.
22. The interest is $I = 1000 \times 0.05 \times 2 = 100$. He repays the principal plus the interest: $\$1,000 + \$100 = \$1,100$.
23. Rearrange $I = Prt$ to get $r = \frac{I}{Pt} = \frac{300}{1500 \times 5} = 0.04$, which is 4%.
24. The interest needed is $\$2,950 - \$2,500 = \$450$. Then $t = \frac{I}{Pr} = \frac{450}{2500 \times 0.06} = 3 \text{ years}$.



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