Simple Interest

Name: _____	Date: _____	Score: _____ / 24

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 _____
2. $P = \$800,\ r = 5\%,\ t = 3$ yr _____
3. $P = \$1{,}000,\ r = 4\%,\ t = 1$ yr _____
4. $P = \$1{,}500,\ r = 3\%,\ t = 4$ yr _____
5. $P = \$2{,}000,\ r = 2.5\%,\ t = 2$ yr _____
6. $P = \$600,\ r = 7\%,\ t = 5$ yr _____
7. $P = \$2{,}500,\ r = 4\%,\ t = 3$ yr _____
8. $P = \$1{,}200,\ r = 5.5\%,\ t = 2$ yr _____
9. $P = \$3{,}000,\ r = 6\%,\ t = \frac{1}{2}$ yr _____
10. $P = \$750,\ r = 8\%,\ t = 2$ yr _____
11. $P = \$4{,}000,\ r = 4.5\%,\ t = 3$ yr _____
12. $P = \$900,\ r = 5\%,\ t = 6$ yr _____
13. $P = \$1{,}800,\ r = 3.5\%,\ t = 4$ yr _____
14. $P = \$5{,}000,\ r = 3\%,\ t = 2$ yr _____
15. $P = \$250,\ r = 10\%,\ t = 3$ yr _____
16. $P = \$3{,}200,\ r = 5.25\%,\ t = 2$ yr _____
17. Find r: $I = \$90,\ P = \$600,\ t = 3$ yr _____
18. Find t: $I = \$240,\ P = \$2{,}000,\ r = 4\%$ _____
19. Find P: $I = \$180,\ r = 6\%,\ t = 2$ 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. $I = \$60$
2. $I = \$120$
3. $I = \$40$
4. $I = \$180$
5. $I = \$100$
6. $I = \$210$
7. $I = \$300$
8. $I = \$132$
9. $I = \$90$
10. $I = \$120$
11. $I = \$540$
12. $I = \$270$
13. $I = \$252$
14. $I = \$300$
15. $I = \$75$
16. $I = \$336$
17. $r = 5\%$
18. $t = 3$ yr
19. $P = \$1{,}500$
20. $A = \$1{,}800$
21. $I = \$480;\ A = \$2{,}480$
22. $\$1{,}100$
23. $r = 4\%$
24. $t = 3$ 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 $r = \dfrac{I}{Pt} = \dfrac{90}{600 \times 3} = 0.05 = 5\%$.
18. Solve $t = \dfrac{I}{Pr} = \dfrac{240}{2000 \times 0.04} = 3$ years.
19. Solve $P = \dfrac{I}{rt} = \dfrac{180}{0.06 \times 2} = 1500$.
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 $r = \dfrac{I}{Pt} = \dfrac{300}{1500 \times 5} = 0.04$, which is 4%.
24. The interest needed is $\$2{,}950 - \$2{,}500 = \$450$. Then $t = \dfrac{I}{Pr} = \dfrac{450}{2500 \times 0.06} = 3$ years.

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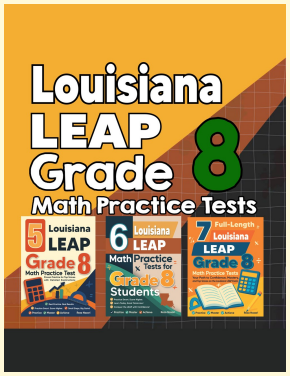

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