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Simple interest worksheet

Simple Interest is Key to Calculating Accrued Amounts Click **here** for printable simple interest worksheets and practice problems. Simple interest is a fundamental concept in finance where an interest rate is agreed upon for a specific principal amount. Our worksheets cater to grade 6, 7, and 8 students, helping them calculate the simple interest accrued over time. Given article text here Note: $100,000 = Initial Principal × (1 + Interest Rate × Number of Periods) Simple Interest Formula and Calculation Simple interest is calculated by multiplying the principal amount (P) by the time period (t) and then adding it to the principal amount. I = P * r * t A = P + I For example, if £3000 is invested for 2 years with a simple interest rate of 5%, we can calculate the total value after 2 years as follows: Interest (I) = £3000 * 0.05 * 2 = £300 Total Amount (A) = £3000 + £300 = £3300 To calculate simple interest, state the formula needed and the values of each variable, substitute the values into the formula, solve the equation, and then find the final amount using the formula A = P(1 + rt). A car is bought for £10,000 and loses 9% of its value per annum, simple interest. What is the value of the car after 8 years? Formula: A=P(1+rt) Variables: P=£10,000 r=-0.09 (since it's a depreciation rate) t=8 Substituting values into formula: A=10000(1-0.09×8) A=10000(0.28) A=2800 £76,000 is borrowed for 2 years on a credit card with a 1% interest payment per month simple interest. What is the total cost to pay off after this time? Formula: A=P(1+rt) Variables: P=£76,000 r=0.01 (since it's a monthly rate) t=24 (2 years × 12 months/year) Substituting values into formula: A=76000(1+0.01×24) A=76000(1.24) A=94000 A house is currently valued at £175,000. For the first 3 years, the value of the house increases by a simple interest rate of 0.2% per annum. For the following 4 years, the value of the house decreases in value by a simple interest rate of 0.18% per annum. Calculate the value of the house after these 7 years. Formula: A=P(1+r1t1+r2t2) Variables: P=£175,000 r1=0.002 (3-year increase rate) t1=3 r2=-0.0018 (4-year decrease rate) t2=4 Substituting values into formula: A=175000(1+0.002×3-0.0018×4) A=175000(0.99.88) A=174790 Incorrect formula application: £76,000 is invested for 2 years at 1% per month simple interest. What is the value of the investment after this time? Formula: A=P(1+rt) Variables: P=£76,000 r=0.01 (monthly rate) t=2 (years) Substituting values into formula: A=76000(1+0.01×2) A=76000(1.02) A=77200 Incorrect percentage change due to different time scales: £76,000 is invested for 2 years at 1% per month simple interest. What is the value of the investment after this time? Formula: A=P(1+rt) Variables: P=£76,000 r=0.01 (monthly rate) t=24 (2 years × 12 months/year) Substituting values into formula: A=76000(1+0.01×24) A=76000(1.24) A=94000 Using the incorrect value for the percentage change: £100 is increased by 2% simple interest over 5 years. Formula: A=P(1+r*t) Variables: P=£100 r=0.02 (percentage increase rate) t=5 (years) Substituting values into formula: A=100(1+0.02×5) A=100(1.10) A=110 The value is increasing, so the formula is correct. However, if a value is depreciating (going down), the value of r would be negative, and it's incorrectly used as positive, resulting in an incorrect answer that is larger than the original value. The original price of the laptop was £689, with a sale price of 80% of this amount, resulting in a reduced value of £551.20. Over three years, the value of the laptop decreases by 4% of £551.20 per year, which amounts to £66.14. Subtracting this from the original purchase price gives the new value. For the t-shirt, Shop A offers an 8% reduction, resulting in a lower price of £14.40, while Shop B provides both an 8% and additional 2% reductions, yielding a final price of £14.43. In financial problems, Freya invests $6700 for 2 years at a simple interest rate of 1.2%, resulting in a total value of $6700 × 1.024 = $6,970 after two years. In contrast, Euan's investment is worth more after 2 years due to the higher interest rate applied over the first year. Lauren starts with £300 and earns an interest rate of 3% for five years, before withdrawing £30 at the end of the second year. Her total amount after five years would be £315. If Lauren aims to save £400, it would now take her 18 years to achieve this goal, considering the reduced interest rate. #### 2. Interest (S.I.) and Amount (A). We will recapitulate the same and know more about it and practice more questions given in the worksheet on simple interest. While solving the questions on simple interest worksheet we need to remember; the formula for calculating simple interest (S. I.) = (P × R × T)/100 and, formula for calculating amount (A) = P + I. Find the simple interest and amount in each of the following: (a) P = $18,000, R = 5%, T = 1 year (b) P = $26,000, R = 12%, T = 3 years (c) P = $3,125, R = 15%, T = 73 days (d) P = $56,600, R = 11%, T = 9 months (e) P = $180, R = 3%, T = 1¹/₄ year Word problems on simple interest worksheet: 2. What sum would yield an interest of $36 in 3 years at 3% p.a.? 3. At what rate per cent per annum will $250 amount to $330 in 4 years? 4. At what rate per cent per annum will $400 yield an interest of $78 in 1¹/₂ years? 5. In what time will $400 amount to $512 if the simple interest is calculated at 14% p.a.? 6. A sum amounts to $24,000 at 15% simple interest per annum after 4 years. Find the sum. 7. Ken borrowed $2,000 from Sam at 8% per annum. After 6 years he cleared the amount by giving $26,000 cash and a watch. Find the cost of the watch. 8. In how many years will $400 yield an interest of $112 at 14% simple interest? 9. In how many years will $12,000 yield an interest of $13,230 at 10% simple interest? 10. In how many years will $600 double itself at 10% simple interest? 11. At what rate of simple interest will $5,000 amount to $60,500 in 3 years, 4 months? 12. At what rate of simple interest will the sum of money double itself in 6 years? 13. Find the simple interest at the rate of 5% p.a. for 3 years on that principal which in 4 years, 8 months at the rate of 5% p.a. gives $12,000 as simple interest. 14. At what rate per cent per annum will $4,000 yield an interest of $410 in 2 years? 15. Simple interest on a certain sum is⁶/₂₅ of the sum. Find the rate per cent and time if both are numerically equal. Answers for simple interest worksheet: 1. (a) $90, $18,900; (b) $936, $35,360; (c) $93.75, $32,187.50; (d) $466.95, $6,126.95; (e) $6.75, $186.75 2. $400 3. 8% 4. 13% 5. 2 years 6. $15,000 7. $360 8. 2 years 9. 11¹/₄ years 10. 8¹/₃ years 11. 6.3% 12. 16²/₃% 13. $771.42 14. 5¹/₈% 15. 8%, 8 years To practice solving simple interest problems, use the formula S.I. = (Principal x Rate x Time) / 100 to calculate both the simple interest and amount owed in each scenario. Scenario 1: - P: $30,000 - R: 10% - T: 5 years Simple Interest (S.I.) = ($30,000 x 10% x 5) / 100 = $15,000 Amount Owed = Principal + Interest = $30,000 + $15,000 = $45,000 Scenario 2: - P: $17,000 - R: 20% - T: 30 days (converted to years) S.I. = ($17,000 x 20% x 30/365) / 100 ≈ $279.45 Amount Owed = Principal + Interest = $17,000 + $279.45 = $17,279.45 Scenario 3: - P: $6,000 - R: 15% - T: 13 months (converted to years) S.I. = ($6,000 x 15% x 13/12) / 100 ≈ $975 Amount Owed = Principal + Interest = $6,000 + $975 = $6,975 Scenario 4: - P: $500 - R: 3% - T: 1.5 years S.I. = ($500 x 3% x 1.5) / 100 ≈ $1,350 Amount Owed = Principal + Interest = $500 + $1,350 = $1,850 Now, solve for the following: 2. What sum would yield an interest of $80 in 4 years at 4% p.a.? Principal = $80 × 100 / (4% x 4) ≈ $500 3. At what rate percent per annum will $550 amount to $650 in 4 years? Simple Interest (S.I.) = Amount - Principal = $650 - $550 = $100 Rate = ($100 x 100) / ($550 x 4) ≈ 4.5% 4. In what time will $800 amount to $1050 if the simple interest is calculated at 15% p.a.? Simple Interest (S.I.) = Amount - Principal = $1050 - $800 = $250 Time = ($250 x 100) / ($800 x 15%) ≈ 2.04 years 5. A sum amounts to $1500 at 5% simple interest per annum after 3 years. Find the sum. Principal = $1500 × (100 + 5% x 3) / 100 ≈ $1304.34 6. Mr. Mike borrowed $5500 from Sam at 5% per annum. After 5 years, he cleared the amount by giving $8,500 cash and a bag. Find the cost of the bag. Principal = $5500 Simple Interest (S.I.) = ($5500 x 5%) / 100 = $275 Total Amount Owed = Principal + Interest = $5500 + $275 = $5775 Cost of Bag = $8,500 - $5775 ≈ $725 8. In how many years will $7000 yield an interest of $4620 at 22% simple interest? Principal = $7000 Simple Interest (S.I.) = ($4620 / 100) x 100 / ($7000 x 22%) ≈ 3.04 years 9. At what rate of simple interest will $2800 amount to $3500 in 2 years and 3 months? Simple Interest (S.I.) = Amount - Principal = $3500 - $2800 = $700 Time = 9/4 years Rate = ($700 x 100) / ($2800 x 9/4) ≈ 5.55% the simple interest for the principal can be calculated as follows: first, find the principal using the given simple interest and time at a rate of 4% per annum; this involves dividing the simple interest by the product of the rate and time (1600 / (4 * 13/2)) which yields a principal value of $6153.84. then, calculate the simple interest for the principal over a period of four years at an annual rate of 8%, using the formula (6153.84 * 4 * 8) / 100, resulting in $1969.22 as the simple interest. next, let's consider problem 11: find the rate percent and time if both are numerically equal when the simple interest is 36/72 of the principal. let the sum be represented by 'x', with the simple interest being (36/72)x; using the formula for simple interest (si = (p * r * t) / 100), we equate (36/72)x to ((x * r * r) / 100). solving this equation will give us an approximate rate of 7%. finally, for problem 12, determine the rate percent per annum when the simple interest on a sum at the end of five years is 2/5 of the sum itself. using the formula (si = (p * r * t) / 100), we equate 2/5x to ((x * r * 5) / 100). solving this equation results in a rate of 8% per annum.