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Simple interest is when the interest on a loan or investment is calculated only on the amount initially invested or loaned. This is different from compound interest, where interest is calculated on on the initial amount and on any interest earned. As you will see in the examples below, the simple interest formula can be used to calculate the interest earned, the total amount, and other values depending on the problem. [adsenseWide] Here we will learn about simple interest including how to calculate simple interest for increasing and decreasing values, and how to set up, solve and interpret growth and decay problems. There are also simple interest worksheets based on Edexcel, AQA and OCR exam questions, along with further guidance on where to go next if you're still stuck. Simple interest is calculated by finding a percentage of the principal (original) amount and multiplying by the time period of the investment. The final value of the investment can then be found by adding the simple interest to the principal amount. Simple Interest Formula Simple interest can be calculated using the following formula: I=Prt And we can calculate the value of the investment, A, after the time period with the formula: \begin{aligned} A& =P+Prt \\\\ & =P\left( 1+rt \right) \end{aligned} Where: I represents the simple interest A represents the final amount. P represents the original amount. r is the percentage rate (written as a decimal). t represents the time period (number of intervals). E.g Lets calculate the interest earned on £3000 with a simple interest rate of 5\% over 2 years. Using the formula I=Prt, remembering that 5\% = 0.05 \begin{aligned} I&=3000\times 0.05\times 2 \\\\ & =\text{£}300 \end{aligned} To find the final value of the investment we can now add the interest to the principal amount. \begin{aligned} A&=3000+300 \\\\ & =\text{£}3300 \end{aligned} We could have calculated this directly using the formula A=P\left( 1+rt \right) \begin{aligned} A& =3000\left( 1+0.05\times 2 \right) \\\\ & =\text{£}3300 \end{aligned} In order to calculate simple interest: State the formula needed and the value of each variable. Substitute the values into the formula. Solve the equation. Get your free simple interest worksheet of 20+ questions and answers. Includes reasoning and applied questions. DOWNLOAD FREE Simple interest is part of our series of lessons to support revision on simple interest and compound interest. You may find it helpful to start with the main simple interest and compound interest lesson for a summary of what to expect, or use the step by step guides below for further detail on individual topics. Other lessons in this series include: Simple interest and compound interest Compound interest Depreciation £2100 is invested for 3 years at an annual interest rate of 2\% per year simple interest. Find the interest earned on the investment in that time? State the formula needed and the value of each variable We required the interest so we will use the formula I=Prt with: 2Substitute the values into the formula. Substituting these values into the simple interest formula I=Prt, we get: I=2100\times 0.02\times 3 3Solve the equation. I=£126 £126 was earned on the investment. £1500 is invested for 4 years at an annual interest rate of 5\% per year simple interest. What is the value of the investment after this time? State the formula needed and the value of each variable We required final the value of the investment so we will use the formula A=P(1+rt) with: Substitute the values into the formula. Substituting these values into the simple interest formula A=P(1+rt), we get: A=1500(1+0.05\times{4}) \begin{aligned} &A=1500(1+0.20)\\\\ &A=1500(1.20)\\\\ &A=1500\times{1.2}\\\\ &A=\pounds1800. \end{aligned} 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? State the formula needed and the value of each variable Here we use the formula A=P(1+rt) with: Substitute the values into the formula. Substituting these values into the simple interest formula A=P(1+rt), we get: A=10000(1-0.09\times{8}) \begin{aligned} &A=10000(1-0.72)\\\\ &A=10000(0.28)\\\\ &A=10000\times{0.28}\\\\ &A=\pounds2800. \end{aligned} £7600 is borrowed for 2 years on a credit card. The cost of borrowing is a 1\% interest payment per month simple interest for the life of the loan. What is the total cost to pay off after this time? State the formula needed and the value of each variable Here we use the formula A=P(1+rt) with: P=7600 r=0.01 t= 2 \times 12 = 24 (remember there are 12 months in 1 year) Substitute the values into the formula. Substituting these values into the simple interest formula A=P(1+rt), we get: A=7600(1+0.01\times{24}) \begin{aligned} &A=7600(1+0.24)\\\\ &A=7600(1.24)\\\\ &A=7600\times{1.24}\\\\ &A=\pounds{9424}. \end{aligned} A house is currently valued at £175,000. For the first 3 years, the value of the house increases by the rate of simple interest 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. State the formula needed and the value of each variable Here we use the formula A=P\left(1+r_{1} t_{1}+r_{2} t_{2}\right) P=175,000 r_{1}=0.002 t_{1}=3 r_{2}=-0.0018 t_{2}=4 Substitute the values into the formula. Substituting these values into the simple interest formula A=P\left(1+r_{1} t_{1}+r_{2} t_{2}\right), we get: A=175,000(1+0.002\times{3}-0.0018\times{4}) \begin{aligned} &A=175,000(1+0.006-0.0072)\\\\ &A=175,000(0.9988)\\\\ &A=175,000\times{0.9988}\\\\ &A=\pounds{174,790}. \end{aligned} Applying the incorrect formula to the question This is a very common mistake where the simple interest on an amount is calculated instead of using the compound interest formula. Incorrect percentage change due to different time scales In example 4 " £7600 is invested for 2 years at 1\% per month simple interest. What is the value of the investment after this time?", the value of t is written as 2 and not 24. State the formula needed and the value of each variable Here we use the formula A=P(1+rt) with: Substitute the values into the formula. Substituting these values into the simple interest formula A=P(1+rt), we get: A=7600(1+0.01\times{2}) \begin{aligned} &A=7600(1+0.02)\\\\ &A=7600\times{1.02}\\\\ &A=\pounds{7752}. \end{aligned} Using the incorrect value for the percentage change Using the percentage as the value for r (therefore not dividing the percentage by 100 ). For example when using simple interest to increase £100 by 2\% for 5 years, this calculation is made: \begin{aligned} &A=100(1+2\times{5})\\\\ &A=100\times{11}\\\\ &A=\pounds{1100!} \end{aligned} Is the value increasing or decreasing? If a value is depreciating (going down), the value of r is negative whereas it is incorrectly used as a positive and so the answer will be larger than the original amount. The original price was £689 . The sale price was 80 % of this. 80 % of £689 is £551.20 . The value of the laptop has decreased by 4 % of £551.20 per year for three years. We can work out 4 % of 551.20 and multiply by 3 ; this is £66.14 . Subtracting this from the purchase price gives the new value. The amount to be paid back is given by 1.07\times999=1068.93 Six months is a quarter of the finance period, so a quarter of the full amount will have been spent on the saxophone, therefore \frac{1}{4}\times1068.93=267.23 Shop A: After a 10 % reduction, the t-shirt will cost £14.40 Shop B: The 8 % reduction means the t-shirt will be £14.72 , with the additional 2 % reduction making the price £14.43 The initial amount is 7342 , the simple interest rate is 0.4 % and the number of months is 48 , which results in 7342(1+0.004\times48) The initial amount is 365500 , the simple interest rate is 0.25 % and the number of years is 12 , which results in 365500(1+0.0025\times12) 1.(a) £850 is invested for 6 years at 2\% simple interest per year. Work out the total interest earned? (b) The interest rate changes to 0.15\% simple interest per month. How does this affect the final value of the investment over the same time period of 6 years? (6 marks) (a) 850 \times 0.02 \times 6 (1) £102 (1) (b) 0.15 \times 12 \times 6 = 10.8\% (1) 850 \times (0.108) (1) £91.80 (1) Decreased by £10.20 over 6 years (1) 2. (a) Freya invests \$6700 for 2 years. The simple interest rate is 1.2\% per year. Which calculation below works out the total value after 2 years? Circle your answer. (b) Euan invests \$6400 for 2 years. The simple interest rate is 1.4\% for the first year 1.1\% for the second year. Whose investment is worth more after 2 years and by how much? You must show your working. (4 marks) (a) \$6700 \times 1.024 (1) (b) 1.4+1.1=2.5\% (1) \$6700 \times (0.001) (1) \$6.70 (1) 3. (a) Lauren places £300 into a new bank account with a simple interest rate of 3\%. After the second year, she withdraws £30. How much money would she have after 5 years? (b) The interest rate after 5 years halves. How many years will it now take Lauren to save £400? (5 marks) (a) 300 \times (1+0.03 \times 5)-30 (1) £315 (1) (b) 400-315=£85 (1) 85 \div 4.725 (1) 18 years (1) You have now learned how to: Solve problems involving percentage change, including: percentage increase, decrease and original value problems and simple interest in financial mathematics Set up, solve and interpret the answers in growth and decay problems, including compound interest {and work with general iterative processes} Surds Types of numbers Standard form Prepare your KS4 students for maths GCSEs success with Third Space Learning. Weekly online one to one GCSE maths revision lessons delivered by expert maths tutors. Find out more about our GCSE maths tuition programme. We use essential and non-essential cookies to improve the experience on our website. Please read our Cookies Policy for information on how we use cookies and how to manage or change your cookie settings.AcceptPrivacy & Cookies Policy ExampleTo show how the formula works, we can recalculate the last example:Rory borrows \(£300\) from his bank.The bank charges simple interest at a rate of \(9\%\) p.a. (per annum).How much will Rory owe after \(4\) years?P = \(£300\)T = \(4\) yearsR = \(9\%\) p.a.Put these values into the formula.Simple Interest = \(\frac{(300 × 4 × 9)}{100}\)\(= £108\)Rory owes \(£108\) interest + the principal of \(£300\)\(= £408\)If you are using the formula to calculate simple interest, don't forget to add the principal if you want to know the total amount owed/saved.Use the simple interest formula to calculate the interest gained on \(£2500\) over \(4\) years at a rate of \(6\%\) per annum.Simple Interest = \(\frac{(P × T × R)}{100}\)P = \(£2500\)T = \(4\) yearsR = \(6\%\) p.a.Interest = \(\frac{({2500}\times{4}\times{6})}{100}\)\(= £600\)Compound interest is interest that is calculated on the principal plus the amount of interest already earned.Therefore, the amount of money that earns interest increases every year.ExampleDaniel invests \(£400\) at a compound interest rate of \(6\%\).How much interest will he have earned after \(3\) years?Interest earned in first year\(= 6\% ~of~ £400\)\(= £24\)Principal for second year\(= £400 + £24\)\(= £424\)Interest earned in second year\(= 6\%~ of~ £424\)\(= £25.44\)Principal for second year\(= £424 + £25.44 = £449.44\)Interest earned in third year\(= 6\%~ of ~£449.44\)\(= £26.97\)Total amount of interest earned\(= £24 + £25.44 + £26.97\)\(= \boldsymbol{£76.41}\)Amelia borrows \(£1500\) at a compound interest rate of \(8\%\) per annum (p.a.).How much does she owe after \(2\) years?Interest to be added in first year\(= 8 \percent~of~£1500\)\(= £120\)Principal for second year\(= £1500 + £120\)\(= £1620\)Interest to be added in second year\(= 8 \percent~of~£1620\)\(= £129.60\)Amelia now owes \(= £1620 + £129.60\)\(= \boldsymbol{£1749.60}\)If compound interest is to be added over a large number of years, the calculation becomes very long and complex. In this case, it is convenient to use a formula.Total amount \(= {P}\times{(1 +}\frac{R}{100}){^t}\)P = Principal (original amount)R = compound interest rate (%)T = time (years)ExampleDaniel invests \(£400\) at a compound interest rate of \(6\%\).How much interest will he have earned after \(8\) years?P = \(£400\)R = \(6\%\) per annum (p.a.).T = \(8\) yearsTotal amount after \(3\) years \(= {P}\times{(1 +}\frac{R}{100}){^t}\)\(= 400 (1 + 0.06)^8\)\(= 400(1.06)^8\)\(= £637.54\)Interest earned \(= £637.54 - £400 = £237.54\)Ryan borrows \(£850\) at a compound interest rate of \(9 \percent\) per annum (p.a.).Use the compound interest formula to calculate how much will he owe after \(4\) years?P = \(£850\)R = \(9 \percent\) per annum (p.a.).T = \(4\) yearsTotal amount after \(4\) years \(= {P}\times{(1 +}\frac{R}{100}){^t}\)\(= 850\times(1 + 0.09)^4\)\(= 850\times(1.09)^4\)\(= £1199.84\) (nearest penny)Ryan owes \(£1199.84\) after \(4\) years.Calculate the simple interest on \(£7000\) borrowed for \(5\) years at an interest rate of \(5.5\%\) per annum (p.a.).Jamie puts \(£450\) into a savings account.How much will he have in his account after \(4\) years at a simple interest rate of \(12\%\) per annum (p.a.)?Emily invests \(£1200\).After four years, how much will her investment be worth if she is paid \(12\%\) compound interest per annum?Mo borrows \(£2400\) at 1\(5\%\) per annum (p.a.) compound interest for \(4\) years.How much compound interest will he have to pay ?Discover more maths topics on Bitesize.Maths Subscribe to our YouTube channel for the latest videos, updates, and tips. In simple interest we will learn and identify about the terms like Principal, Time, Rate, Amount, etc. Suppose Ron has deposited $100 in a bank. Ron goes to the bank to find out about his deposited money. The manager of the bank informs Ron that $100 deposited in the bank one year before has now become $110. Ron enquires how did $100 become $110 after one year?The manager told that when someone deposits money in a bank, we pay some extra money on the deposited amount. For example, suppose the bank has given a loan of $6000 to Jack to purchase a tractor. After three years Jack returns back the loan along with 10% interest charged by the bank. Here, the money borrowed (loan is the principal and the extra money to be paid is called the interest.The interest is only a fair payment for using another person's money.PRINCIPAL (P):The money you deposit or put in the bank is called the PRINCIPAL.INTEREST (I):The extra money you get from the bank after depositing is called the INTEREST.AMOUNT (A):The total money means the PRINCIPAL and INTEREST you get after a fix time is called the AMOUNT.Notes:P is the money deposited or borrowed called the PRINCIPAL.T is the TIME or number of years for which the money is deposited or borrowed.The interest is calculated at a RATE per cent decided by the bank every year. This is R % p.a. (per annum or per year)PRINCIPAL (P) + INTEREST (I) = AMOUNT (A)ORP + I = AThere are two types of interests.1. Simple Interest (S.I.).2. Compound Interest (C.I.).The Simple Interest (SI) remains the same every year. ● Simple Interest.Word Problems on Simple Interest.Factors Affecting InterestIn Simple Interest when the Time is given in Months and Days.To find Principal when Time Interest and Rate are given.To find Rate when Principal Interest and Time are given .To find Time when Principal Interest and Rate are given.Worksheet on Simple Interest.Worksheet on Factors affecting Interest While rounding off to the nearest hundred, if the digit in the tens place is between 0 – 4 i.e. < 5, then the tens place is replaced by '0'. If the digit in the units place is equal to or >5, then the tens place is replaced by '0' and the hundreds place is increased by 1. Round off to nearest 1000 is discussed here. While rounding off to the nearest 1000, if the digit in the hundreds place is between 0 – 4 i.e., < 5, then the hundreds place is replaced by '0'. If the digit in the hundreds place is = to or > 5, then the hundreds place is In worksheet on rounding off number we will solve 10 different types of problems. 1. Round off to nearest 10 each of the following numbers: (a) 14 (b) 57 (c) 61 (d) 819 (e) 7729 2. Round off to Common factors of two or more numbers are a number which divides each of the given numbers exactly. For examples 1. Find the common factor of 6 and 8. Factor of 6 = 1, 2, 3 and 6. Factor To find out factors of larger numbers quickly, we perform divisibility test. There are certain rules to check divisibility of numbers. Divisibility tests of a given number by any of the number 2, 3, 4, 5, 6, 7, 8, 9, 10 can be perform simply by examining the digits of the A fraction with denominator 100 is called percentage and is denoted by the symbol %. In our daily life, we see a lot of statements with numbers followed by a symbol %. A number followed by % is called a percentage or percent. The term percent comes from the Latin phrase per To convert a fraction into a percent, we multiply the given fraction by 100 and add the percent symbol after the product. Let us consider how to change a fraction to a percent (i) 42/100 = 42% (ii) 73/100 = 73% (iii) 6/100 = 6% Average means a number which is between the largest and the smallest number. Average can be calculated only for similar quantities and not for dissimilar quantities. In worksheet on average we will solve different types of questions on the concept of average, calculating the average of the given quantities and application of average in different problems. The properties of division are discussed here: 1. If we divide a number by 1 the quotient is the number itself. In other words, when any number is divided by 1, we always get the number itself as the quotient. For example: (i) 7542 ÷ 1 = 7542 (ii) 372 ÷ 1 = 372 5th Grade Numbers Page 5th Grade Math Problems From Introduction to Simple Interest to HOME PAGE Didn't find what you were looking for? Or want to know more information about Math Only Math. Use this Google Search to find what you need. Share this page: What's this? Learning objectives of this article: Define and explain the simple interest. How is it calculated? Contents: Definition and Explanation Formula of Simple Interest Examples There are two ways to calculate interest. One is the simple interest and other is the compound interest. In this article simple interest is defined, explained and calculated. The concept of compound interest is explained on future value of a single sum page. Definition and Explanation: Interest is a fee which is paid for having the use of money. We pay interest on mortgages for having the use of the bank's money. We use the bank's money to pay a contractor or person from whom we are purchasing a home. Similarly, the bank pays us interest on money invested in savings accounts or certificates of deposit because it has temporary access to our money. The amount of money that is lent or invested is called the principle. Interest is usually paid in proportion to the principle and the period of time over which the money is used. The interest rate specifies the rate at which interest accumulates. The interest rate is typically stated as a percentage of the principle per period of time, for example, 18 percent per year or 1.5 percent per month. Interest that is paid solely on the amount of the principle is called simple interest. Simple interest is usually associated with loans or investments which are short-term in nature. Formula of Simple Interest: The calculation of simple interest is based on the following formula: Simple interest = Principle × Interest rate per time period × Number of time periods Or I = Pin Where; I = Simple interest, dollars P = Principle, dollars i = Interest rate per time period n = Number of time periods of loan In the above formula, it is essential that the time periods for i and n be consistent with each other. That is, if i is expressed as a percentage per year, n should be expressed in number of years. Similarly, if i is expressed as a percentage per month, n must be stated in number of months. Examples: Example 1: A credit union has issued a 3-year loan of $5,000. Simple interest is charged at a rate of 10 percent per year. The principle plus interest is to be repaid at the end of the third year. Compute the interest for three year period. What amount will be repaid at the end of the third year? Solution: I = Pin P = ($5,000)(0.10)(3) = $1,500 The amount to be repaid is the principle plus the accumulated interest, that is: $5,000 + $1,500 $6,500 Example 2: A person lends $10,000 to a corporation by purchasing a bond from the corporation. Simple interest is computed quarterly at a rate of 3 percent per quarter, and a check for the interest is mailed each quarter to all bondholders. The bonds expire at the end of 5 years, and the final check includes the original principle plus interest earned during the last quarter. Compute the interest earned each quarter and the total interest which will be earned over 5-year life of the bonds. Solution: In this problem P = $10,000, i = 0.03 per quarter, and the period of the loan is 5 years. Since the time period for i is a quarter (of a year), we must consider 5 years as 20 quarters. And since we are interested in the amount of interest earned over one quarter, we must let n = 1. Therefore quarterly interest equals: I = Pin I = ($10,000)(0.03)(1) = $300 To compute the total interest over the five year period, we multiply the per-quarter interest of $300 by the number of quarters, 20, to obtain Total interest = $300 × 200 = $6000 Home>Simple Interest – Explanation & ExamplesSubstitute in the values in the simple interest formula;(SI) = [(P) × (R) × (T)]/100= (50000 x 5 x 2)/100= $ 5000Therefore, she earned an interest of $5000The amount (A) = Principal (P) + Interest (I)Substitute;= 50000+ 5000= $ 55000Hence, the woman got $ 55000Example 2Tyson invested a certain amount of money in a bank. The bank paid him $9000 after a given period of time. If the interest paid by the bank was $1200, calculate the amount of money Tyson invested?ExplanationThe amount (A) = $ 9000,Simple Interest (SI) = $ 1200From the formula;Principal (P) = Amount (A) – Interest (I)= 9000 – 1200= $7800Therefore, Tyson invested $ 7800.Example 3Maria deposited in a bank $6400 and earned $ 8000 after a year. Calculate the simple interest she earned?ExplanationThe principal (P) = $ 6400,Amount (A) = $ 8000Apply the formula;Simple Interest (SI) = Amount (A) – Principal (P)= 8000- 6400= $1600Therefore, Maria earned an interest of $ 1600Simple interest has many applications, like bonds and mortgages. Bonds pay coupon payment in the form of non-compounding interest. Similarly, non-compounding interest mortgages often used with a bi-weekly payment plan to pay the loan sooner. ExampleTo show how the formula works, we can recalculate the last example:Rory borrows \(£300\) from his bank.The bank charges simple interest at a rate of \(9\%\) p.a. (per annum).How much will Rory owe after \(4\) years?P = \(£300\)T = \(4\) yearsR = \(9\%\) p.a.Put these values into the formula.Simple Interest = \(\frac{(300 × 4 × 9)}{100}\)\(= £108\)Rory owes \(£108\) interest + the principal of \(£300\)\(= £408\)If you are using the formula to calculate simple interest, don't forget to add the principal if you want to know the total amount owed/saved.Use the simple interest formula to calculate the interest gained on \(£2500\) over \(4\) years at a rate of \(6\%\) per annum.Simple Interest = \(\frac{(P × T × R)}{100}\)P = \(£2500\)T = \(4\) yearsR = \(6\%\) p.a.Interest = \(\frac{({2500}\times{4}\times{6})}{100}\)\(= £600\)Compound interest is interest that is calculated on the principal plus the amount of interest already earned.Therefore, the amount of money that earns interest increases every year.ExampleDaniel invests \(£400\) at a compound interest rate of \(6\%\).How much interest will he have earned after \(3\) years?Interest earned in first year\(= 6\% ~of~ £400\)\(= £24\)Principal for second year\(= £400 + £24\)\(= £424\)Interest earned in second year\(= 6\%~ of~ £424\)\(= £25.44\)Principal for second year\(= £424 + £25.44 = £449.44\)Interest earned in third year\(= 6\%~ of ~£449.44\)\(= £26.97\)Total amount of interest earned\(= £24 + £25.44 + £26.97\)\(= \boldsymbol{£76.41}\)Amelia borrows \(£1500\) at a compound interest rate of \(8\%\) per annum (p.a.).How much does she owe after \(2\) years?Interest to be added in first year\(= 8 \percent~of~£1500\)\(= £120\)Principal for second year\(= £1500 + £120\)\(= £1620\)Interest to be added in second year\(= 8 \percent~of~£1620\)\(= £129.60\)Amelia now owes \(= £1620 + £129.60\)\(= \boldsymbol{£1749.60}\)If compound interest is to be added over a large number of years, the calculation becomes very long and complex. In this case, it is convenient to use a formula.Total amount \(= {P}\times{(1 +}\frac{R}{100}){^t}\)P = Principal (original amount)R = compound interest rate (%)T = time (years)ExampleDaniel invests \(£400\) at a compound interest rate of \(6\%\).How much interest will he have earned after \(8\) years?P = \(£400\)R = \(6\%\) per annum (p.a.).T = \(8\) yearsTotal amount after \(3\) years \(= {P}\times{(1 +}\frac{R}{100}){^t}\)\(= 400 (1 + 0.06)^8\)\(= 400(1.06)^8\)\(= £637.54\)Interest earned \(= £637.54 - £400 = £237.54\)Ryan borrows \(£850\) at a compound interest rate of \(9 \percent\) per annum (p.a.).Use the compound interest formula to calculate how much will he owe after \(4\) years?P = \(£850\)R = \(9 \percent\) per annum (p.a.).T = \(4\) yearsTotal amount after \(4\) years \(= {P}\times{(1 +}\frac{R}{100}){^t}\)\(= 850\times(1 + 0.09)^4\)\(= 850\times(1.09)^4\)\(= £1199.84\) (nearest penny)Ryan owes \(£1199.84\) after \(4\) years.Calculate the simple interest on \(£7000\) borrowed for \(5\) years at an interest rate of \(5.5\%\) per annum (p.a.).Jamie puts \(£450\) into a savings account.How much will he have in his account after \(4\) years at a simple interest rate of \(12\%\) per annum (p.a.)?Emily invests \(£1200\).After four years, how much will her investment be worth if she is paid \(12\%\) compound interest per annum?Mo borrows \(£2400\) at 1\(5\%\) per annum (p.a.) compound interest for \(4\) years.How much compound interest will he have to pay ?Discover more maths topics on Bitesize.Maths Simple interest is an interest charge that borrowers pay lenders for a loan. It is calculated using the principal only and does not include compounding interest. Simple interest relates not just to certain loans. It's also the type of interest that banks pay customers on their savings accounts. The formula to determine simple interest is an easy one. Just multiply the loan's principal amount by the annual interest rate by the term of the loan in years. This type of interest usually applies to automobile loans or short-term loans, although some mortgages use this calculation method. Simple interest is calculated by multiplying loan principal by the interest rate and then by the term of a loan.Simple interest can provide borrowers with a basic idea of a borrowing cost.Auto loans and short-term personal loans are usually simple interest loans.Simple interest involves no calculation of compound interest.A benefit of simple interest over compound interest can be a lower borrowing cost. Interest is the cost of borrowing money. Typically expressed as a percentage, it amounts to a fee or charge that the borrower pays the lender for the financed sum. Simple interest is an easy way to look at the charge you'll pay for borrowing. The interest rate is calculated against the principal amount and that amount never changes, as long as you make payments on time. Neither compounding interest nor calculation of the interest rate against a growing total balance is involved. That means you'll always pay less interest with a simple interest loan than a compound interest loan if the loan term is greater than one year. Many debt transactions involve a more complex calculation of interest than simple interest. Interest doesn't compound or get added to the principal amount for a larger borrowing cost result. You never pay interest on interest.Borrowers can save money.Debts can be easier to pay off.The simple interest calculation is simple and straightforward. Simple interest is better for borrowers because it doesn't account for compound interest. On the other hand, compound interest is a key to building wealth for investors. The formula for simple interest is straightforward: Simple Interest = P × r × n where: P = Principal r = Interest rate n = Term of loan, in years \begin{aligned}&\text{Simple Interest} = P \times r \times n \\&\textbf{where:} \\&P = \text{Principal} \\&r = \text{Interest rate} \\&n = \text{Term of loan, in years} \\\end{aligned} Simple Interest=P×r×nwhere:P=Principalr=Interest raten=Term of loan, in years As a reminder, simple interest paid or received over a certain period is a fixed percentage of the principal amount that was borrowed or lent. For example, let's say that a student obtains a simple interest personal loan to pay for one year of college tuition. The loan amount is $18,000. The annual interest rate on the loan is 6%. The term of the loan is three years. Using the simple interest formula above, the amount of simple interest on the student's loan is: $ 18 , 000 × 0.06 × 3 = $ 3 , 240 \begin{aligned}\$18,000 \times 0.06 \times 3 = \$3,240\end{aligned} $18,000×0.06×3=$3,240 Therefore, the total amount of principal and interest paid to the lender is: $ 18 , 000 + $ 3 , 240 = $ 21 , 240 \begin{aligned}\$18,000 + \$3,240 = \$21,240\end{aligned} $18,000+$3,240=$21,240 Simple Interest is similar to Daily Simple Interest except that with the latter, interest accrues daily and is added to your account balance. Also, while loan balances on simple interest debt are reduced on the payment due date, daily simple interest loan balances are reduced on the day payments are received. Simple interest usually applies to automobile loans or short-term personal loans. In the U.S., most mortgages on an amortization schedule also involve simple interest, although they can certainly feel like compound interest loans. The compounding feel comes from varying principal payments—that is, the percentage of your mortgage payment that's actually going towards the loan itself, not the interest. The interest doesn't compound. Rather, the principal payments do. A $1,000 principal payment saves interest on that $1,000 and results in higher principal payments the next year, and higher the following year, and so on. If you don't let the principal payments vary, as in an interest-only loan (zero principal payment), or by equalizing the principal payments, the loan interest itself doesn't compound. If you make partial payments to a simple interest loan, the payment will be applied to interest first, and any remainder cases. Solution: Principal amount = $1,000, personal loan interest rate = 5% = 5/100. (Add a sentence here describing the given information in the question.) Duration Simple Interest 1 Year S.I = (1000 × 5 × 1)/100 = 50 2 Year S.I = (1000 × 5 × 2)/100 = 100 3 Year S.I = (1000 × 5 × 3)/100 = 150 10 Year S.I = (1000 × 5 × 10)/100 = 500 Now, we can also prepare a table for the above question adding the amount to be returned after the given time period. Simple Interest Amount 1 Year S.I = (1000 × 5 × 1)/100 = 50 A = 1000 + 50 = 1050 2 Year S.I = (1000 × 5 × 2)/100 = 100 A = 1000 + 100 = 1100 3 Year S.I = (1000 × 5 × 3)/100 = 150 A = 1000 + 150 = 1150 10 Year S.I = (1000 × 5 × 10)/100 = 500 A = 1000 + 500 = 1500 What Types of Loans use Simple Interest? Most banks these days apply compound interest on loans because in this way banks get more money as interest from their customers, but this method is more complex and hard to explain to the customers. On the other hand, calculations become easy when banks apply simple interest methods. Simple interest is much more useful when a customer wants a loan for a short period of time, for example, 1 month, 2 months, or 6 months. When someone goes for a short-term loan using simple interest, the interest applies on a daily or weekly basis instead of a yearly basis. Consider that you borrowed $10,000 on simple interest at a 10% interest rate per year, so this 10% a year rate is divided into a rate per day which is equal to 10/365 = 0.027%. So you have to pay $2.73 a day extra on $10,000. Simple Interest vs Compound Interest Simple interest and compound interest are two ways to calculate interest on a loan amount. It is believed that compound interest is more difficult to calculate than simple interest because of some basic differences in both. Let's understand the difference between simple interest and compound interest through the table given below: Simple Interest Compound Interest Simple interest is calculated on the original principal amount every time. Compound interest is calculated on the accumulated sum of principal and interest. It is calculated using the following formula: S.I.= P × R × T It is calculated using the following formula: C.I.= P × (1 +R)T - P It is equal for every year on a certain principal. It is different for every span of the time period as it is calculated on the amount and not the principal. Important Notes on Simple Interest: If the rate of interest as a percentage is used then the SI formula is (PRT)/100. But if the rate of interest is used as a decimal (i.e., if we have already divided the rate by 100) then the SI formula is just PRT. The rate of interest is the interest on every $100 for a fixed time period. Interest is always more in the case of compound interest as compared to simple interest. The formula or methods to calculate compound interest is derived from simple interest calculation methods. Think Tank: If the interest paid by Micheal is one-fifth of the total amount he has to pay after a certain time period, what is the time period if the rate of interest was 25%? The interest on a sum lent at the rate of 10% per annum for a period of 20 months is equal to 1.5 times interest on $3,000 at the rate of 5% per annum in 3 years. What is the sum. ☛ Related Topics: Example 1: Robert purchased a car worth $48,000, he borrowed the money from the bank at 10% per annum for a period of 4 years. How much amount he has to pay after the period. Solution: The principal value for the car is $48,000, the rate of simple interest is 10% and the time period given is 4 years. Using the formula for amount, A= P(1 +RT), A= 48000 × (1 + 10/100 × 4) A= 48000 × (1 + 2/5) A= 48000 × 7/5 A= $67200 Answer: Therefore, Robert has to pay $67,200. Example 2: If Maria borrowed a sum of $46,500 for a period of 21 months at 20% per annum, then find the simple interest that she will need to pay. Solution: The principal amount is $46,500 and the rate of interest is 20% = 20/100. The time period given is 21 months = 21/12 years. Using the simple interest formula, SI = P × R × T SI = 46500 × 20/100 × 21/12 SI = $16275. Answer: Therefore, Maria is going to pay $16,275. Example 3: How much money was invested at 5% annual simple interest for 4 years to earn $3500? Solution: Assume that principal value is P. Rate of interest is, R = 5% = 0.05. Time is, T = 4 years. Amount is, A = 3500. Using the simple interest formula of amount, A = P (1 + RT) 3500 = P (1 + 0.05 · 4) 3500 = 1.2 P Dividing both sides by P, P = 3500/1.2 = 2916.67 Answer: The invested money = $ 2916.67. Show Solution > go to slidego to slidego to slide Have questions on basic mathematical concepts? Become a problem-solving champ using logic, not rules. Learn the why behind math with our certified experts Book a Free Trial Class FAQs on Simple Interest Simple interest is a type of interest that is calculated only on the initial amount borrowed/invested, without considering any interest charged/earned in previous periods. It is a fixed percentage of the principal amount that is charged or earned over a specific period of time. What is the Use of Simple Interest? Simple interest is used in cases where the amount that is to be returned requires a short period of time. So, monthly amortization, mortgages, savings calculation, and education loans use simple interest. What are Compound Interest and Simple Interest Formulas? For a given principal P, time T, and rate of interest R%, simple interest formula is PRT. compound interest formula is P(1 + R)T - P. What are the Types of Simple Interests? Simple interest is of two types ordinary simple interest and exact simple interest. In ordinary simple interest, a year is considered of 365 days while calculating the interest while in exact simple interest, a year is considered 366 days if it is a leap year. Both methods use the same formula to calculate simple interest. Are Home Loans Simple or Compound Interest? Home loans take a long time to repay, so the interest added by the lender is usually compound interest. Where to Find Simple Interest Calculator? To find the simple interest calculator (SI calculator), click here. This calculator allows us to enter the values of principal, rate of interest, and time duration (in years/months/days) and finds the simple interest showing step-by-step solution. Are Car Loans Simple or Compound Interest? Car loans or auto loans use simple interest to calculate the interest. The borrower agrees to pay the money back, plus a flat percentage of the amount borrowed. But in case the borrower fails to repay the amount on time, the company or the lender may start charging compound interest. What is the Difference between Simple and Compound Interest? Simple interest is the interest paid only on the principal, whereas, compound interest is the interest paid on both principal and interest compounded in regular intervals. How to Calculate Simple Interest? Simple Interest is calculated using the following formula: SI = P × R × T, where P = Principal, R = Rate of Interest, and T = Time period. Here, the rate is given in percentage (r%) is written as r/100. And the principal is the sum of money that remains constant for every year in the case of simple interest. How do I Calculate Simple Interest Monthly? To calculate simple interest monthly, we have to divide the yearly interest calculated by 12. So, the formula for calculating monthly simple interest becomes (P × R × T) / (100 × 12). What is Simple Interest Rate Formula? Using the simple interest formula, SI = PRT/100. To find the rate R from this, we just solve this equation for R. Then we get R = (SI × 100) / (P × T). Simple Interest abbreviated as S.I is a technique of computing the interest amount for some principal amount of money. Imagine that you have ever borrowed money from your friend when your pocket money is drained? Or lent maybe? So, what happens when you borrow money? Firstly, you use that money for the purpose you had borrowed it. After that, you return the money in addition to some extra amount for the time period you have borrowed and that's what is called simple interest. Interest FormulaThe Formula for simple interest enables us to find out the interest amount if the principal amount, rate of interest and time duration is given.That being said, the simple interest formula to calculate interest rate isSI = (P × R ×T) / 100In which,SI = simple interestP = principal amount or the original amount being borrowedR = rate of interest (in percentage)T = time period (in years)For the purpose of calculating the total amount, the formula below is used:Amount (A) = Principal (P) + Interest (I)In which,Amount (A) = total money paid back at the termination of the time period for which it was borrowed.How to Calculate Interest RateIn the real world, money is not free to borrow. You have to borrow money from banks, financial institutions and even from a friend/relative in the form of a loan. During payback, besides the loan amount, you pay some additional money that depends on the loan amount and also upon the time for which you borrow. This is known as the simple interest. This term finds a sizable usage in banking.Simple Interest Formula For MonthsThe formula to calculate interest rate on a yearly basis is already known. Now, let's check the formula to calculate the interest rate for months. Let's say P is the principal amount, R be the rate of interest annually and n be the time duration (in months), then the simple interest formula can be written as:Simple Interest for 'n' months = (P × n × R)/(12 ×100)Difference Between Simple Interest and Compound InterestThere is another kind of interest which we call a compound interest. The major difference between a simple and compound interest is that the simple interest relies upon a loan or a principal amount of a deposit whereas the compound interest is based on the principal amount and interest that is collected in every period of time.Solved Examples Using Simple Interest FormulaLet's undertake a simple example to understand the concept of simple interest.Example:Mr. Bharat borrowed a loan of Rs 20000 from a bank for the time period of 1 year. The rate of interest charged is 8% per annum. Calculate the interest and the amount he has to pay at the end of a year.Solution:Given, the loan sum = P = Rs 20000Rate of interest per annum = R = 8%Time for which the money is borrowed = T = 1 yearTherefore, simple interest for a year, SI = (P × R × T) / 100= (20000 × 8 × 1) / 100 = Rs 1600 Hence, the amount that Mr. Bharat has to pay to the bank at the end of the year =Principal + Interest= 20000 + 1600= Rs 21,600 . Interest can be charged when you borrow money or earned when you save.When you charge something on a credit card or take out a loan from a financial institution (student loan, auto loan, mortgage, etc.), you're charged interest for borrowing that money.You can also earn interest in the form of a yield on interest-bearing accounts, such as savings accounts.Interest is either the cost of borrowing money or the reward for saving or investing it — depending on which side of the transaction you're on.For borrowers, interest is often reflected as an annual percentage of the amount of a loan. This percentage is known as the interest rate on the loan. For investors or savers, interest comes in the form of an annual percentage yield (APY).For example, a bank will pay you interest when you deposit your money in a high-yield savings account. The bank pays you to hold and use your money to invest in other transactions. Conversely, if you borrow money to pay for a large expense, the lender will charge you interest on top of the amount you borrowed.Understanding how interest works is essential to making smart financial decisions. In this guide, we'll break down the basics of interest, how it's calculated and what it means for your loans, credit cards, savings accounts and more.How interest works when borrowingWhenever you borrow money, you're required to pay the principal back to your lender. You'll also need to pay your lender the interest, typically an annual percentage of the principal, set for the loan. These loans come in many forms, including credit cards, student loans, car loans, mortgages and personal loans. Understanding how the interest terms and repayment requirements work is essential to managing debt wisely.For example, let's say you borrow $10,000 from your bank in a straightforward loan with a 10 percent interest rate per annum (meaning per year), and the loan is payable in five years.Interest on a typical bank loan is added to monthly payments and is usually compounded monthly. In this example, you'd pay

work at Finder.Article edited by Kelly Suzan Waggoner Simple interest is a straightforward method of calculating interest on a loan or deposit. It is based on the initial principal amount, and the interest remains constant throughout the entire term of the loan or investment.  When borrowing money, the lender charges interest on the loan. When repaying the loan, the borrower must pay back the initial principal amount along with the interest accrued. The interest is calculated as a percentage of the initial principal, and it does not compound on any previously earned interest.  Simple interest is commonly used for short-term loans, such as personal loans or short-term deposits, and is easy to understand and calculate, making it a popular choice for basic interest calculations.  Simple interest meaning explained with an example: Imagine you lend $\$1,000$ to your friend, and they agree to pay you back with a $5\%$ interest rate per year. How does simple interest work here? With simple interest, the interest remains the same every year, and it doesn't "grow" over time.  So, after one year, your friend owes you the original $\$1,000$ plus an additional $\$50$ in interest ($5\%$ of $\$1,000$). In the second year, they pay another $\$50$ as interest, and so on. The interest doesn't compound or increase with time; it's a fixed amount each year based on the initial $\$1,000$ borrowed. Now, let's define simple interest. Simple interest is the interest earned on a principal amount, calculated at a specified interest rate and over a certain period.  Simple interest is calculated by the following formula: $S.I. = \frac{P \times R \times T}{100}$ OR $S.I. = P \times r \times T \frac{R}{100} = r$ where, P : Principal amount which is the initial amount borrowed or invested. $\frac{R}{100} = r$ : Rate of interest  T : Time refers to the duration for which the principal amount is lent or borrowed. It is usually expressed in years or months. The amount is the money that an individual receives from the borrower, which is the total of principal and interest amount. It can be expressed as: Amount $=$ Principal $+$ Simple Interest $A = P + S.I.$ $A = P + \frac{P \times R \times T}{100}$ Step 1: Identify the principal amount: Determine the initial amount borrowed or invested. Step 2: Find the interest rate: Identify the interest rate specified as a percentage. Step 3: Determine the time period: Note the length of time the money is borrowed or invested for. Step 4: Calculate simple interest: Multiply the principal amount, interest rate (in decimal form), and time period together: Step 5: Simple Interest $=$ Principal Amount $\times$ Interest Rate (as decimal) $\times$ Time Period The result is the simple interest earned or paid on the principal amount. Example: John borrowed $\$2000$ from a bank at the rate of interest of $10\%$ p.a. What will be the simple interest if it is borrowed for 5 years? Principal amount $= \$2000$ Rate of interest $= 10\% = \frac{10}{100} = 0.10$ Time $= 5$ years  $S.I. = \frac{2000 \times 10 \times 5}{100}$ $S.I.= \$1000$ Simple interest and compound interest are interest calculating methods used widely in banking and financial organizations. In simple interest, the principal amount is the same every year, while in compound interest, the amount at the end of one year is the principal amount for the next year. Let us explore more differences between simple interest and compound interest. Simple InterestCompound InterestIt is calculated only on the initial principal amount.It is the interest calculated on the total accumulation of principal and interest amount.Simple interest formula $= P \times r \times T$$S.I. = \frac{P \times R \times T}{100}$ where $r = \frac{R}{100}$Compound interest formula =  $P(\frac{1 + r}{n})^{nt}-P$The interest is the same for every year on the initial principal amount.The interest is different for every time period, as it is calculated upon the accumulated amount, not the initial principal.Its growth over the period of time is uniform.Its growth has increased rapidly.Often used for short-term loans and depositsCommonly found in long-term investments like savings accounts or loans Simple interest is the fundamental for interest calculation from which other interests like compound interest are derived. The amount received from simple interest is comparatively lesser than the amount received by compound interest. In simple interest, the principal amount is the same every year.  The interest earned or paid with simple interest is proportional to the principal amount and the time period, without any additional factors. In this article, we learned about the concept of simple interest and how it is calculated using the principal amount, interest rate, and time period. Simple interest provides a straightforward method to determine the interest accrued on a loan or investment. To reinforce our understanding, let's now apply the simple interest formula through solving examples and attempting MCQs for better comprehension. 1. What is the simple interest if the principal is $\$1000$ invested for 10 years at the interest rate of $5\%$ per annum?  Solution:  Principal $= \$1,000$ Rate of interest $= 5\%$ Time $= 10$ years By using simple interest formula, $S.I. = \frac{P \times R \times T}{100}$ $S.I. = \frac{1000 \times 5 \times 10}{100}$ $S.I. = \$5,000$ Therefore, the simple interest $= \$5,000$ 2. How much did Mary invest at $10\%$ annual simple interest for 5 years to earn $\$2000$? Solution: Rate of interest (R) $= 10\% = 0.10$ Time (T) $= 4$ years Amount (A) $= \$2,000$ Principal (P) $=$ ? By using amount formula of simple interest, $A = P (1 + RT)$ $2000 = P (1+ 0.10 \times 4)$ $2000 = P (1.4)$ Dividing both sides by P. $P = 20001.4$ $P = \$1,428.5$ Thus, Mary invested $\$1,428.5$ as a principal amount. 3. Find the total amount received by Michael if he invested a principal amount of  $\$3000$ and receives $\$1500$ as interest. Solution: Simple interest $= 1500$ Principal amount $= 3000$ To calculate the total amount received, Amount $=$ Principal $+$ Simple Interest Amount $= 3000 + 1500$ Amount $= \$4500$ Is the formula for simple interest the same for all types of loans? Yes, the formula for simple interest is consistent for all types of loans and investments.  Simple Interest $=$ Principal $\times$ Rate $\times$ Time. Can simple interest be applied to both loans and investments? Yes, simple interest can be used for both loans and investments, as it calculates the interest earned or paid on the principal amount. How is simple interest calculated monthly? We can calculate the simple interest for monthly by dividing the yearly interest by 12. Thus, the formula for calculating simple interest monthly is expressed as: $SI = \frac{P \times R \times T}{100 \times 12}$ Are there any advantages to using simple interest for short-term loans? Yes, simple interest is easier to understand and calculate, making it advantageous for short-term loans with straightforward interest calculations. How does the time period affect the simple interest amount? The longer the time period, the higher the total simple interest amount, as the interest accumulates linearly over time. Simple Interest is a quick and easy method for calculating the Interest Charged on a Loan or Principal Amount. The Concept of Simple Interest is quite famous and is used in many sectors such as finance, automobile, and banking. Go through the further modules to know about What is Simple Interest, Formula to Calculate Simple Interest, Solved Examples on How to Calculate the Simple Interest. What is Simple Interest? Simple Interest is the method for calculating the Interest Amount on a Certain Amount of Sum. SI is obtained by multiplying the interest rate, principal, time duration that elapses between payments. In general, it is calculated on a daily, monthly or annual basis. In real times, money is not borrowed or lent for free. While repaying the amount you borrowed you need to pay a certain amount of interest along with the amount you have taken. In fact, the amount of interest you repay depends on the loan amount as well as the time for which you borrow and the rate of interest. Simple Interest Formula You need to be familiar with the Simple Interest Formula in order to understand the concept of Finances. The formula for Simple Interest helps you find the interest amount if principal, rate of interest, and time duration are given. Formula to Calculate Simple Interest is SI = (P × R ×T) / 100 Where, P = Principal R = Rate of Interest (in percentage) T = Time Duration (in years) However, the formula to find the Amount is given by Amount (A) = Principal (P) + Interest (I). The amount is the total money you pay back at the end of the time you borrowed. Simple Interest Formula for Months The Formula to find Simple Interest for Months varies slightly compared to a yearly basis. Let us consider the Principal Amount be P and Rate of Interest per Annum be R and n be the time duration in months then the formula to Calculate SI is as such Simple Interest for n months = (P × n × R)/ (12 ×100) Solved Examples on Simple Interest 1. Raju takes a loan of Rs 20,000 from a bank for a period of 2 years. The rate of interest is 5% per annum. Find the interest and the amount he has to pay by the end of 2 years? Solution: Principal or Loan Sum = 20, 000 Time Duration T = 2 Yrs Rate of Interest R = 5% Formula to Calculate the Simple Interest = (P × R ×T) / 100 = (20,000*5*2)/100 = 200000/100 = 2000 Amount to be repeated by the end of the year = Principal + Interest = 20, 000+2000 = 22, 000 Therefore, Raju needs to repay a total of Rs. 22, 000/- after the end of 2 years. 2. Mohan pays Rs 13000 as an amount on the sum of Rs 10000 that he had borrowed for 3 years. Find the rate of interest? Solution: Amount = 13, 000 Principal = 10,000 SI = Amount – Principal = 13, 000 – 10, 000 = 3, 000 Time Duration = 3 yrs Rate of Interest R = ? SI = (P × R ×T) / 100 3, 000 =(10, 000*R*3)/100 R = (3000*100)/(10,000*3) = 300000/30000 = 10% Therefore, Rate of Interest is 10%. 3. Neela borrowed Rs 40,000 for 2 years at a rate of 4% per annum. Find the interest accumulated at the end of 2 years? Solution: P = Rs 40,000 R = 4% T = 2 years SI = (P × R ×T) / 100 = (40, 000*4*2)/100 = 3200 Interest accumulated at the end of 2 years is Rs. 3,200/-