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SIMPLE INTEREST
AND
COMPOUND INTEREST

Introduction

Principal (P): The original sum of money loaned/deposited. Also known as capital.

Interest (I): The amount of money that you pay to borrow money or the amount of money that you earn on a deposit.

Time (T): The duration for which the money is borrowed/deposited.

Rate of Interest (R): The percent of interest that you pay for money borrowed, or earn for money deposited

Introduction

- Simple interest is when the interest on a loan or investment is calculated only on the amount initially invested or loaned.
- Simple interest is calculated by multiplying the daily interest rate by the principal, by the number of days that elapse between payments.
- Simple interest benefits consumers who pay their loans on time or early each month.
- Auto loans and short-term personal loans are usually simple interest loans.

Introduction

- Compound interest is the interest calculated on the principal and the interest accumulated over the previous period.
- It is unlike simple interest where interest is not added to the principal while calculating the interest during the next period.
- Some of its applications are:
  - Increase or decrease in population.
  - The growth of bacteria.
  - Rise or depreciation in the value of an item.

Simple Interest Formula:

Simple Interest (SI) = {Principal (P) × Rate (R) × Time (T)}/100

Amount (A) = Principal (P) + Interest (I)

= P+[(PNT)/100]

=P{1+(NT/100)}

Principal (P) = Amount (A) – Interest (I)

Interest (I) = Amount (A) – Principal (P)

Compound Interest Formula:

The compound interest formula is given below:

Compound Interest = Amount – Principal

Where the amount is given by:

$A = P\left(1+\frac{R}{100}\right)^{t}$

A= amount

P= principal

R= rate of interest

t= number of years

$CI = A-P$

$= P\left(1+\frac{R}{100}\right)^{t} - P$

$= P\left[\left(1+\frac{R}{100}\right)^{t} - 1\right]$

Question 01:

Find the simple interest on Rs. 68,000 at 16(2/3)% per annum for a period of 9 months?

A) Rs. 8500

B) Rs. 3200

C) Rs. 2100

D) Rs. 4300

E) None of these

Answer: C

Question 02:

A man took a loan from a bank at the rate of 12 % p.a. simple interest. After three years he had to pay Rs. 5400 interest only for the period. The principal amount borrowed by him was:

A) Rs. 12000

B) Rs. 11000

C) Rs. 15000

Answer: C

Question 03:

Raymond bought a car for $40, 000. He took a $20,000 loan from a bank at an interest rate of 15% per year for a 3-year period. What is the total amount (interest and loan) that he would have to pay the bank at the end of 3 years?

A) Rs. 27,800

B) Rs. 24,500

C) Rs. 24,700

D) Rs. 22,300

Answer: A

Question 04:

Find the simple interest on ₹ 68000 at 16 $^{2}/_{3}$ % p.a. for 9 months.

A) Rs.7500

B) Rs.8500

C) Rs.6500

D) Rs.5500

Answer: B

Question 05:

Ariel takes a loan of $8,000 to buy a used truck at the rate of 9 % simple Interest.

Calculate the annual interest to be paid for the loan amount.

A) Rs. 850

B) Rs. 720

C) Rs. 340

D) Rs. 510

E) None of these

Answer: B

Question 06:

Ryan bought $ 15,000 from a bank to buy a car at 10% simple Interest. If he paid $ 9,000 as interest while clearing the loan, find the time for which the loan was given

A) 6 years

B) 8 years

C) 4 years

D) 7 years

E) None of these

Answer: A

Question 07:

If Rs. 4 becomes Rs. 10 in 50 years at simple interest, the rate % p.a. is

A) 5 %

B) 2 1/2 %

C) 3 1/3 %

D) 3 %

E) 6 %

Answer: D

Question 08:

Find out the capital required to earn a monthly interest of Rs. 210 at 7 % simple interest.

A) Rs. 24000

B) Rs. 36000

C) Rs. 18000

D) Rs. 30000

E) Rs. 72000

Answer: B

Question 09:

A total of $1,200 is invested at a simple interest rate of 6% for 4 months. How much interest is earned on this investment?

A) 20

B) 72

C) 16

D) 24

E) None of these

Answer: D

Question 10:

A business takes out a simple interest loan of $10,000 at a rate of 7.5%. What is the total amount the business will repay if the loan is for 8 years?

A) Rs. 48,000

B) Rs. 36,000

C) Rs. 16,000

D) Rs. 35,600

Answer: C

Question 11:

A sum of money at simple interest amounts to Rs. 850 in 3 years and to Rs. 900 in 4years. The sum is:

A) Rs. 650

B) Rs. 690

C) Rs. 725

D) Rs. 700

Answer: D

Question 12:

If the simple interest on Rs 500 increases by Rs 10 when time increases by 4 years. Find the rate per annum.

A) 0.5%

B) 0.2%

C) 0.3%

D) 0.7%

Answer: A

Explanation:

Answer: (a)

Use the following formula which we highlighted in the second tips and tricks article:

$$Simple\ Interest\ (SI_1) = \frac{(P \times R \times T_1)}{100}$$

$$Simple\ Interest\ (SI_2) = \frac{(P \times R \times T_2)}{100}$$

$$(SI_1) - (SI_2) = \frac{(P \times R \times (T_1 - T_2))}{100}$$ (Or use it directly)

$$\Rightarrow 10 = \frac{500 \times R \times 4}{100}$$

$$\Rightarrow R = 0.5\%$$

Question 13:

A sum of Rs. 15,000 amounts to Rs. 19,500 in 5 years at the rate of simple interest.

What is the rate of interest?

A) 3%

B) 4%

C) 5%

D) 6%

E) None of these

Answer: D

Question 14:

A sum fetched a total simple interest of Rs. 4016.25 at the rate of 9% p.a. in 5 years. What is the sum?

A) Rs. 4462.50

B) Rs. 8032.50

C) Rs. 8900

D) Rs. 8925

Answer: D

Question 15:

A man invests ₹ 5000 for 3 years at 5% p.a. compounded interest reckoned yearly. Income tax at the rate of 20% on the interest earned is deducted at the end of each year. Find the amount at the end of third year.

A) Rs. 4800

B) Rs. 3600

C) Rs. 5624

D) Rs. 4530

Answer: C