

Simple Interest - Solved Examples

Q 1 - Adam borrowed some money at the rate of 6% p.a. for the first two years, at the rate of 9% p.a. for the next three years, and at the rate of 14% p.a. for the period beyond five years. If he pays a total interest of Rs. 11,400 at the end of nine years, how much money did he borrow?

A - 12,000

B - 13,000

C - 14,500

D - 12,500

Answer - A

Explanation

Let the sum borrowed be Z. Then,

$$\left(\frac{Z \times 6 \times 2}{100}\right) + \left(\frac{Z \times 9 \times 3}{100}\right) + \left(\frac{Z \times 14 \times 4}{100}\right) = 11400$$

$$\text{Therefore, } \frac{3Z}{25} + \frac{27Z}{100} + \frac{14Z}{25} = 11400$$

$$\frac{95Z}{100} = 11400$$

$$Z = \left(\frac{11400 \times 100}{95}\right) = 12000$$

Q 2 - A certain sum of money amounts to Rs. 1008 in 2 years and to Rs. 1164 in $3\frac{1}{2}$ years. find the sum and the rate of interest?

A - Rs. 800, Rate 14%

B - Rs. 850, Rate 12%

C - Rs. 800, Rate 13%

D - Rs. 500, Rate 13%

Answer - C

Explanation

S.I. for $1\frac{1}{2}$ years = Rs. (1164-1008)
=156

S.I. for 2 years = Rs. $(156 \times \frac{2}{3} \times 2)$ = Rs. 208

Principal = Rs. (1008 - 208) = Rs. 800

Now, P = 800, T = 2, and S.I. = 208

Rate = $(\frac{100 \times 208}{800 \times 2})\%$ = 13%

Q 3 - At what rate percent per annum will a sum of money double in 16 years?

A - 5%

B - 3%

C - 4%

D - $6\frac{1}{4}\%$

Answer - D

Explanation

Let Principal = P, Then,

S.I. = P and T = 16 years

Rate = $(\frac{100 \times P}{P \times 16})\%$

= $6\frac{1}{4}$

Q 4 - The simple interest on a certain sum of money for $2\frac{1}{2}$ years at 12% per annum is Rs. 40 less than the simple interest on the same sum for $3\frac{1}{2}$ years at 10% per annum. Find the sum?

A - 400

B - 800

C - 1600

D - 500

Answer - B

Explanation

Let the sum be Z then,
 $(\frac{Z \times 10 \times 7}{100 \times 2}) - (\frac{Z \times 12 \times 5}{100 \times 2})$
 $= 40$
 $\frac{7Z}{20} - \frac{3Z}{10} = 40$
 $Z = 40 \times 20$
The sum is Rs. 800

Q 5 - A sum was put at simple interest at a certain rate for 3 years. Had it been put at 2% higher rate, it would have fetched Rs. 360 more. Find the sum?

A - 10000

B - 6000

C - 15000

D - 6500

Answer - B**Explanation**

Let the sum be = P and original rate = R. Then,

$$\left(\frac{P \times (R+2) \times 3}{100}\right) - \left(\frac{P \times R \times 3}{100}\right) = 360$$

$$3PR + 6P - 3PR = 36000$$

$$6P = 36000$$

$$P = 6000$$

Q 6 - A person borrows Rs. 5000 for 2 years at 4% p.a. simple interest. he immediately lends it to another person at $6\frac{1}{4}\%$ p.a. for 2 years find his gain in the transaction per year?

A - 112

B - 112.50

C - 110

D - 100

Answer - B**Explanation**

$$\text{Gain in 2 years} = \text{Rs. } \left[\left(\frac{5000 \times 25 \times 2}{4 \times 100} \right) - \left(\frac{5000 \times 4 \times 2}{100} \right) \right]$$

$$= \text{Rs. } (625 - 400)$$

$$= \text{Rs. } 225$$

$$\text{Gain in 1 year} = \text{Rs. } \left(\frac{225}{2} \right)$$

$$= \text{Rs. } 112.50$$

Q 7 - How much time for an amount of Rs. 450 to yield Rs. 81 as interest at 4.5% per annum of simple interest?

A - 4

B - 5

C - 4.5

D - 6

Answer - A

Explanation

$$\begin{aligned}\text{Time} &= (100 \times 81 / 450 \times 4.5) \\ &= 4 \text{ years}\end{aligned}$$

Q 8 - A sum of Rs. 12,500 amounts to Rs. 15,500 in 4 years at the rate of simple interest. What is the rate of interest?

A - 6

B - 6.5

C - 5

D - 6.75

Answer - A

Explanation

$$\begin{aligned}\text{S.I.} &= \text{Rs. } (15500 - 12500) = \text{Rs. } 3000 \\ \text{Rate} &= (100 \times 3000 / 12500 \times 4) \\ &= 6\%\end{aligned}$$

Q 9 - Reema took a loan of Rs. 1200 with simple interest for as many years as the rate of interest. If she paid Rs. 432 as interest at the end of loan period, what was the rate of interest?

A - 10

B - 5

C - 6

D - 7

Answer - C

Explanation

Let Rate = R% and time also R years. Then,
 $(\frac{1200 \times R \times R}{100}) = 432$
 $= 12R^2 = 432$
 $R^2 = 36$
 $R=6$

Q 10 - A man took a loan from a bank at the rate of 12% p.a. simple interest. After 3 years he had to pay Rs. 5400 interest only for the period. The principal amount borrowed b him was?

A - 10000

B - 15000

C - 15500

D - 6500

Answer - B

Explanation

$$\begin{aligned}\text{Principal} &= \text{Rs. } (100 \times 5400 / 12 \times 3) \\ &= \text{Rs. } 15000\end{aligned}$$

Q 11 - what is the present worth of Rs. 132 due in 2 years at 5% simple interest per annum?

A - 120

B - 150

C - 155

D - 650

Answer - A

Explanation

Let the present worth be Rs. z then,
S.I. = Rs. $(132 - z)$
therefore $(\frac{z \times 5 \times 2}{100}) = 132 - z$
 $10z = 13200 - 100z$
 $110z = 13200$
 $z = 120$

Q 12 - A sum fetched a total simple interest of Rs. 4016.25 at the rate of 9 p.c.p.a in 5 years. What is the sum?

A - 10000

B - 8500

C - 9000

D - 8925

Answer - B**Explanation**

$$\begin{aligned}\text{Principal} &= \frac{(100 \times 4016.25 / 9 \times 5)}{(401625 / 45)} \\ &= 8925\end{aligned}$$

Q 13 - Rs. 800 becomes Rs. 956 in 3 years at a certain rate of simple interest. If the rate of interest is increased by 4%, What amount will Rs. 800 become in 3 years?

A - 10000

B - 1025

C - 15500

D - 6500

Answer - B**Explanation**

$$\begin{aligned}\text{S.I.} &= (956 - 800) = 156 \\ \text{Rate} &= \frac{(100 \times 156 / 800 \times 3)}{100} \\ \text{New Rate} &= (6\frac{1}{2} + 4) \\ &= 10\frac{1}{2} \\ \text{New S.I.} &= \text{Rs. } (800 \times 10\frac{1}{2} \times 3 / 100) \\ &= 252 \\ \text{therefore New Amount} &= \text{Rs. } (800 + 252) = 1052\end{aligned}$$

Q 14 - A certain amount earns simple interest of Rs. 1750 after 7 years. Had the interest been 2 % more, how much more interest would it have earned?

A - 35

B - Data is inadequate

C - 245

D - 350

Answer - B

Explanation

We need to know the S.I., principal and time to find the rate.
Since the principal is not given, so the data is inadequate.

Q 15 - In how many years, Rs. 150 will produce the simple interest @ 8% as Rs. 800 produce in 3 years @ $4\frac{1}{2}$?

A - 6

B - 8

C - 9

D - 8

Answer - C

Explanation

$P = \text{Rs. } 800$ $R = 4\frac{1}{2} = \frac{9}{2}$ $T = 3$ years
 $\text{S.I.} = \text{Rs. } (800 \times \frac{9}{2} \times \frac{3}{100}) = 108$
Now, $P = \text{Rs } 150$, $\text{S.I.} = \text{Rs. } 108$, $R = 8\%$
 $\text{Time} = (\frac{100 \times 108}{150 \times 8}) = 9$ years

Q 16 - A sum invested at 5% simple interest per annum grows to Rs. 504 in 4 years. The same amount at 10% simple interest per annum in $2\frac{1}{2}$ years will grow to?

A - 420

B - 525

C - 450

D - 500

Answer - B

Explanation

Let the sum be Rs. z . Then,

S.I. = Rs. $(504 - z)$

therefore $(\frac{z \times 5 \times 4}{100}) = 504 - z$

$20z = 50400 - 100z$

$120z = 50400$

$z = 420$

Now $P = 420$, $R = 10\%$, $T = \frac{5}{2}$

S.I. = $(\frac{420 \times 10 \times \frac{5}{2}}{100 \times 2}) = 105$

Amount = Rs $(420 + 105) = 525$

Q 17 - what will be the ratio of simple interest earned by certain amount at the same rate of interest for 6 years and that for 9 years?

A - 2:3

B - 1:4

C - 1:3

D - none

Answer - A

Explanation

Let the principal be P and rate of interest be R%
 therefore Required Ratio = $\left(\frac{P \times R \times 6}{100} / \frac{P \times R \times 9}{100}\right)$
 $\frac{6PR}{9PR}$
 = 2:3

Q 18 - Nitin borrowed some money at 6% for the first three years, 9% for the next 5 years and 13% for the period beyond 8 years. If the total interest paid by him at the end of eleven years is Rs 8160, how much money did he borrow?

A - 8000

B - 10000

C - 12000

D - Data inadequate

Answer - A

Explanation

Let the sum be Z. Then,
 $\left(\frac{Z \times 6 \times 3}{100}\right) + \left(\frac{Z \times 9 \times 5}{100}\right) + \left(\frac{Z \times 13 \times 3}{100}\right) = 8160$
 $= 18Z + 45Z + 39Z = (8160 \times 100)$
 $102Z = 816000$
 $Z = 8000$

Q 19 - An automobile financier claims to be lending money at simple interest, but he includes the interest every six months for calculating the principal. If he is charging an interest of 10%, the effective rate of interest becomes?

A - 12

B - 15

C - 10

D - 10.25

Answer - D

Explanation

Let the sum be Rs. 100. Then,

S.I. for first 6 months = Rs. $(\frac{100 \times 10 \times 1}{100 \times 2}) = \text{Rs } 5.$

S.I. for last 6 months = Rs. $(\frac{105 \times 10 \times 1}{100 \times 2}) = \text{Rs } 5.25$

So, amount at the end of 1 year = Rs. $(100 + 5 + 5.25) = \text{Rs. } 110.25$

Therefore Effective rate = $(110.25 - 100) = 10.25\%$

Q 20 - A sum of money at simple interest amounts to RS. 815 in 3 years and to 854 in 4 years. The sum is?

A - 700

B - 690

C - 698

D - 650

Answer - C

Explanation

S.I. for 1 year = Rs. $(854 - 815) = 39$

S.I. for 3 years = Rs. $(39 \times 3) = 117$

Therefore Principal = $815 - 117 = 698$