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|---------------------------|----------------------|------------------------|-----------------|
| Name of the Bundle | Proficient Bundle V2 | Subject | Aptitude |
| Topic | Simple Interest | Last updated on | 18 January 2024 |

SIMPLE INTEREST

Example 1:

Calculate the simple interest on a principal of Rs5000 lent at a rate of 10% for 2 years

Method 1: By using Formula.

$$SI = \frac{PRT}{100}$$

$$= \frac{(5000 \times 10 \times 2)}{100}$$

$$= 1000$$

Method 2: By Percentage

Hint: Consider Principal as 100%

SI as $rt\%$ (Product of rate and time period)

| | | |
|----------|-----|------|
| So, Here | % | Rs |
| | 100 | 5000 |
| | 20 | 1000 |



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Example 2:

Calculate the Amount on a principal of Rs1000 lent at a rate of 10% for simple interest for 2 years

Method 1:

$$SI = (1000 \times 10 \times 2) / 100 = 200$$

$$\text{Amount} = P + SI = 1000 + 200 = 1200$$

Method 2: Percentage Method

| | |
|----------|------|
| % | Rs |
| 100 | 1000 |
| 120 | 1200 |
| (P%+SI%) | |



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1) A sum of ₹4000 was lent at a simple interest rate of 5% per annum for a period of 2 years. How much interest was earned?

- a)400 b)600 c)800 d)1000

Ans: a)400

Solution

$$P=4000$$

$$R=5\%$$

$$T=2 \text{ Years}$$

$$SI = PRT/100$$

$$= (4000*5*2)/100$$

$$=400$$

2) The simple interest on a certain sum at 15% p.a for three years is \$ 7200. The sum is

- a)16000 b)24000 c)32000 d)48000

Ans: a)16000

Solution

$$P=?$$

$$R=15\%$$

$$T=3 \text{ Years}$$

$$SI= 7200$$

$$SI = PRT/100$$

$$7200 = (P*15*3) / 100$$

$$=16000$$



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3)A person deposits ₹8000 in a bank which pays 8%p.a simple interest. The amount after 8 years will be

- a)39120 b)13120 c)29544 d)69359

Ans: b)13120

Solution

$$P=8000$$

$$R=8\%$$

$$T=8 \text{ Years}$$

$$SI= ?$$

Method 2: Percentage Method

| | |
|----------|-------|
| % | Rs |
| 100 | 8000 |
| 164 | 13120 |
| (P%+SI%) | |



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4)The simple interest on a principal for 6 months at an interest rate of 10% per annum is 100.What is the principal?

- a)1000 b)10000 c)2000 d)6000

Ans: c)2000

Solution

P=?

R=10% per annum

T=1Year

SI= 100 for 6 months; 200 for 1 year.

By Percentage Method

| | | |
|-----|-------------|--------------------|
| % | Rs | r= 10% For 1 Year |
| 5 | 100 | r= 5% For 6 months |
| 100 | 2000 | |



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5) ₹480 is invested at simple interest. It becomes ₹520 after 20 months. What is the interest rate per annum?

- a) 6% b) 5% c) 8% d) 4%

Ans: b) 5%

Solution

$$P=480$$

$$R=?$$

$$T=20\text{Years } 1 \text{ year} + 8 \text{ months} = 20/12 = 5/3$$

$$\text{Amount} = 520$$

$$\text{Amount} + \text{SI} = \text{Principal}$$

$$520 + \text{SI} = 480$$

$$\text{SI} = 520 - 480 = 40$$

$$\text{SI} = 40$$

$$\text{SI} = \frac{PRT}{100}$$

$$40 = \frac{(480 * R * 5)}{100 * 3}$$

$$R = 5\%$$



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6) Find the total amount receivable on ₹8000 at 12% simple interest for 5 years.

- a) Rs.22000 b) Rs.22300 c) Rs.20400 d) Rs.12800

Ans: d) Rs.12800

Solution

$$P=8000$$

$$R=12\%$$

$$T=5 \text{ Years}$$

$$\text{Amount} = ?$$

Method 2: Percentage Method

| | |
|----------|-------|
| % | Rs |
| 100 | 8000 |
| 160 | 12800 |
| (P%+SI%) | |



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7) Find the total amount receivable on ₹10000 at 10% simple interest for 5 years.

- a) Rs.2000 b) Rs.2500 c) Rs.5000 d) Rs.15000

Ans: d) Rs.15000

Solution

$$P=10000$$

$$R=10\%$$

$$T=5 \text{ Years}$$

$$\text{Amount} = ?$$

Method 2: Percentage Method

| | |
|----------|-------|
| % | Rs |
| 100 | 10000 |
| 150 | 15000 |
| (P%+SI%) | |



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8) A sum of ₹1500 is invested at simple interest for x months. If the rate of interest is x/8% per annum, then the sum grows to ₹1590. What is the value of x?

- a) 3.2 months b) 2.4 months c) 32 months d) 24 months

Ans: **d) 24 months**

Solution

$$P = 1500$$

$$R = x/8\%$$

$$T = x \text{ months}$$

$$\text{Amount} = 1590$$

$$SI = A - P \quad 1590 - 1500 = 90$$

Method 2: Percentage Method

| % | Rs |
|-----------------------|---|
| 100 | 1500 |
| $X^2 / (8 \times 12)$ | <input style="border: 1px solid green;" type="text" value="?"/> |

$$9600 \quad 1500$$

$$X^2 \quad$$

$$X^2 = 192 \times 3$$

$$= 576$$

Taking Square root, We get $X = 24$ months.



| | | | |
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9) In how many years shall ₹3500 invested at the rate of 10% simple interest per annum, amounts to ₹4500.

- a) $2\frac{5}{7}$ years b) $2\frac{6}{7}$ years c) $2\frac{4}{7}$ years d) $2\frac{3}{7}$ years

Ans: b) $2\frac{6}{7}$ years

Solution

$$P=3500$$

$$R=10\%$$

$$T=?$$

$$\text{Amount}=4500$$

$$SI=A-P \quad 4500-3500 =1000$$

Method 1: By using Formula.

$$SI=PRT/100$$

$$1000=(3500*10*T)/100$$

$$=2\frac{6}{7} \text{ Years.}$$



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10) A person invests money in three different schemes for 6 years, 10 years and 12 years at 10%, 12% and 15% simple interest respectively. At the completion of each scheme, he gets the same interest. The ratio of his investment is

- a) 6: 3:2 b) 3 :2 :5 c) 3: 4 : 6 d) 60:120:180

Ans: a) 6: 3: 2

Solution

$SI = (PRT)/100$; Given SI same; P1.

$$S_1 = P_1 R_1 * T_1. = 6 * 10 = P_1 60$$

$$S_2 = P_2 R_2 * T_2. = 10 * 12 = P_2 120$$

$$S_3 = P_3 R_3 * T_3 = 12 * 15 = P_3 180$$

Given $S_1 = S_2 = S_3$ Same.

$$P_1 60 = P_2 120 = P_3 180.$$

$$P_1 = 2P_2 = 3P_3.$$

| | | |
|-------|-------|-------|
| P_1 | P_2 | P_3 |
|-------|-------|-------|

| | | |
|---|---|---|
| 2 | 1 | 1 |
|---|---|---|

| | | |
|---|---|---|
| 3 | 3 | 2 |
|---|---|---|

| | | |
|----|----|---|
| 6: | 3: | 2 |
|----|----|---|

Taking Ratio, We get , **6:3:2.**



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11) Ashok deposited ₹10000 in bank at a rate of 8% per annum. Find the simple interest for 5 years.

- a)2000 **b)4000** c)2500 d)2000

Ans: b)4000

Solution

$$P=10000$$

$$R=8\%$$

$$T=5$$

$$SI=?$$

| | | |
|--|-----|-------|
| | % | Rs |
| | 100 | 10000 |
| | 40 | 4000 |



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12) Kamal invested ₹30000 to a 1 year at 7% per annum. Find the simple interest and amount received by him at the end of one year.

- a)2100,32100 b)1800,25300 c)2100,31200 d)4200,21300

Ans: a)2100,32100

Solution

$$P=30000$$

$$R=7\%$$

$$T=1$$

$$SI=?$$

$$\text{Amount}=?$$

Method 2: Percentage Method

| | |
|----------|-------|
| % | Rs |
| 100 | 30000 |
| 7 | 2100 |
| 107 | 32100 |
| (P%+SI%) | |



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13) The simple interest on ₹68000 at 16 2/3% per annum for 9 months is_____.

- a) 2550 b) 6500
c) 8500 d) 85000

Ans:c) 8500

Solution

$$P=68000$$

$$R=16 \frac{2}{3}\%$$

$$T=9 \text{ months}$$

$$SI=?$$

Method 1: By using Formula.

$$SI = \frac{PRT}{100}$$

$$= \frac{(68000 \times 50/3 \times 9/12)}{100}$$

$$= 8500$$



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14) Find the simple interest for ₹6750 for 219 days at 10% earned per annum.

- a)399 b)155
c) 450 d)405

Ans: d)405

Solution

P=6750

R=10%

T=219 days

SI=?

Method 1: By using Formula.

SI=PRT/100

= (6750*219/365*10)/100

=405

| |
|--------------------------|
| %----->FRACTION |
| 12 ½%=25/2 |
| 11 1/9% =1/9 |
| 9 1/11%=1/11 |
| 16 2/3%=1/6 |
| 6 ¼%=1/16 |
| 8 1/3%=1/12 |
| 14 2/7%= 1/7 |
| 7 1/7%=1/14 |
| 16 2/3 %=50/3% |
| 9 months =9/12 yr |



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15) If the ratio of principal and the simple interest for 5 years is 10:7, then the rate of interest per annum is

- a) 15% b) 20% c) 10% d) 14%

Ans: d) 14%

Solution

$$P : SI = 10:7$$

$$T = 5 \text{ years}$$

$$R = ?$$

$$SI = ?$$

Method 2: Percentage Method

| | |
|-----|-----------------------------|
| % | Ratio |
| 100 | 10 (principal ratio)(Given) |
| 5r | 14% |



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16)The simple interest on a sum of money is $\frac{9}{35}$ of the sum.If the number of years is numerically $\frac{5}{7}$ times of rate percent per annum, then the $r\%$ p.a is

- a)9% b)7% c)6 % d)4%

Ans: c)6 %

$SI = \frac{9}{35}P$

$T = \frac{5}{7}R$

Ratio SI: P

$9: 35$

Method 2: Proportion Method

| | |
|---------------------|---------------------|
| % | Ratio |
| 100 | 35(principal ratio) |
| $(\frac{5}{7}) R^2$ | 9 (SI Ratio) |
| 700 | 35 |
| $5R^2$ | 9 |

Solving We get $R^2=36$; Then taking square root **R =6**



| | | | |
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17) Ramesh borrows a sum of ₹90,000 for 4 years at 5% simple interest. He lends it to suresh at 7% for 4 years at simple interest. What is his gain?

- a)8000 b)7200 c)7500 d)90000

Ans: b)7200

Solution

P =9000

T=4years

T=4 years

R₁=5%

R₂=7%

Method 2: Percentage Method

| | |
|-----|-------|
| % | Rs |
| 100 | 90000 |
| 20 | 18000 |

I- (SI%)

Method 2: Percentage Method

| | |
|-----|-------|
| % | Rs |
| 100 | 90000 |
| 28 | 25200 |

II - (SI%)

Taking Difference

25200 -18000 =7200



| | | | |
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18) A sum doubles in 7 years at a simple interest. Find the time in which the sum will become 5 times at the same rate of interest?

- a) 35 years b) 21 years c) 28 years d) 42 years

Ans: c) 28 years

| Years | Sum (Increase) | | | | | | |
|-------|---|-----------|-------------|---|-------|------------|-----------|
| | <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20px;">P---></td> <td style="width: 100px;">2P 1 (time)</td> <td style="width: 100px; text-align: right;">7</td> </tr> <tr> <td>P---></td> <td>5P 4(time)</td> <td style="text-align: right; border: 1px solid green; padding: 2px;">28</td> </tr> </table> | P---> | 2P 1 (time) | 7 | P---> | 5P 4(time) | 28 |
| P---> | 2P 1 (time) | 7 | | | | | |
| P---> | 5P 4(time) | 28 | | | | | |

19) A sum doubles in 6 years at a simple interest. Find the time in which the sum will become 10 times at the same rate of interest?

- a) 27 years b) 45 years c) 54 years d) 42 years

Ans: c) 54 years

| Years | Sum (Increase) | | | | | | |
|-------|---|-----------|-------------|---|-------|--------------|-----------|
| | <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20px;">P---></td> <td style="width: 100px;">2P 1 (time)</td> <td style="width: 100px; text-align: right;">6</td> </tr> <tr> <td>P---></td> <td>10P 9(times)</td> <td style="text-align: right; border: 1px solid green; padding: 2px;">54</td> </tr> </table> | P---> | 2P 1 (time) | 6 | P---> | 10P 9(times) | 54 |
| P---> | 2P 1 (time) | 6 | | | | | |
| P---> | 10P 9(times) | 54 | | | | | |



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20) After Certain time, ratio of principal and amount is 5:6. After 8 years their ratio become 1:2. Find the rate of interest.

- a) 15% b) 10% c) 20% d) 12%

Ans: b) 10%

P : A To make the Ratio of principal equal

5 : 6 5 : 6

8 YEARS

1 : 2 x5 5 : 10

5 6 } 4 (SI=A-P) $A \propto SI$

5 10 }

$4 = (P \cdot R \cdot T) / 100$

$4 = (5 \cdot R \cdot 8) / 100$

R = 10%

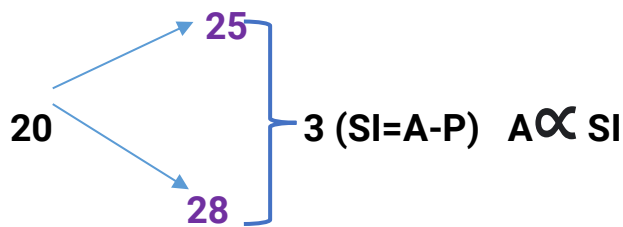
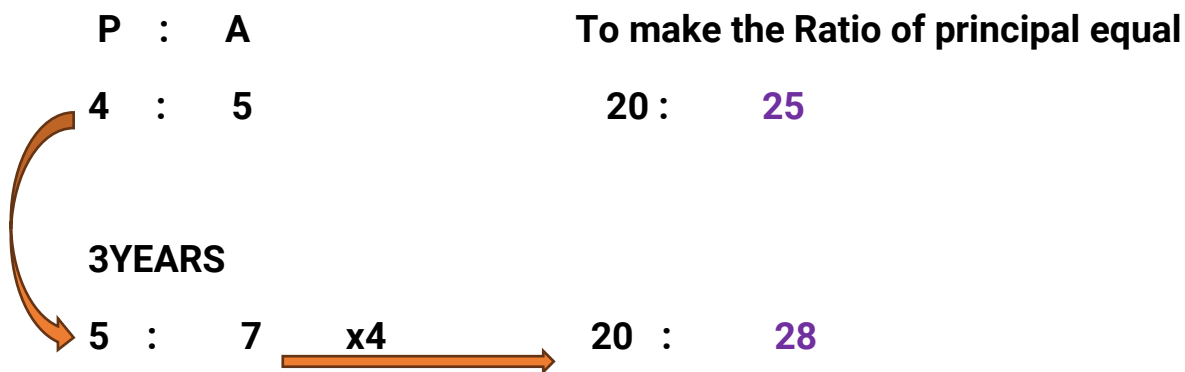


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21) After Certain time, ratio of principal and amount is 4:5. After 3 years their ratio become 5:7. Find the rate of interest.

- a) 5% b) 8% c) 10% d) 12%

Ans: a) 5%



$$R = (SI/P) * (100/T)$$

$$(3/20) * (100/3)$$

$$R = 5\%$$



| | | | |
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22) If the annual rate of simple interest increases from 11% to 17 ½%, a person's yearly income increases by 1071.20. The principal amount invested in Rupee is

- a) 17,250 b) 19120 c) 10710 d) 16480

Ans: d) 16480

Solution:

Difference in R% 17.5% - 11% = 6.5%

| % | Amount |
|-----|--------------|
| 6.5 | 1071.2 |
| 100 | 16480 |

23) At the rate of 8% the amount invested earns a simple interest of Rs 240 after 3 years. If the rate of interest been 5% more, then how much more interest would it have earned?

- a) 105 b) 180 c) 150 d) 135

Ans: c) 150

SI = R x T

R*T Rs

24 240 How much more interest earned =

(13)*3 **390** 390-240 = **150**

(8%+5%)

↓
(5% more)



| | | | |
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24) A sum at a certain rate of simple interest becomes Rs.14880 after 3 years and Rs 16800 after 5 years. Find the simple interest on the same sum at 10% per annum for 4 years.

- a)4800 b)5184 c)4740 d)4860

Ans: a)4800

Solution

P=?

Amount =14880 after 3 years

Amount 16800 after 5 years

Taking Difference, we get the amount for 2 years. 16800-14880=1920

| | |
|-------------|-------------|
| Year | SI |
| 2 | 1920 |

| | |
|----------|-------------|
| 3 | 2880 |
|----------|-------------|

To find the principal P=? from amount of 3 years 16880-2880=12000

P=12000 R=10% T=4

SI=(P*R*T)/100 (12000*10*4)/100=4800

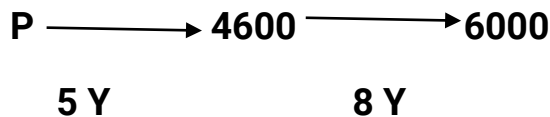


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25) A certain sum amounts to Rs 4600 after 5 years and to Rs 6000 after 8 years at the same rate of interest per annum. What will be the simple interest on a sum of Rs 8500 for 6 ½ years at the same rate?

- a) Rs.11,375 b) Rs.11,460 c) Rs.10,215 d) Rs.10,515

Ans: a) Rs.11,375



Taking Difference, we get the amount for 3 years; 6000-4600 = 1400

| | | |
|------|--|--------------|
| YEAR | SI | |
| 3 | 1400 | |
| 5 | 7000/3 | SI for 5 yrs |

To find principal P=? For 5 Yrs Amount=4600 ; SI=4600-7000/3

Principal = 6800/3

P=6800/3 SI = PRT/100

SI= 7000/3 7000/3= (6800/3) (R)(5)/100

R=?

T=5 yrs Rate = 350/17

For P=8500 R=350/17% T=6 ½ Yrs

SI= (PRT)/100
 = (8500) *(350/17) *(13/2)/100
 =11375

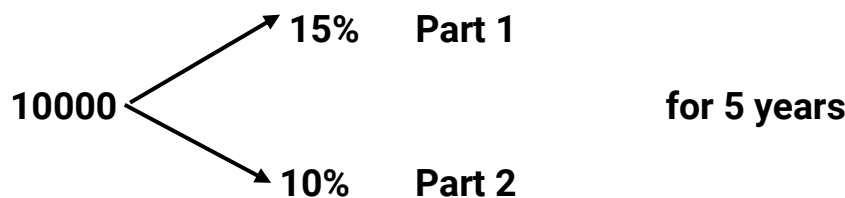


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26)A man has Rs 10,000. He lent a part of it at 15% simple interest and the remaining at 10% simple interest. The total interest he received after 5 years amounted to 6500.The difference between the parts of the amount he lent is

- a)2000 b)2500 c)1500 d)1750

Ans: a) 2000



$$SI = SI_1 + SI_2 = 6500$$

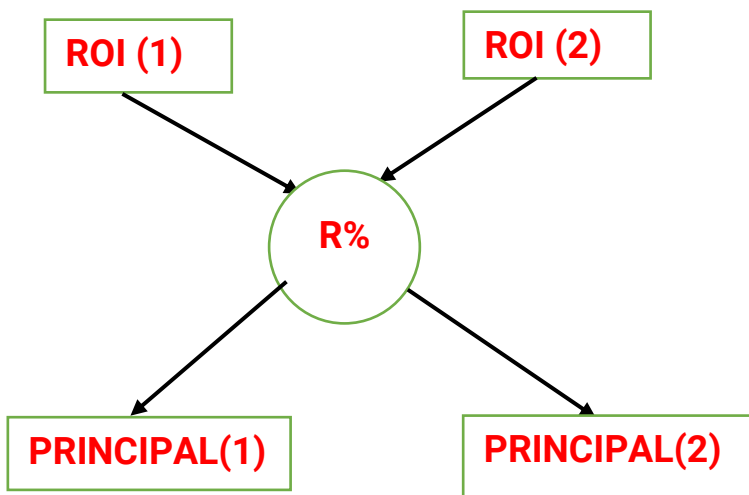
$$R = (SI/P) * (100/T)$$

$$= (6500/10000) * (100/5)$$

$$R = 13\%$$

Alligation Concept

ROI=Rate of Interest.





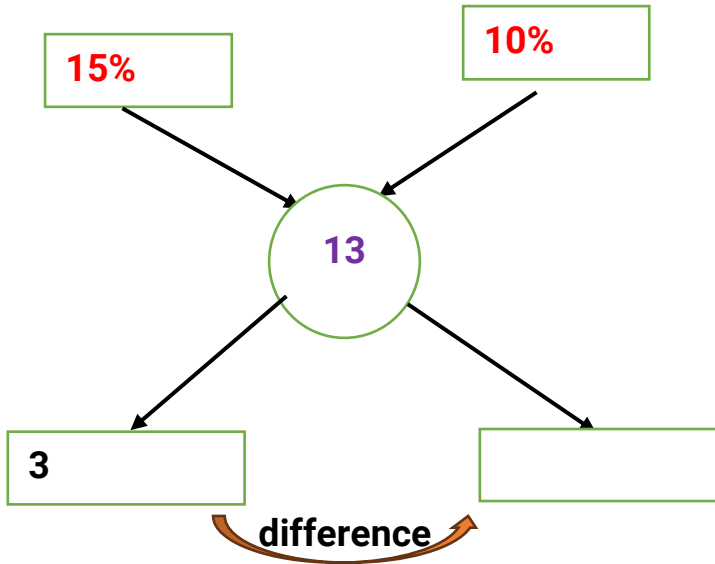
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Ratio

Principal

5

10000

1

2000

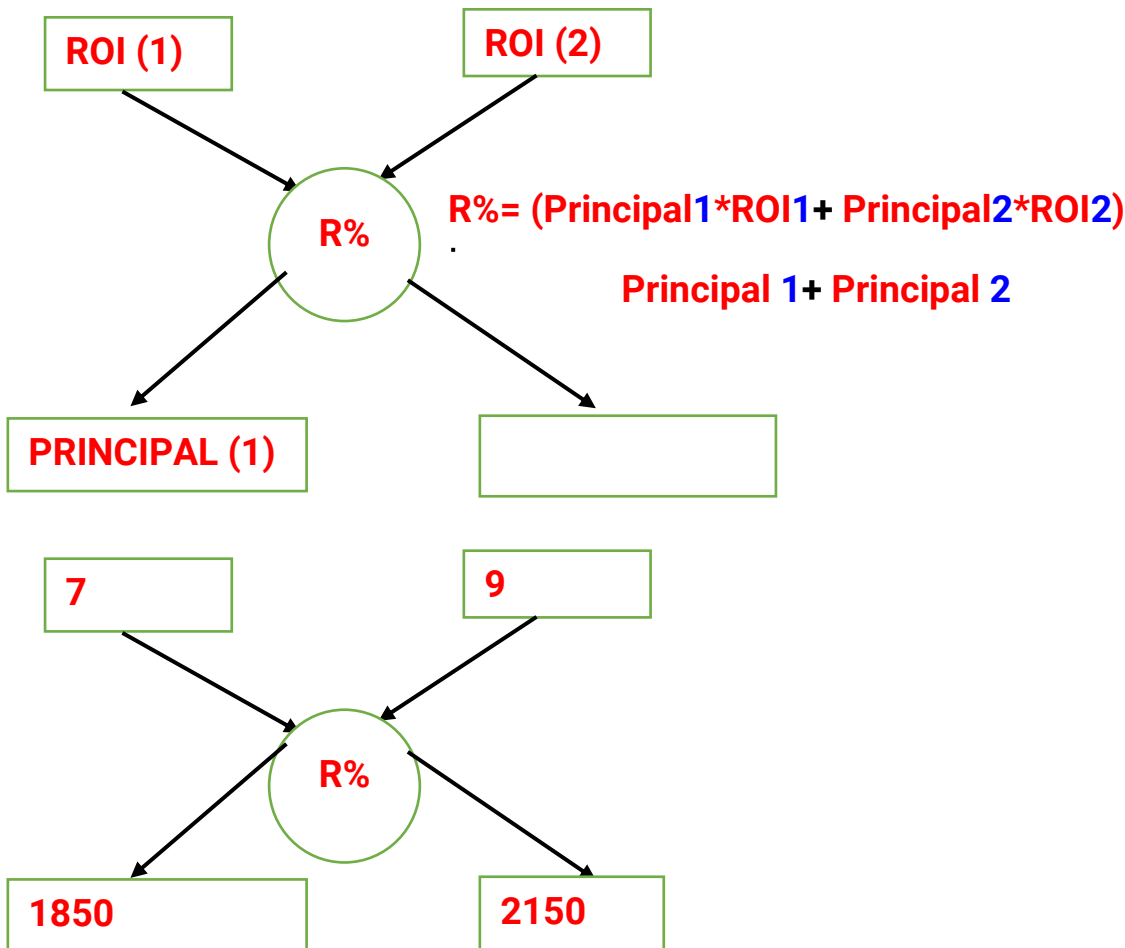


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27)A man deposited Rs.1850 in a bank at 7% per annum and Rs.2150 in another bank at 9% per annum. Find the rate of interest for the whole sum.

- a)8.133% b)8.075% c)8.25% d)8.375%

Ans: b)8.075%



$$= \frac{(7 \times 1850) + (9 \times 2150)}{(1850 + 2150)}$$

$$= 8.075\%$$

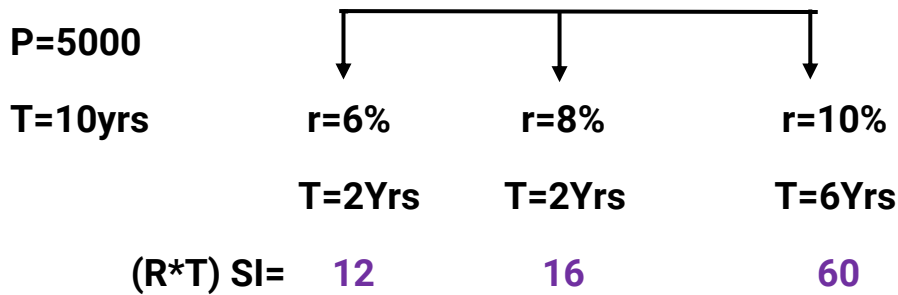


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|--------------------|----------------------|-----------------|-----------------|
| Name of the Bundle | Proficient Bundle V2 | Subject | Aptitude |
| Topic | Simple Interest | Last updated on | 18 January 2024 |

28) Anil lent a sum of Rs.5,000 on a simple interest for 10 years in such a way that the rate of interest is 6% per annum for the first 2 years, 8% per annum for the next 2 years and 10% per annum beyond 4 years. How much interest (in Rs) will he earn at the end of 10 years?

- a) 5000 b) 4400 c) 4200 d) 3500

Ans: b) 4400



Method 2: Percentage Method

| | |
|------------|------|
| % | Rs |
| 100 | 5000 |
| 88 | 4400 |
| (12+16+60) | |



| | | | |
|--------------------|----------------------|-----------------|-----------------|
| Name of the Bundle | Proficient Bundle V2 | Subject | Aptitude |
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29) A person borrowed Rs1200 at 8% p.a and Rs.1800 at 10% p.a as simple interest for the same period. He has to pay Rs.1380 in **total** as interest. Find the time period.

- a)10Yrs b)5Yrs c)6yrs d)4Yrs

Ans: b)5Yrs

$$P1=1200$$

$$P2=1800$$

$$R1=8\%$$

$$R2=10\%$$

$$SI=1380$$

$$T=?$$

$$SI = (P1 \cdot R1 \cdot T1) / 100 + (P2 \cdot R2 \cdot T2) / 100$$

$$1380 = (1200 \cdot 8 \cdot T) / 100 + (1800 \cdot 10 \cdot T) / 100$$

$$1380 = 96T + 180T$$

T=5Years.

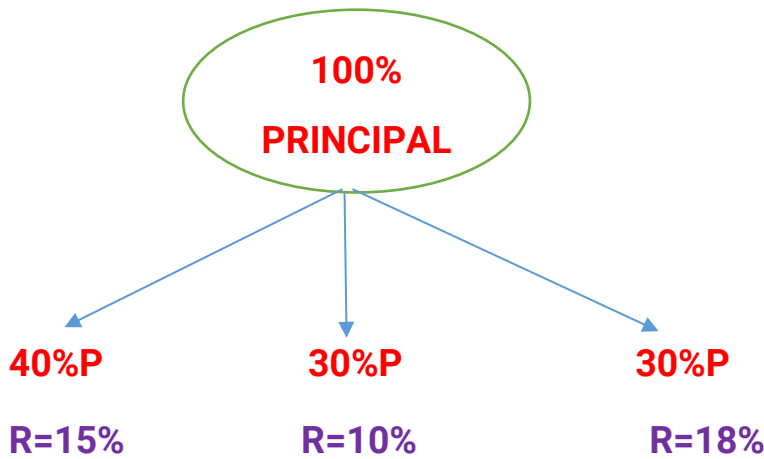


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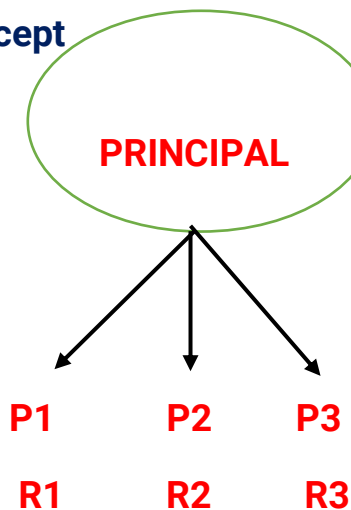
30) A person lends 40% of his sum of money at 15% per annum, 50% of rest at 10% per annum and the rest at 18% per annum as rates of interest, If the interest is calculated on the whole sum then what would be the annual rate of interest.

- a) 13.4% b) 14.33% c) 14.4% d) 13.33%

Ans: c) 14.4%



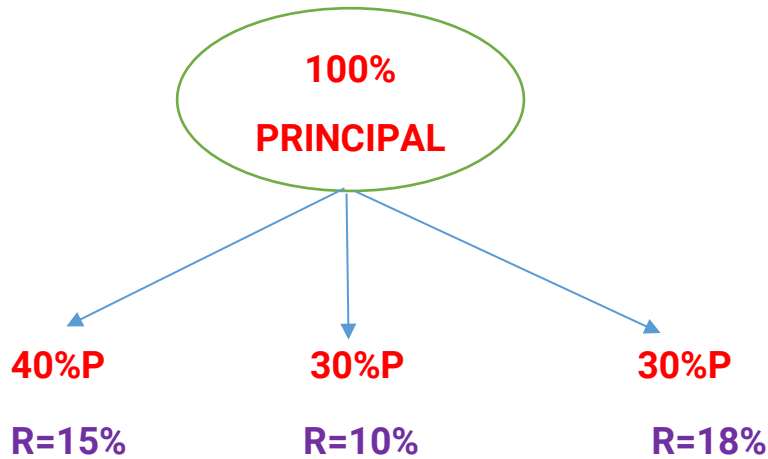
Average Concept



$$\text{Average}(R) = \frac{(P1 * R1) + (P2 * R2) + (P3 * R3)}{(P1 + P2 + P3)}$$



| | | | |
|---------------------------|----------------------|------------------------|-----------------|
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$$\text{Average (Rate)} = (600+300+540)/100 = 14.4\%$$