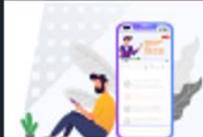


# SBI Clerk & PO 2022 Arithmetic Questions (PDF in English)

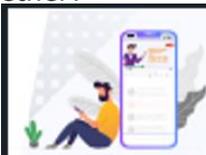
- A shopkeeper bought 40Kg of wheat at the rate of 35 per kg. He sold thirty percent of the total quantity at the rate of Rs. 45 per kg. Approximately, at what price per kg should he sell the remaining quantity to make 25% overall profit.
  - Rs. 43
  - Rs. 45
  - Rs. 47
  - Rs. 38
  - None of these
- Aman's expense is 30% more than Vimal's expense and Vimal's expense is 10% less than Raman's expense. If the sum of their expenses is ₹ 6447, then what would be the Aman's expense?
  - ₹2200
  - ₹ 2457
  - ₹ 1890
  - ₹ 2100
  - None of these
- If the numerator of a fraction is increased by 240% and the denominator of the fraction is decreased by 50%, the resultant fraction is  $2\frac{5}{6}$ . What is the original fraction?
  - 1/4
  - 2/3
  - 5/12
  - 4/11
  - None of these
- Rita borrows two equal sums at the same time at 6% and 5% p.a. simple interest respectively. She finds that if she pays the former sum with simple interest on a certain date exactly one year before the latter, she will have to pay in each case the same amount i.e., Rs.3900. Find the sum.
  - Rs.2600
  - Rs.2800
  - Rs.3000
  - Rs.3200
  - Rs.3400
- Mohan travelling at the same speed, can cover 25 km upstream and 39 km downstream in 8 h. At the same speed, it can travel 35 km upstream and 52 km downstream in 11 h. The speed of the stream is
  - 3 km/hr
  - 4 km/hr
  - 5 km/hr
  - 6km/hr
  - None of these
- In a two digit number, the ten's digit is 2 more than the square of unit digit. The original number is 18 more than the number received by reversing the digits. What is the original number?
  - 62
  - 31
  - 52
  - 83
  - None of these
- A woman with the sum of Rs2602 wants to deposit this sum into the bank account of her two daughters so that both will get equal money after 5 years and 7 years respectively at the rate of 4% compounded annually. Find the part of amount deposited into the account of the first daughter.
  - Rs1352
  - Rs1200
  - Rs1500
  - Rs1301
  - None of these.
- A solid sphere of radius 'a' is cut by a plane at a distance of 'b' from its center, thus obtaining two different pieces. The total surface area of these two pieces is 40% of the surface area of the sphere. Find 'b'.
  - $a/\sqrt{2}$
  - $a/\sqrt{3}$
  - $a/\sqrt{5}$
  - $a/\sqrt{6}$
  - None of these
- In a bag there are 4 gold bands, 5 silver bands and 6 iron bands. 3 bands are drawn one by one. If the first band comes out to be of Gold, then 6 more gold bands are added to bag. After the 2<sup>nd</sup> draw no new bands are added. Find the probability that all the 3 bands drawn are of gold bands.
  - 9/19
  - 25/19
  - 451/475
  - 24/475
  - None of these
- Two pipes can fill a cistern in 14 hr and 16 hr respectively. The pipes are opened simultaneously and it is found that due to leakage in the bottom, 32 mins Extra are taken for the cistern to be filled up. If the cistern is full, in what time would the leak empty it?
  - 118 hrs
  - 90 hrs
  - 120 hrs
  - 112 hrs
  - 110 hrs
- A wholesaler purchased two type of pulses. One was costing Rs. 200 per quintal and other was costing Rs. 260 per quintal. In 52 quintals of the costlier pulse, how much of Rs. 200 pulses should be added such that he gains 25% by selling them at Rs. 300 per quintal.
  - 26
  - 32
  - 36
  - 45
  - None of these



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12. At an orphanage, 4720 books and 1475 pencils were to distributed. If every kid must get an equal number of books and pencils, what is the maximum possible number of kids that can receive the gifts?  
 A. 475                      B. 165  
 C. 370                      D. 295  
 E. 280
13. Susmitto was married 6 years ago. The present age of Susmitto is  $(5/4)$  times of his age at the time of marriage. His brother was 4 years younger to him at the time of his marriage. What is the present age of his brother?  
 A. 24 years                      B. 28 years  
 C. 26 years                      D. 18 years  
 E. None of these
14. Sandip can finish a work in the same time in which Suman and Palash together can finish the same work. Sandip and Suman together can finish the work in 16 days and Palash alone can finish the work in 40 days. In how many days, Suman alone can finish the work?  
 A. 48                              B.  $53\frac{1}{3}$  days  
 C.  $40\frac{1}{4}$  days                      D. 35  
 E.  $25\frac{1}{5}$  days
15. Richa scores 80% marks in five subjects together, viz., math, anthropology, language, geography and Arabi, where in the maximum marks of each subject were 105. How many marks did Richa score in Anthropology, if she scored 89 marks in Math, 92 marks in Arabi, 98 marks in Language and 81 marks in Geography?  
 A. 60                              B. 85  
 C. 73                              D. 94  
 E. None of the above.
16. The population of a town increased from 175000 to 262500 in a decade. What is the average percent increase of population per year?  
 A. 8%                              B. 5%  
 C. 3%                              D. 10%  
 E. None of these
17. How many ways the word 'TAPEWRITER' can be arranged so that vowels will always be together?  
 A. 40320                              B. 8080  
 C. 14084                              D. 15120
18. Susmitto was married 6 years ago. The present age of Susmitto is  $(5/4)$  times of his age at the time of marriage. His brother was 4 years younger to him at the time of his marriage. What is the present age of his brother?  
 A. 24 years                              B. 28 years  
 C. 26 years                              D. 18 years  
 E. None of these
19. Sandip can finish a work in the same time in which Suman and Palash together can finish the same work. Sandip and Suman together can finish the work in 16 days and Palash alone can finish the work in 40 days. In how many days, Suman alone can finish the work?  
 A. 48                              B.  $53\frac{1}{3}$  days  
 C.  $40\frac{1}{4}$  days                      D. 35  
 E.  $25\frac{1}{5}$  days
20. A started a business with investing Rs. 8000 and after some months, B joined with investing Rs. 5000. At the end of one year, total profit was Rs. 4250 and share of A is Rs. 3000. After how many months did B join?  
 A. 4                                      B. 5  
 C. 2                                      D. 1  
 E. Date inadequate
21. The monthly salaries of Benny and Manjhi are in the ratio of 5 : 4. Benny, from her monthly salary, gives  $3/5$  to her mother, 15% towards her sister's college fees, 18% towards a loan and she shops with the remaining amount, which is Rs. 4200. What is the monthly salary of Manjhi?  
 A. Rs. 108000                              B. Rs. 24000  
 C. Rs. 36000                              D. Rs. 60000  
 E. Rs. 48000
22. If a boy sells a book at 13% profit and pen at 9% profit then he earns Rs.1060 as profit but if he sells a book at  $16\frac{2}{3}$ % profit and a pen at  $11\frac{1}{9}$ % loss then he bears no profit or no loss. Find the C.P. of the book and the pen? (Rs)





1. Ans. A.

Total exp.= 40\*35 = 1400

Acc. to question,

=> 12\*45+x\*28 = 1400\*125/100

=> 28x = 1750-540

x = 43(approx)

2. Ans. B.

Let Vimal's expense be ₹ 100.

∴ Aman's expense = ₹ 130

And Raman's expense =  $\frac{100}{90} \times 100$

= ₹  $\frac{1000}{9}$

∴ Ratio of the expense of Vimal, Aman and Raman respectively

= 100 : 130 :  $\frac{1000}{9}$

= 90 : 117 : 100

∴ Aman's expense =  $\frac{117}{90 + 117 + 100} \times 6447$

=  $\frac{117}{307} \times 6447 = ₹ 2457$

3. Ans. C.

Suppose original fraction is

=  $\frac{x}{y}$

∴  $\frac{x + \frac{240}{100}x}{y - \frac{50}{100}y} = 2\frac{5}{6}$

⇒  $\frac{x + 2.4x}{y - 0.5y} = \frac{17}{6}$

$\frac{3.4x}{0.5y} = \frac{17}{6}$

∴  $\frac{x}{y} = \frac{17}{6} \times \frac{0.5}{3.4}$

$\frac{x}{y} = \frac{5}{12}$

4. Ans. C.

The total interest given is same; this means the total rate percent is same,

6\*t=5\*(t+1)=6t=5t+5=t=5

Amount = 3900, time=5 years and rate of interest = 6%

Sum=100A/(100+RT)=3900\*100/(100+6\*5)=Rs.3000

5. Ans. B.

Let the speed of a boat & stream be x & y kmph.

According to question

25/(x-y)+39/(x+y)=8 .....(i)

&

35/(x-y)+52/(x+y)=11.....(ii)

From (i) and (ii)

x=9, y=4

Hence speed of stream, y=4

6. Ans. B.

Let the unit digit be x.

In a two digit number, the ten's digit is 2 more than the square of unit digit.

So, the ten's digit = x<sup>2</sup> + 2.

So, the number = 10(x<sup>2</sup> + 2) + x

= 10x<sup>2</sup> + 20 + x

And, the reverse number = 10x + (x<sup>2</sup> + 2)

= 10x + x<sup>2</sup> + 2

According to the question, we can write,

(10x<sup>2</sup> + 20 + x) - (10x + x<sup>2</sup> + 2) = 18

⇒ 9x<sup>2</sup> - 9x = 0

⇒ x<sup>2</sup> - x = 0

⇒ x(x - 1) = 0

Then, x = 0 or x = 1

So, the value of unit digit = 1

Then, the ten's digit = 2 + 1<sup>2</sup> = 3

∴ The original number = 31

7. Ans. A.

Let the amount deposited for her two daughters are A and B respectively.

Now,

A(1+4/100)<sup>5</sup> = B(1+4/100)<sup>7</sup>

A/B = (1+4/100)<sup>(7-5=2)</sup>

A/B = (26/25)<sup>2</sup>

A/B = 676/625

A+B = 676+625= 1301 but total sum is 2 times of

A+B = 2602

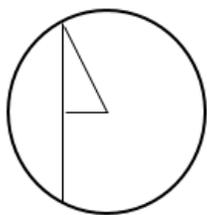
Therefore Amount deposited into the account of 1<sup>st</sup> daughter

= 676\*2= Rs1352 ans.

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8. Ans. C.



Surface area of a sphere =  $4\pi r^2$

Area of a circle =  $\pi r^2$

Given, sphere of radius 'a' is cut by a plane at a distance of 'b' from its center, thus obtaining two different pieces.

Let the radius of the bases of the pieces obtained be 'r'.

∴ By Pythagoras theorem,

$$a^2 = r^2 + b^2$$

$$\Rightarrow r^2 = a^2 - b^2$$

Now, total surface area of these two pieces is 40% more than the surface area of the sphere.

Thus, the area of the bases is 40% of the surface area of the sphere.

$$\therefore 2 \times \pi r^2 = 40\% \text{ of } 4\pi a^2$$

$$\Rightarrow a^2 - b^2 = 0.8a^2$$

$$\Rightarrow a^2/5 = b^2$$

$$\Rightarrow b = a/\sqrt{5}$$

9. Ans. D.

Total bands initially in the bag =  $4 + 5 + 6 = 15$

There are 4 gold bands

If on first draw, gold band comes out then 6 more gold bands are added

∴ The probability of gold band on first draw =  $4/15$

⇒ Due to withdraw of one gold band now there are only 3 gold bands is left.

Also, there is no replacement done so, total number of bands becomes 14.

After adding 6 new gold bands, total number of bands becomes =  $14 + 6 = 20$

And total number of gold bands =  $3 + 6 = 9$

Now, if on the 2<sup>nd</sup> draw, Gold band is drawn then

∴ The probability of gold band on 2<sup>nd</sup> draw =  $9/20$

As there is no replacement done so, total number of bands becomes 19

And total number of gold bands =  $9 - 1 = 8$

Now, if on the 3<sup>rd</sup> draw, Gold band is drawn then

∴ The probability of gold band on 3<sup>rd</sup> draw =  $8/19$

⇒ Final probability if on both the draws gold band is drawn =  $4/15 \times 9/20 \times 8/19 = 24/475$

Hence,  $24/475$  is the probability of all the 3 bands drawn are of gold bands.

10. Ans. D.

: Work done by the two pipes in 1 hour =  $1/14 + 1/16 = 15/112$

Time taken by these two pipes to fill the tank =  $112/15$  hrs.

Due to leakage, time taken = 7 hrs 28 min + 32 min = 8 hours

Therefore, work done by (two pipes + leak) in 1 hr =  $1/8$

work done by leak in 1 hour =  $15/112 - 1/8 = 1/112$

Leak will empty full cistern in 112 hours.

11. Ans. A.

Cost of 1<sup>st</sup> variety = Rs. 200

Cost of 2<sup>nd</sup> variety = Rs. 260

Now, 52 quintals of 2<sup>nd</sup> variety is taken and mixed with 1<sup>st</sup> variety.

Let the quintals of 1<sup>st</sup> variety taken be 'a'

Profit% of 25% is obtained by selling them at Rs. 300 per quintal.

Total cost price =  $200 \times a + 260 \times 52 = 13520 + 200a$

Thus,  $13520 + 200a + 25\% \text{ of } (13520 + 200a) = 300 \times (52 + a)$

$$\Rightarrow 16900 + 250a = 15600 + 300a$$

$$\Rightarrow 1300 = 50a$$

$$\Rightarrow a = 26 \text{ quintals}$$

12. Ans. D.

Let the number of kids who get equal number of books and pencils be 'K'

All of the 4720 books need to be equally distributed among the kids. Therefore, 4720 must be divisible by 'K'.

Similarly 1475 must also be divisible by 'K'

Thus 'K' is a factor of both 4720 and 1475. But

there can be many such factors. The trick is to notice that we want the maximum possible value of 'K'

Now, the highest possible value of 'K' that divides both 4720 and 1475 is the Highest Common Factor i.e. HCF of the two numbers.

Representing 4720 and 1475 as a product of prime factors:

$$4720 = 2 \times 2 \times 2 \times 2 \times 5 \times 59$$

$$1475 = 5 \times 5 \times 59$$

The highest common factor is therefore  $(5 \times 59) = 295$

Thus, a maximum of 295 kids can receive the gifts. Hence the correct option is option (D).

13. Ans. C.

Let the present age of Susmitto be x years.

Susmitto married 6 years ago. So, Susmitto's age at time of his marriage

= (x - 6) years.

Now we can write,  
 $x = (x - 6) \times (5/4)$   
 $\Rightarrow 4x = 5x - 30$   
 $\Rightarrow x = 30$

So, Susmitto's present age = 30 years.  
 His age at the time of his marriage = (30 - 6) years = 24 years.

$\therefore$  The present age of his brother = (24 - 4) + 6 = 26 years.

14. Ans. B.

Sandip and Suman together can finish the work in 16 days and Palash alone can finish the work in 40 days.

So, (Sandip + Suman)'s 1 day's work =  $1/16$   
 Palash's 1 day's work =  $1/40$   
 Sandip can finish a work in the same time in which Suman and Palash together can finish the same work.

So, Sandip's 1 day's work = (Suman + Palash)'s 1 day's work  
 Then, (Sandip + Suman + Palash)'s 1 day's work =  $(1/16) + (1/40) = 7/80$   
 $\Rightarrow 2 \times$  Sandip's 1 day's work =  $7/80$   
 $\Rightarrow$  Sandip's 1 day's work =  $7/160$   
 Then, Suman's 1 day's work =  $(1/16) - (7/160) = 3/160$

$\therefore$  Suman alone can finish the work in  $160/3$  days  
 =  $53\frac{1}{3}$  days.

15. Ans. A.

80% of total marks = 80% of (105 × 5) = 420  
 So, obtained marks in Anthropology = 420 - (89 + 92 + 98 + 81) = 60

16. Ans. B.

Increase in the population in 10 years = 262500 - 175000 = 87500  
 Percentage increase in the population in 10 years

$$= \frac{87500}{175000} \times 100 = \frac{8750}{175} = 50\%$$

Average percent increase of population per year =

$$50 \times \left(\frac{10}{100}\right) = 5\%$$

17. Ans. D.

Consonants are T, P, W, R, T, R  
 Vowels are A, E, I, E (Here the vowels will be considered as a single letter)  
 TPWRTR(AEIE) - There is 7 letters

The number of arrangements are  $\frac{7! \cdot 4!}{2! \cdot 2! \cdot 2!} =$

15120

(Note: In denominator, the factorials show the repetitions of the letters T, R and E)

18. Ans. C.

Let the present age of Susmitto be x years.  
 Susmitto married 6 years ago. So, Susmitto's age at time of his marriage = (x - 6) years.

Now we can write,  
 $x = (x - 6) \times (5/4)$   
 $\Rightarrow 4x = 5x - 30$   
 $\Rightarrow x = 30$

So, Susmitto's present age = 30 years.  
 His age at the time of his marriage = (30 - 6) years = 24 years.

$\therefore$  The present age of his brother = (24 - 4) + 6 = 26 years.

19. Ans. B.

Sandip and Suman together can finish the work in 16 days and Palash alone can finish the work in 40 days.

So, (Sandip + Suman)'s 1 day's work =  $1/16$   
 Palash's 1 day's work =  $1/40$   
 Sandip can finish a work in the same time in which Suman and Palash together can finish the same work.

So, Sandip's 1 day's work = (Suman + Palash)'s 1 day's work  
 Then, (Sandip + Suman + Palash)'s 1 day's work =  $(1/16) + (1/40) = 7/80$   
 $\Rightarrow 2 \times$  Sandip's 1 day's work =  $7/80$   
 $\Rightarrow$  Sandip's 1 day's work =  $7/160$   
 Then, Suman's 1 day's work =  $(1/16) - (7/160) = 3/160$

$\therefore$  Suman alone can finish the work in  $160/3$  days  
 =  $53\frac{1}{3}$  days.

20. Ans. A.

A started a business with investing Rs. 8000 and after some months, B joined with investing Rs. 5000.

Equivalent capital of A  
 = Rs. 8000 × 12  
 = Rs. 96000

Let B joined after x months.

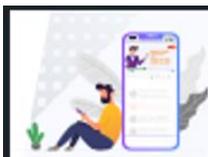
So, equivalent capital of B  
 = Rs. 5000 × (12 - x)  
 = Rs. 60000 - 5000x

Total profit after one year = Rs. 4250

Share of A = Rs. 3000. Then, the share of B = Rs. 4250 - 3000 = Rs. 1250

So, the ratio of their share;

$$A : B = 3000 : 1250 = 12 : 5$$



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Now, we can write,  
 $96000/(60000 - 5000x) = 12/5$   
 $\Rightarrow 60000 - 5000x = 96000 \times (5/12)$   
 $\Rightarrow 60000 - 5000x = 8000 \times 5$   
 $\Rightarrow 5000x = 60000 - 40000$   
 $\Rightarrow x = 20000/5000$   
 $\Rightarrow x = 4$

$\therefore$  After 4 months, B joined in the business.

21. Ans. E.

Let their salaries be  $5x$  and  $4x$

Now,

$$5x - \left( 3x + \frac{15 \times 5x}{100} + \frac{18 \times 5x}{100} \right) = 4200$$

$$5x - [3x + (0.75x + 0.9x)] = 4200$$

$$5x - 4.65x = 4200$$

$$x = \frac{4200}{0.35} = 12000$$

$\therefore$  Monthly salary of Manjhi =  $4x = 4 \times 12000 = 48000$  Rs.

22. Ans. A.

For book=B	For pen=P
$16\frac{2}{3}\% = 1/6$	$11\frac{1}{9}\% = 1/9$

For no profit no loss

$$CP = 1/9 : 1/6 = 2 : 3$$

B : P

$$200 : 300$$

$$13\% \quad 9\%$$

$$26 \quad 27$$

$$\text{Total} = B + P = 26 + 27 = 53$$

$$\text{But total profit} = 1060 = 53 \times 20$$

$$\text{Hence CP of book} = 200 \times 20 = 4000$$

$$\text{CP of pen} = 300 \times 20 = 6000$$

23. Ans. A.

A started a business with investing Rs. 8000 and after some months, B joined with investing Rs. 5000.

Equivalent capital of A

$$= \text{Rs. } 8000 \times 12$$

$$= \text{Rs. } 96000$$

Let B joined after  $x$  months.

So, equivalent capital of B

$$= \text{Rs. } 5000 \times (12 - x)$$

$$= \text{Rs. } 60000 - 5000x$$

Total profit after one year = Rs. 4250

Share of A = Rs. 3000. Then, the share of B = Rs.

$$4250 - 3000 = \text{Rs. } 1250$$

So, the ratio of their share:

$$A : B = 3000 : 1250 = 12 : 5$$

Now, we can write,

$$96000/(60000 - 5000x) = 12/5$$

$$\Rightarrow 60000 - 5000x = 96000 \times (5/12)$$

$$\Rightarrow 60000 - 5000x = 8000 \times 5$$

$$\Rightarrow 5000x = 60000 - 40000$$

$$\Rightarrow x = 20000/5000$$

$$\Rightarrow x = 4$$

$\therefore$  After 4 months, B joined in the business.

24. Ans. C.

Let the normal time required to reach the destination =  $x$  hours.

Total distance = 450 km

Now, according to the question, we can write,

$$\frac{450}{x} - \frac{450}{x + \frac{20}{60}} = 15$$

$$\frac{450(3x + 1) - 1350x}{x(3x + 1)} = 15$$

$\Rightarrow$

$$\Rightarrow 450 + 1350x - 1350x = 15 \times x(3x + 1)$$

$$\Rightarrow 450x = 45x^2 + 15x$$

$$\Rightarrow 3x^2 + x - 30 = 0$$

$$\Rightarrow 3x^2 + 10x - 9x - 30 = 0$$

$$\Rightarrow x(3x + 10) - 3(3x + 10) = 0$$

$$\Rightarrow (3x + 10)(x - 3) = 0$$

$$\text{Then, } x = -10/3 \text{ or } x = +3$$

We will ignore the negative value of  $x$  as the time cannot be negative.

$\therefore$  The normal time required to reach the destination = 3 hours.

25. Ans. A.

A started a business with investing Rs. 8000 and after some months, B joined with investing Rs. 5000.

Equivalent capital of A

$$= \text{Rs. } 8000 \times 12$$

$$= \text{Rs. } 96000$$

Let B joined after  $x$  months.

So, equivalent capital of B

$$= \text{Rs. } 5000 \times (12 - x)$$

$$= \text{Rs. } 60000 - 5000x$$

Total profit after one year = Rs. 4250

Share of A = Rs. 3000. Then, the share of B = Rs.

$$4250 - 3000 = \text{Rs. } 1250$$

So, the ratio of their share;

$$A : B = 3000 : 1250 = 12 : 5$$

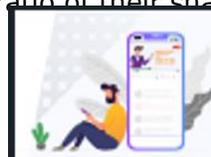
Now, we can write,

$$96000/(60000 - 5000x) = 12/5$$

$$\Rightarrow 60000 - 5000x = 96000 \times (5/12)$$

$$\Rightarrow 60000 - 5000x = 8000 \times 5$$

$$\Rightarrow 5000x = 60000 - 40000$$



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$$\Rightarrow x = 20000/5000$$

$$\Rightarrow x = 4$$

∴ After 4 months, B joined in the business.

26. Ans. E.

P(Ind) = Probability of winning of team India =

$$\frac{75}{100} = \frac{3}{4}$$

P(Aus) = Probability of winning of team Australia =

$$\frac{80}{100} = \frac{4}{5}$$

P( $\overline{\text{Ind}}$ ) = Probability of not winning of team India =

$$1 - \frac{3}{4} = \frac{1}{4}$$

P( $\overline{\text{Aus}}$ ) = Probability of not winning of team India

$$= 1 - \frac{4}{5} = \frac{1}{5}$$

Therefore the game will not end up in a tie when India wins & Australia loses or India loses & India wins.

P(Either India will win or Australia will win)

P(Ind and  $\overline{\text{Aus}}$ ) + P( $\overline{\text{Ind}}$  and Aus)

$$P(\text{Ind}) * P(\overline{\text{Aus}}) + P(\overline{\text{Ind}}) * P(\text{Aus}) = \left(\frac{3}{4} * \frac{1}{5}\right) + \left(\frac{4}{5} * \frac{1}{4}\right) = \frac{7}{20}$$

27. Ans. C.

Let the normal time required to reach the destination = x hours.

Total distance = 450 km

Now, according to the question, we can write,

$$\frac{450}{x} - \frac{450}{x + \frac{20}{60}} = 15$$

$$\frac{450(3x + 1) - 1350x}{x(3x + 1)} = 15$$

$$\Rightarrow 450 + 1350x - 1350x = 15 \times x(3x + 1)$$

$$\Rightarrow 450x = 45x^2 + 15x$$

$$\Rightarrow 3x^2 + x - 30 = 0$$

$$\Rightarrow 3x^2 + 10x - 9x - 30 = 0$$

$$\Rightarrow x(3x + 10) - 3(3x + 10) = 0$$

$$\Rightarrow (3x + 10)(x - 3) = 0$$

$$\text{Then, } x = -10/3 \text{ or } x = +3$$

We will ignore the negative value of x as the time cannot be negative.

∴ The normal time required to reach the destination = 3 hours.

28. Ans. D.

Difference

$$= \frac{Pr^2}{(100)^2}$$

(Rates of simple interest and compound interest are equal) i.e.,

$$\frac{236.16 \times 100 \times 100}{16400} =$$

$$r^2 \text{ or, } r^2 \frac{23616}{164} = 144$$

$$\therefore r = \sqrt{144} = 12\%$$

29. Ans. D.

Let Tanvi's age be x years.

∴ Tarun's age = x/2

∴ Vishal's age is x/4 years

After four years,

$$(x + 4) = \left(\frac{x}{4} + 4\right) 2.5$$

$$\text{or, } x + 4 = \frac{2.5x}{4} + 10$$

$$\text{or, } 4x + 16 = 2.5x + 40$$

$$\text{or, } 1.5x = 24$$

$$\text{or, } x = \frac{24}{1.5} = 16$$

30. Ans. C.

Let the normal time required to reach the destination = x hours.

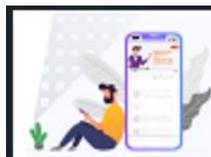
Total distance = 450 km

Now, according to the question, we can write,

$$\frac{450}{x} - \frac{450}{x + \frac{20}{60}} = 15$$

$$\Rightarrow \frac{450(3x + 1) - 1350x}{x(3x + 1)} = 15$$

$$\Rightarrow 450 + 1350x - 1350x = 15 \times x(3x + 1)$$



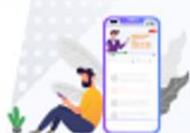
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$$\begin{aligned}\Rightarrow 450x &= 45x^2 + 15x \\ \Rightarrow 3x^2 + x - 30 &= 0 \\ \Rightarrow 3x^2 + 10x - 9x - 30 &= 0 \\ \Rightarrow x(3x + 10) - 3(3x + 10) &= 0 \\ \Rightarrow (3x + 10)(x - 3) &= 0 \\ \text{Then, } x &= -10/3 \text{ or } x = +3\end{aligned}$$

We will ignore the negative value of  $x$  as the time cannot be negative.  
 $\therefore$  The normal time required to reach the destination = 3 hours.

\*\*\*



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