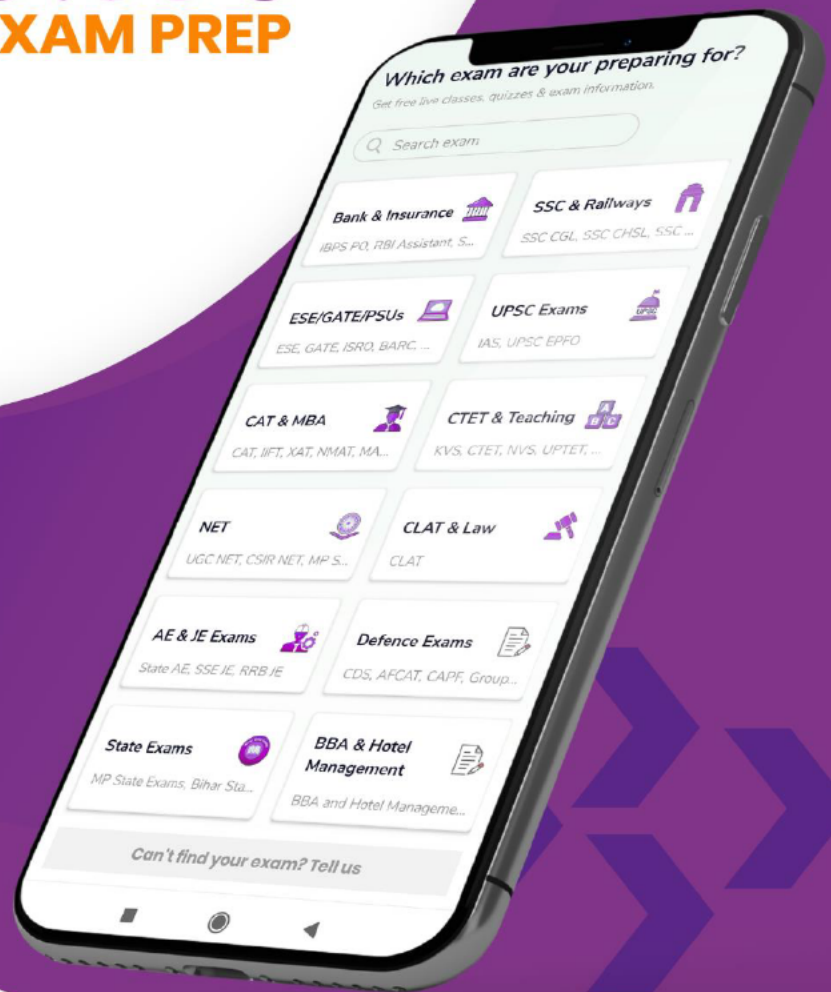




BYJU'S
EXAM PREP



SBI Clerk & PO 2022

Arithmetic Questions

(Solution PDF)

1. Ans. A.

$$\text{Total exp.} = 40 \times 35 = 1400$$

Acc. to question,

$$\Rightarrow 12 \times 45 + x \times 28 = 1400 \times 125/100$$

$$\Rightarrow 28x = 1750 - 540$$

$$x = 43(\text{approx})$$

2. Ans. B.

Let Vimal's expense be ₹ 100.

∴ Aman's expense = ₹ 130

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

$$= ₹ \frac{1000}{9}$$

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

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

$$= 90 : 117 : 100$$

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

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

3. Ans. C.

Suppose original fraction is

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

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

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

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

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

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

4. Ans. C.

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

$$6 \times t = 5 \times (t+1) = 6t = 5t + 5 \Rightarrow t = 5$$

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

$$\text{Sum} = 100A / (100 + RT) = 3900 \times 100 / (100 + 6 \times 5) = \text{Rs. } 3000$$

5. Ans. B.

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

According to question

$$25/(x-y) + 39/(x+y) = 8 \dots\dots\dots(i)$$

&

$$35/(x-y) + 52/(x+y) = 11 \dots\dots\dots(ii)$$

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.

$$\text{So, the ten's digit} = x^2 + 2.$$

$$\text{So, the number} = 10(x^2 + 2) + x$$

$$= 10x^2 + 20 + x$$

$$\text{And, the reverse number} = 10x + (x^2 + 2)$$

$$= 10x + x^2 + 2$$

According to the question, we can write,

$$(10x^2 + 20 + x) - (10x + x^2 + 2) = 18$$

$$\Rightarrow 9x^2 - 9x = 0$$

$$\Rightarrow x^2 - x = 0$$

$$\Rightarrow x(x - 1) = 0$$

$$\text{Then, } x = 0 \text{ or } x = 1$$

$$\text{So, the value of unit digit} = 1$$

$$\text{Then, the ten's digit} = 2 + 1^2 = 3$$

$$\therefore \text{The original number} = 31$$

7. Ans. A.

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

Now,

$$A(1 + 4/100)^5 = B(1 + 4/100)^7$$

$$A/B = (1 + 4/100)^{(7-5)} = 2$$

$$A/B = (26/25)^2$$

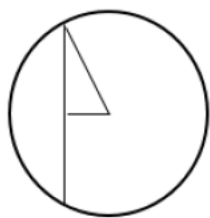
$$A/B = 676/625$$

$$A + B = 676 + 625 = 1301 \text{ but total sum is 2 times of } A + B = 2602$$

Therefore Amount deposited into the account of 1st daughter

$$= 676 \times 2 = \text{Rs } 1352 \text{ ans.}$$

8. Ans. C.

Surface area of a sphere = $4\pi r^2$ Area of a circle = πr^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 2nd draw, Gold band is drawn then

∴ The probability of gold band on 2nd 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 3rd draw, Gold band is drawn then

∴ The probability of gold band on 3rd 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 1st variety = Rs. 200

Cost of 2nd variety = Rs. 260

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

Let the quintals of 1st variety taken be 'a'

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

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

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

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

$$\Rightarrow 1300 = 50a$$

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

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:

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

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

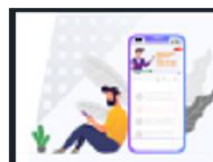
The highest common factor is therefore $(5 \times 59) = 295$

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



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= (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 = $(1/16) + (1/40) = 7/80$

$$\Rightarrow 2 \times \text{Sandip's 1 day's work} = 7/80$$

$$\Rightarrow \text{Sandip's 1 day's work} = 7/160$$

Then, Suman's 1 day's work = $(1/16) - (7/160) = 3/160$

\therefore Suman alone can finish the work in $160/3$ days

$$= 53\frac{1}{3} \text{ days.}$$

15. Ans. A.

80% of total marks = 80% of $(105 \times 5) = 420$

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

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

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 = $(1/16) + (1/40) = 7/80$

$$\Rightarrow 2 \times \text{Sandip's 1 day's work} = 7/80$$

$$\Rightarrow \text{Sandip's 1 day's work} = 7/160$$

Then, Suman's 1 day's work = $(1/16) - (7/160) = 3/160$

\therefore Suman alone can finish the work in $160/3$ days

$$= 53\frac{1}{3} \text{ days.}$$

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

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

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

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,

$$\begin{aligned} 96000/(60000 - 5000x) &= 12/5 \\ \Rightarrow 60000 - 5000x &= 96000 \times (5/12) \\ \Rightarrow 60000 - 5000x &= 8000 \times 5 \\ \Rightarrow 5000x &= 60000 - 40000 \\ \Rightarrow x &= 20000/5000 \\ \Rightarrow x &= 4 \end{aligned}$$

∴ After 4 months, B joined in the business.

21. Ans. E.

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

Now,

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

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

$$5x - 4.65x = 4200$$

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

∴ 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

$$200 : 300$$

$$13\% : 9\%$$

$$26 : 27$$

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

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

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

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

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

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

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

$$\text{Total profit after one year} = \text{Rs. } 4250$$

$$\text{Share of A} = \text{Rs. } 3000. \text{ Then, the share of B} = \text{Rs. } 4250 - 3000 = \text{Rs. } 1250$$

$$\text{So, the ratio of their share;}$$

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

Now, we can write,

$$\begin{aligned} 96000/(60000 - 5000x) &= 12/5 \\ \Rightarrow 60000 - 5000x &= 96000 \times (5/12) \\ \Rightarrow 60000 - 5000x &= 8000 \times 5 \\ \Rightarrow 5000x &= 60000 - 40000 \\ \Rightarrow x &= 20000/5000 \\ \Rightarrow x &= 4 \end{aligned}$$

∴ 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,

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

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

⇒

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

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

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

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

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

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

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

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

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

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

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

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

$$\text{Total profit after one year} = \text{Rs. } 4250$$

$$\text{Share of A} = \text{Rs. } 3000. \text{ Then, the share of B} = \text{Rs. } 4250 - 3000 = \text{Rs. } 1250$$

$$\text{So, the ratio of their share;}$$

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

Now, we can write,

$$\begin{aligned} 96000/(60000 - 5000x) &= 12/5 \\ \Rightarrow 60000 - 5000x &= 96000 \times (5/12) \\ \Rightarrow 60000 - 5000x &= 8000 \times 5 \\ \Rightarrow 5000x &= 60000 - 40000 \end{aligned}$$

$$\Rightarrow x = 20000/5000$$

$$\Rightarrow x = 4$$

∴ 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

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

(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,

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

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

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

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

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.

