

**Quiz Date: 8<sup>th</sup> March 2020**

**Directions (1-5):** In the following questions three statements either A, B and C or I, II and III are given. You have to use your knowledge of mathematics to answer which statement(s) is/are sufficient to answer the question.

Q1. What is the age of Ravi?

**A:** Four years ago, Raju was as old as Ravi is at present.

**B:** Rita's present age is two times of Raju's present age.

**C:** The average age of Ravi and Rita is 19 years.

(a) A is sufficient to give answer

(b) Any two statements are sufficient to give answer

(c) All of three statements are necessary to give answer

(d) Even using all the three statements answer cannot be found.

(e) Only C is sufficient.

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Q2. What is the cost price of wristwatch?

**A:** Shopkeeper gives 20% discount on a speaker.

**B:** The marked price of wristwatch is 25% more than that of speaker.

**C:** The shopkeeper earns a profit of 10% after selling the speaker.

(a) Any two of them are sufficient

(b) All the three statements are required

(c) Only C is sufficient.

(d) Even using all statements, answer cannot be found

(e) Only A is sufficient

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Q3. What is the total quantity of milk in final mixture of milk and water after adding some milk ?

**A:** 68 liters of initial mixture has ratio of milk and water as 11:6.

**B:** A certain amount of milk is added to this mixture to make the ratio of water to milk as 6:13.

**C:** Selling the mixture at a certain rate, 35 % profit is obtained.

- (a) Any two of them is sufficient
- (b) Only A and B are sufficient
- (c) All the three statements are required
- (d) Answer cannot be found even using all the three statements
- (e) Only B and C are required

Q4. The speed of a train A and time taken by it to cross a tunnel is known. Find length of tunnel.

**A:** Another train B is running in opposite direction to A with a speed 40% more than A.

**B:** Train B crosses a platform X and a pole in 24 sec and 8 sec respectively before crossing the train A and tunnel.

**C:** The ratio of length of train A and platform X is 3 : 5.

- (a) Only A and B are sufficient.
- (b) Only B and C are sufficient
- (c) Even using all the three statements answer cannot be found.
- (d) All the three statements are required.
- (e) Only B is sufficient



Q5. In how many ways 2 green balls can be chosen from box 'A' which contains red, green and black balls?

**A:** Ratio of total number of balls in boxes A and B is 2 : 3 and box A contains 5 green balls.

**B:** Total balls in box B is 18 while ratio of red and black balls in box A is 3:4.

**C:** Box 'B' contains 5 red 7 black and 6 green balls only while ratio of red and green balls in box 'A' is 3:5.

- (a) Statement A and either B or C are sufficient
- (b) Any two statements are sufficient
- (c) All the three statements are required
- (d) Statement B and either A or C are sufficient
- (e) None of these

**Direction (6 - 10):** Find the wrong number in the following number series.

Q6. 224, 118, 184, 468, 1648, 7421.5

- (a) 224
- (b) 118
- (c) 1648
- (d) 468
- (e) 184

Q7. 4498, 4888, 5336, 5846, 6422, 7070

- (a) 5846
- (b) 4498
- (c) 5336
- (d) 7070
- (e) 6422

Q8. 122, 125.2, 131.6, 141.2, 152, 170

- (a) 125.2
- (b) 131.6
- (c) 141.2



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(d) 170

(e) 152

Q9. 140, 160, 182, 206, 234, 260

(a) 140

(b) 234

(c) 182

(d) 206

(e) 260

Q10. 3671, 2341, 4537, 1163, 6072, - 783

(a) 6072

(b) 2341

(c) - 783

(d) 3671

(e) 1163

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Q11. Two pipes A and B can fill a cistern in 18 minutes and 30 minutes respectively, but a third pipe C can empty the full tank in 12 minutes. A and B are kept open for 10 minutes from the beginning and then C is also opened. In what time will the cistern be filled/emptied?

(a) 160 minutes

(b) 20 minutes

(c) 170 minutes

(d) 30 minutes

(e) 45 minutes

Q12. Shivam and Amit invest equal sum. Shivam invested on C.I. for two years at the rate of 15% p.a. and Amit invested  $\frac{3}{4}$ th of sum at some rate of simple interest and remaining sum at

the rate of 9% p.a. on simple interest. If interest received by both at the end of two years are equal, then find the interest earned by Amit?

- (a) 8000
- (b) 9000
- (c) 10000
- (d) can't be determined
- (e) 12000

Q13. Average age of a man, woman and their son is 30 years. Man's age is two year more than his wife and age of son is  $\frac{1}{4}$ th the sum of age of his mother and father. When two other family members were added, new average becomes 27 years. If difference between age of two new member are one year then find difference between son and the new member who is elder.

- (a) 7 years
- (b) 8 years
- (c) 4 years
- (d) 2 years
- (e) 5 years

Q14. Ratio between marked price of article A to article B is 4 : 5. Shopkeeper allowed d% discount on article 'A' and (d + 18)% discount on article 'B', so selling price of both articles become equal. If shopkeeper made a profit of 20% on article A and 25% on article B and profit made on article B is Rs. 384 more than that of article A, then find the cost price of article 'A' and article 'B' respectively?

- (a) 9000 Rs. 8400 Rs.
- (b) 9600 Rs. 9216 Rs.
- (c) 9800 Rs. 9012 Rs.
- (d) 9600 Rs. 8488 Rs.
- (e) 9200 Rs. 9216 Rs.

Q15. The average age of a group of six children is 15 years. From the group, two children, whose ages were 3 years more and 5 years more than the average age, left. 4 new children, whose average age is 4 years more than the given average age, join the group. Find the new average age.

- (a) 15 years
- (b) 16 years
- (c) 17 years
- (d) 18 years
- (e) 12 years

**Direction (16 -1 8):** In each of these equations, two equations (I) and (II) are given. You have to solve both the equations and give answer among the following options.

(a)  $x \geq y$

(b)  $x \leq y$

(c)  $x > y$

(d) Relationship between  $x$  and  $y$  cannot be established

(e)  $x < y$

Q16. I.  $88x^2 - 19x + 1 = 0$

II.  $132y^2 - 23y + 1 = 0$

Q17. I.  $6x^2 - 7x + 2 = 0$

II.  $20y^2 - 31y + 12 = 0$

Q18. I.  $28x^2 - 8x - 11 = 0$

II.  $28y^2 + 32y + 9 = 0$

**Directions (19-20):** In the following questions, two statements (quantity 1 and quantity 2) are given. You have to find both the quantities and give answer

(a) If quantity 1 > quantity 2

(b) If quantity 1 < quantity 2

(c) If quantity 1  $\geq$  quantity 2

(d) If quantity 1  $\leq$  quantity 2

(e) If quantity 1 = quantity 2 or No relation between quantity 1 and quantity 2

Q19. **Quantity 1:** No. of days taken by P and R together to complete the whole work. P and Q together can complete a piece of work in  $10\frac{2}{7}$  days while Q and R together can complete the same work in  $13\frac{1}{3}$  days. Q is 25% more efficient than R.

**Quantity 2:** Total no. of days to finish the work. A is twice as efficient as C. B takes thrice as many days as A. C takes 12 days to finish the work alone. If they work in pairs (i.e., BC, AB, CA) starting with BC on the first day, AB on the second day and AC on the third day and so on.

Q20. **Quantity 1:** No. of extra days will the rest of the food last for the remaining soldiers in an army camp. There was sufficient food for 250 soldiers for 30 days. After 20 days 125 soldiers left the camp.

**Quantity 2:** No. of days taken by 10 men to complete the remaining project. 12 men can finish a project in 12 days. 18 women can finish the same project in 16 days and 24 children can finish it in 18 days. 8 women and 16 children worked for 9 days and then left.

### Solutions

S1. Ans.(c)

Sol.

From statement A,

Let present age of Ravi =  $x$

$\therefore$  Present age of Raju =  $(x + 4)$

From B,

Rita's present age =  $2(x + 4)$

From C,

$2x + 8 + x = 2 \times 19$

$\Rightarrow x = 10$  years

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S2. Ans.(d)

Sol.

From statement A,

Let MP of speaker = Rs. 100

$\therefore$  SP = 80 rupees

From B,

MP of wrist watch = 1.25 M.P of speaker = Rs. 125 (From st. A)

From C,

C. P. of speaker =  $80 \times \frac{100}{110}$   
 $= \frac{800}{11}$  (from st. A)

Here, there is no information about S.P. and Profit of watch. So, answer cannot be found.



S3. Ans.(b)

Sol.

From A,

$$\text{Milk} = 68 \times \frac{11}{17} = 44 \ell$$

$$\text{Water} = 68 \times \frac{6}{17} = 24 \ell$$

From B, let  $x \ell$  milk is added to the mixture.

$$\frac{24}{44+x} = \frac{6}{13}$$

$$\Rightarrow x = 8 \ell$$

$$\therefore \text{Total milk in final mixture} = 44 + 8 = 52 \ell$$

S4. Ans.(d)

Sol.

From st. A,

Speed of train A = P m/sec (Given)

$$\begin{aligned} \text{Speed of train B} &= \frac{140}{100} \text{ of P} \\ &= \frac{14P}{10} \end{aligned}$$

From st. B+A,

Length of platform

$$= 24 \times \frac{14P}{10} - \frac{14P}{10} \times 8$$

$$= 16 \times \frac{14P}{10}$$

$$= 22.4 P$$

From C, Length of train A

$$= \frac{3}{5} \times 22.4P \text{ (with help of st. A and B together)}$$

$$\therefore \text{Length of tunnel} = Pt(\text{given}) - \frac{3}{5} \times 22.4P$$

S5. Ans.(e)

Sol.

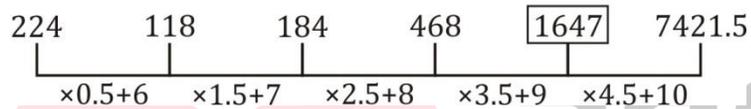
With help of statement A only, required number of ways can be found out.

S6. Ans (c)

Sol.

Wrong number = 1648

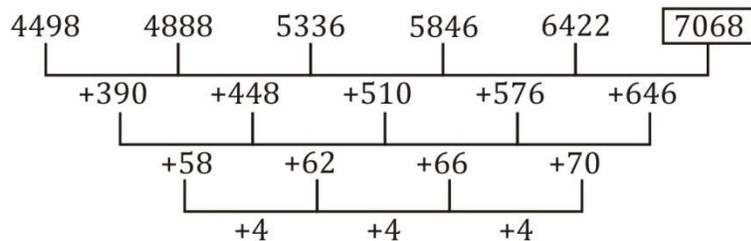
Pattern of series



S7. Ans (d)

Sol.

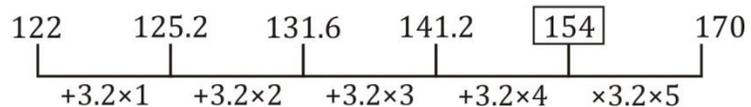
Wrong number = 7070



S8. Ans (e)

Sol.

Wrong number = 152



S9. Ans (b)

Sol.

Wrong number = 234

Pattern of series —

$$140 = 84 + 7 \times 8$$

$$160 = 88 + 8 \times 9$$

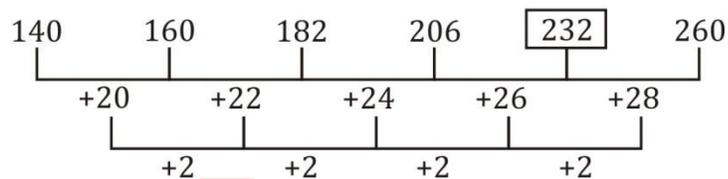
$$182 = 92 + 9 \times 10$$

$$206 = 96 + 10 \times 11$$

$$\boxed{232} = 100 + 11 \times 12$$

$$260 = 104 + 12 \times 13$$

or

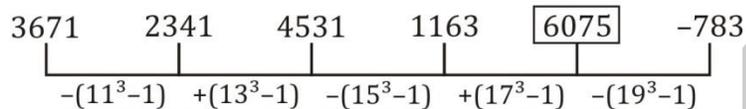


S10. Ans (a)

Sol.

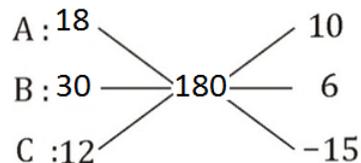
Wrong number = 6072

Pattern of series —



S11. Ans.(d)

Sol.



In 10 minutes,

tank filled by A and B =  $16 \times 10 = 160$  units

$A + B - C = 1$  unit.

Time required to fill the remaining time =  $\frac{20}{1} = 20$  minutes

So, total required time =  $10 + 20 = 30 \text{ min}$

S12. Ans.(d)

Sol.

Let Shivam and Amit have Rs.  $100x$

Equivalent CI for two years at the rate of 15%

$$= 15 + 15 + \frac{15 \times 15}{100}$$

$$= 32.25\%$$

ATQ—

$$100x \times \frac{32.25}{100} = 100x \times \frac{3}{4} \times \frac{R \times 2}{100} + 100x \times \frac{1}{4} \times \frac{9 \times 2}{100}$$

$$32.25x = \frac{3x \times R}{2} + \frac{9x}{2}$$

$$64.5x = 3x \times R + 9x$$

$$3x \times R = 55.5x$$

$$R = \frac{55.5x}{3x}$$

$$R = 18.5\%$$

So, we can't calculate interest.

S13. Ans.(e)

Sol.

Let age of man is x years

Age of woman = (x - 2) years

$$\text{Age of son} = \frac{(x+x-2)}{4}$$

$$= \frac{(x-1)}{2} \text{ years}$$

ATQ—

$$\frac{x+(x-2)+\frac{(x-1)}{2}}{3} = 30$$

$$\frac{2x+2x-4+x-1}{2} = 90$$

$$5x = 185$$

$$x = 37 \text{ years}$$

$$\text{son age} = \frac{(37-1)}{2} = 18 \text{ years}$$

let age of two new members be y years and (y - 1) years

ATQ—

$$\frac{90+(y+y-1)}{5} = 27$$

$$2y - 1 = 135 - 90$$

$$y = \frac{46}{2}$$

$$y = 23$$

Required difference = 23 - 18 = 5 years

S14. Ans(b)

Let marked price of article A and B be 400x and 500x respectively

ATQ—

$$400x \times \frac{(100-d)}{100} = 500x \times \frac{(100-d-18)}{100}$$

$$400 - 4d = 410 - 5d$$

$$d = 10\%$$

$$\text{Cost price of article A} = \frac{400x \times \frac{90}{100}}{120} \times 100$$

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$$= 300x \text{ Rs.}$$

$$\text{Cost price of article B} = \frac{500x \times \frac{(100-28)}{100}}{125} \times 100$$

$$= 288x \text{ Rs.}$$

ATQ—

$$\left(500x \times \frac{72}{100} - 288x\right) - \left(400x \times \frac{90}{100} - 300x\right) = 384$$

$$72x - 60x = 384$$

$$x = 32$$

$$\text{Cost price of article A} = 32 \times 300 = \text{Rs.9600}$$

$$\text{Cost price of article B} = 32 \times 288 = \text{Rs.9216}$$

S15. Ans.(b)

$$\text{Sol. Sum of the ages of 6 children} = 15 \times 6 = 90$$

$$\text{When two children left, sum of the ages of 4 children} = 90 - (18 + 20) = 52$$

$$\text{Sum of the ages of New children} = (15 + 4) \times 4 = 76$$

$$\therefore \text{Required average} = \frac{76+52}{8}$$

$$= \frac{128}{8} = 16 \text{ years}$$

S16. Ans.(a)

Sol.

$$\text{I. } 88x^2 - 19x + 1 = 0$$

$$\Rightarrow 88x^2 - 11x - 8x + 1 = 0$$

$$\Rightarrow 11x(8x - 1) - 1(8x - 1) = 0$$

$$\Rightarrow x = \frac{1}{8}, \frac{1}{11}$$

$$\text{II. } 132y^2 - 23y + 1 = 0$$

$$\Rightarrow 132y^2 - 11y - 12y + 1 = 0$$

$$\Rightarrow (12y-1)(11y-1) = 0$$

$$\Rightarrow y = \frac{1}{12}, \frac{1}{11}$$

$$x \geq y$$

S17. Ans.(e)

Sol.

$$\text{I. } 6x^2 - 7x + 2 = 0$$

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$$\Rightarrow 6x^2 - 3x - 4x + 2 = 0$$

$$\Rightarrow 3x(2x-1) - 2(2x-1) = 0$$

$$\Rightarrow (2x-1)(3x-2) = 0$$

$$\Rightarrow x = \frac{1}{2}, \frac{2}{3}$$

$$\text{II. } 20y^2 - 31y + 12 = 0$$

$$\Rightarrow 20y^2 - 15y - 16y + 12 = 0$$

$$\Rightarrow (4y-3)(5y-4) = 0$$

$$\Rightarrow y = \frac{3}{4}, \frac{4}{5}$$

$$y > x$$

**S18. Ans.(a)**

**Sol.**

$$\text{I. } 28x^2 - 8x - 11 = 0$$

$$\Rightarrow 28x^2 + 14x - 22x - 11 = 0$$

$$\Rightarrow 14x(2x+1) - 11(2x+1) = 0$$

$$\Rightarrow (14x-11)(2x+1) = 0$$

$$\Rightarrow x = \frac{11}{14}, -\frac{1}{2}$$

$$\text{II. } 28y^2 + 32y + 9 = 0$$

$$\Rightarrow 28y^2 + 14y + 18y + 9 = 0$$

$$\Rightarrow (2y+1)(14y+9) = 0$$

$$\Rightarrow y = -\frac{1}{2}, -\frac{9}{14}$$

$$x \geq y$$

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S19. Ans. (a)

Sol.

**Quantity 1:** One day's work of P and Q together =  $\frac{7}{72}$

$$\text{i.e. } \frac{1}{P} + \frac{1}{Q} = \frac{7}{72} \quad \dots (i)$$

and one day's work of Q and R together

$$= \frac{3}{40} \quad \text{i.e. } \frac{1}{Q} + \frac{1}{R} = \frac{3}{40} \quad \dots (ii)$$

But time taken by R =  $1.25 \times$  time taken by Q

$$\text{i.e. } \frac{1}{Q} + \frac{1}{R} = \frac{1.25}{R} + \frac{1}{R} = \frac{2.25}{R} \quad \dots (iii)$$

Solving eq. (i), (ii) and (iii) we get,

Time taken by P to complete the whole work alone = 18 days

and that by Q = 24 days and by R = 30 days

$$\therefore \text{Required answer} = \frac{18 \times 30}{48} = 11 \frac{1}{4} \text{ days}$$

**Quantity 2:** Time taken by C = 12 days

$$\text{Time taken by B} = 3 \times \frac{12}{2} = 18 \text{ days}$$

$$\text{Time taken by A} = \frac{12}{2} = 6 \text{ days}$$

One day's work of pair BC

$$= \frac{1}{12} + \frac{1}{18} = \frac{5}{36}$$

$$\text{One day's work of pair AB} = \frac{1}{18} + \frac{1}{6} = \frac{2}{9}$$

$$\text{One day's work of pair CA} = \frac{1}{6} + \frac{1}{12} = \frac{1}{4}$$

$$\therefore \text{ATQ, First three days work} = \frac{5}{36} + \frac{2}{9} + \frac{1}{4} = \frac{11}{18}$$

$$\text{Next two days work (by BC and AB together)} = \frac{5}{36} + \frac{2}{9} = \frac{13}{36}$$

$$\text{Remaining work after 5 days} = 1 - \left(\frac{11}{18} + \frac{13}{36}\right) = \frac{1}{36}$$

$$\therefore \text{Required time} = 3 + 2 + \frac{4}{36} = 5\frac{1}{9} \text{ days}$$

S20. Ans. (a)

Sol.

$$\text{Quantity 1: } 250 \times 30 = 20 \times 250 + x \times 125$$

Or,  $x = 20$  days

$\therefore$  Food last for  $20 - 10$  i.e. 10 days after 30 days

Quantity 2: 9 days work of 8 women and 16 children

$$= \left(\frac{8 \times 9}{18 \times 16} + \frac{16 \times 9}{24 \times 18}\right)$$

$$= \frac{7}{12}$$

$$\therefore \text{Remaining work} = \frac{5}{12}$$

$\therefore$  No. of days taken by 10 men to complete the remaining work

$$= \frac{5}{12} \times \frac{12 \times 12}{10} = 6$$

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