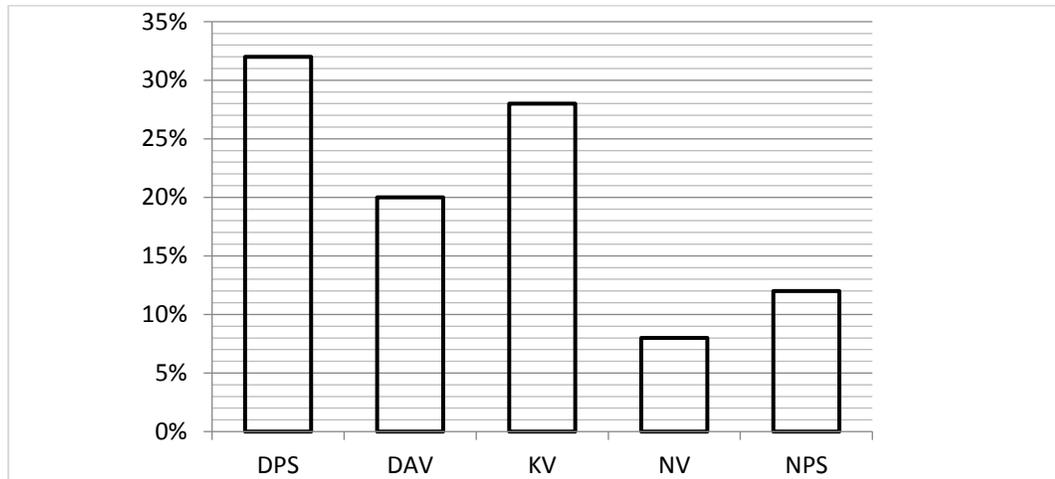


Quiz Date: 19th July 2020

Directions (1-5): The bar graph given below shows the percentage of students appeared in Maths Olympiad from different schools of a town in year 2018.



And the table given below shows the percentage of qualified students from these schools and percentage of qualified girls.

School	Percentage qualified	Percentage of qualified girls
DPS	32%	75%
DAV	28%	$28\frac{4}{7}\%$
KV	25%	40%
NV	30%	$66\frac{2}{3}\%$
NPS	24%	$37\frac{1}{2}\%$

Q1. If unqualified student from school DPS are 2040 then find the total qualified students from school NPS.

- (a) 290
- (b) 294
- (c) 270
- (d) 260
- (e) 250

Q2. If qualified boys from school NV is 120. Then qualified girls from school DAV is what percent more than the qualified boys from school NV?

- (a) 100%
- (b) 200%
- (c) 50%
- (d) 150%

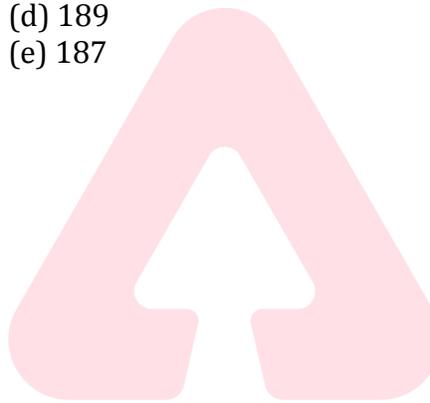
(e) 80%

Q3. If the difference between appeared student from school NPS and DPS is 1500 then find the average number of qualified boys from school DAV, KV and NV ?

- (a) 275
- (b) 250
- (c) 325
- (d) 225
- (e) 260

Q4. If the student appeared in 2019 from school DAV are 1200 which is $33\frac{1}{3}\%$ more than those in 2018, and qualified boys from school DAV in 2019 is same as qualified boys from KV in 2018. Then find the number of qualified girls from DAV in year 2019 ? (Given that percentage of qualified students from DAV are same in both years)

- (a) 147
- (b) 247
- (c) 167
- (d) 189
- (e) 187



Q5. If in year 2019 another school JP has number of qualified boys $33\frac{1}{3}\%$ more than the qualified boys from school NV in year 2018, and number of qualified girls $66\frac{2}{3}\%$ less than qualified girls from school KV in year 2018. Then find the ratio of qualified boys to qualified girls from school JP in 2019? (Given that total appeared student in year 2018 is 9000).

- (a) 7 : 8
- (b) 8 : 9
- (c) 3 : 8
- (d) 8 : 5
- (e) 8 : 7

Q6. Maanik borrowed some money on simple interest at the rate of 6 per cent per annum for the first three years, 9 per cent per annum for the next five years and 13 per cent per annum for the period beyond eight years. If the total interest paid by him at the end of eleven years is Rs. 8160, how much money did he borrow?

- (a) Rs. 12000

- (b) Rs. 10000
- (c) Rs. 8000
- (d) Rs. 11000
- (e) Rs. 14000

Q7. The average age of 80 girls in a class is 15. The average age of a group of 15 girls in the class is 16 and the average age of another 25 girls in the class is 14. What is the average age of the remaining girls in the class ?

- (a) 15.25
- (b) 14
- (c) 14.75
- (d) Cannot be determined
- (e) None of these

Q8. A & B can complete a piece of work in 20 days. They both start working together and after 8 days, A got ill. Due to A's sickness, A's efficiency fall down by 40% and thus the total work completed in 24 days, then find in how many days B alone can complete the remaining work after A got sick.

- (a) 31 days
- (b) 34 days
- (c) 20 days
- (d) 32 days
- (e) None of the above.

Q9. Average of five numbers is 91. Average of first, third and fifth number is 83 and second number is less than or equal to the fourth number. Then, find the maximum value of second number.

- (a) 206
- (b) 153
- (c) 105
- (d) 103
- (e) Cannot be determined.

Directions (10-12): Find the wrong number in the following number series.

Q10. 4836, 805, 160, 38, 12, 5, 4

- (a) 38
- (b) 4
- (c) 805
- (d) 4836
- (e) 12

Q11. 30030, 2313, 210, 30, 6, 2, 1

- (a) 30030
- (b) 1
- (c) 30

- (d) 2313
(e) Series is correct.

Q12. 1150, 1132, 1098, 1042, 970, 880, 772

- (a) 1150
(b) 1098
(c) 772
(d) 880
(e) 970

Directions (13-15): In each of these questions, two equations (I) and (II) are given. You have to solve both the equations and answer the following questions.

Q13. I. $40x^2 - 83x + 42 = 0$
II. $35y^2 - 97y + 66 = 0$

- (a) $x < y$
(b) $x > y$
(c) $x \leq y$
(d) $x \geq y$
(e) $x = y$ or no relation.



Q14. I. $(x + 15)^2 = 961$
II. $(y + 4)^2 = 841$

- (a) $x < y$
(b) $x > y$
(c) $x \leq y$
(d) $x \geq y$
(e) $x = y$ or no relation.

Q15. I. $2x^2 + 17x + 36 = 0$
II. $(4y + 9)^2 + 5y^2 = 31y + 63$

- (a) $x < y$
(b) $x > y$
(c) $x \leq y$
(d) $x \geq y$
(e) $x = y$ or no relation.

Solutions

S1. Ans.(c)

Sol.

$$\text{Qualified student from school DPS} = \frac{2040}{68} \times 32 = 960$$

$$\text{Total appeared student from school DPS} = \frac{96000}{32} = 3000$$

$$\text{Total appeared student from school NPS} = \frac{3000}{32} \times 12 = 1125$$

$$\text{Total qualified student from school NPS} = 1125 \times \frac{24}{100} = 270$$

S2. Ans.(a)

Sol.

$$\text{Qualified student in school from school NV} = 120 \times 3 = 360.$$

$$\text{Total appeared student from school NV} = \frac{360}{30} \times 100 = 1200$$

$$\text{Total appeared student from school DAV} = \frac{1200}{8} \times 20 = 3000$$

$$\text{Total qualified girls from school DAV} = 3000 \times \frac{28}{100} \times \frac{2}{7} = 240$$

Required percentage

$$= \frac{240-120}{120} \times 100 = 100\%$$

S3. Ans.(d)

Sol.

$$\text{Total appeared student} = 1500 \times 5 = 7500$$

$$\therefore \text{Required average} = \frac{7500}{3} \left[\frac{20}{100} \times \frac{28}{100} \times \frac{5}{7} + \frac{28}{100} \times \frac{25}{100} \times \frac{3}{5} + \frac{8}{100} \times \frac{30}{100} \times \frac{1}{3} \right] = \frac{675}{3} = 225$$

S4. Ans.(a)

Sol.

$$\text{Appeared student in year 2018 from school DAV} = \frac{1200}{4} \times 3 = 900$$

$$\text{Total appeared student from year 2018} = 900 \times 5 = 4500$$

$$\therefore \text{qualified boys from school KV in 2018} = 4500 \times \frac{28}{100} \times \frac{1}{4} \times \frac{3}{5} = 189$$

$$\text{qualified boys from school DAV in 2019} = 189$$

$$\therefore \text{qualified girls from school DAV in 2019} = 1200 \times \frac{28}{100} - 189 = 147$$

S5. Ans.(e)

Sol.

$$\text{Qualified boys from school NV in 2018} = 9000 \times \frac{8}{100} \times \frac{30}{100} \times \frac{1}{3} = 72$$

$$\text{Qualified boys from school JP in year 2019} = 72 \times \frac{4}{3} = 96$$

$$\text{Qualified girls from school KV in 2018} = 9000 \times \frac{28}{100} \times \frac{25}{100} \times \frac{2}{5} = 252$$

$$\text{Qualified girls from school JP in 2019} = 252 \times \frac{1}{3} = 84$$

$$\therefore \text{Required ratio} = \frac{96}{84} = 8 : 7$$

S6. Ans (c)

Sol. Let Maanik borrowed Rs $100x$.

ATQ

$$\frac{100x \times 6 \times 3}{100} + \frac{100x \times 9 \times 5}{100} + \frac{100x \times 13 \times 3}{100} = 8160$$

$$18x + 45x + 39x = 8160$$

$$x = 80$$

So, required amount = $100x = \text{Rs } 8000$

S7. Ans.(a)

$$\text{Sol. Required average} = \frac{(80 \times 15) - (15 \times 16) - (15 \times 14)}{40} = \frac{610}{40} = 15.25 \text{ years}$$

S8. Ans. (d)

Sol. Let the efficiency of A & B be 'a units /day' & 'b units/day' respectively.

So, Total work = $(a+b) \times 20$ units

ATQ,

$$(a+b) \times 20 = (a+b) \times 8 + 16 \left(\frac{3a}{5} + b \right)$$

$$20a + 20b = 8a + 8b + \frac{48a}{5} + 16b$$

$$20a - 8a - \frac{48a}{5} = 8b + 16b - 20b$$

$$12a = 20b$$

$$\frac{a}{b} = \frac{5}{3}$$

$$\text{Total work} = (5+3) \times 20 = 160 \text{ units}$$

$$\text{Required Time} = \frac{160 - 8 \times 8}{3}$$

$$= \frac{160 - 64}{3}$$

$$= 32 \text{ days}$$

S9. Ans.(d)

Sol. Let the first, second, third, fourth and fifth number be 'a', 'b', 'c', 'd' & 'e' respectively.

$$\text{So, } \frac{a+b+c+d+e}{5} = 91$$

$$a + b + c + d + e = 455$$

$$\text{Now, } \frac{a+c+e}{3} = 83$$

$$a + c + e = 249$$

$$\text{So, } (b+d) = 455 - 249 = 206$$

ATQ

Since $b \leq d$, so, b can take values between 0 and 103.

So, required answer is 103.

S10. Ans.(a)

Sol. Wrong number = 38

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Patterns of series

$$4836 \div 6 - 1 = 805$$

$$805 \div 5 - 1 = 160$$

$$160 \div 4 - 1 = 39$$

$$39 \div 3 - 1 = 12$$

$$12 \div 2 - 1 = 5$$

$$5 \div 1 - 1 = 4$$

So, there should be 39 in place of 38.



S11. Ans.(d)

Sol. Wrong numbers = 2313

Pattern of series

$$30030 \div 13 = 2310$$

$$2310 \div 11 = 210$$

$$210 \div 7 = 30$$

$$30 \div 5 = 6$$

$$6 \div 3 = 2$$

$$2 \div 2 = 1$$

So, there should be 2310 in place of 2313.

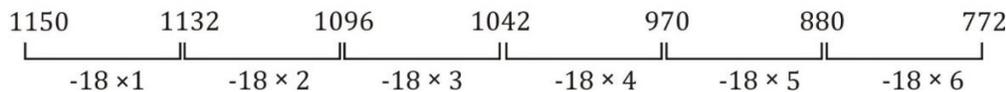
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S12. Ans.(b)

Sol. Wrong Number = 1098

Pattern of Series



So, there should be 1096 in place of 1098.

S13. Ans.(c)

Sol. I. $40x^2 - 83x + 42 = 0$

$$40x^2 - 48x - 35x + 42 = 0$$

$$8x(5x - 6) - 7(5x - 6) = 0$$

$$(5x - 6)(8x - 7) = 0$$

$$\Rightarrow x = \frac{6}{5}, \frac{7}{8}$$

II. $35y^2 - 97y + 66 = 0$

$$35y^2 - 55y - 42y + 66 = 0$$

$$5y(7y - 11) - 6(7y - 11) = 0$$

$$(7y - 11)(5y - 6) = 0$$

$$\Rightarrow y = \frac{11}{7}, \frac{6}{5}$$

So, $y \geq x$.

S14. Ans.(e)

Sol. I. $(x + 15)^2 = 961$

$$(x + 15) = \sqrt{961}$$

$$x + 15 = \pm 31$$

$$\begin{array}{l|l} x + 15 = 31 & x + 15 = -31 \\ x = 16 & x = -46 \end{array}$$

II. $(y + 4)^2 = 841$

$$y + 4 = \sqrt{841}$$

$$y + 4 = \pm 29$$

$$\begin{array}{l|l} y + 4 = 29 & y + 4 = -29 \\ y = 25 & y = -33 \end{array}$$

So, no relation can be established between x and y .

S15. Ans.(a)

Sol. I. $2x^2 + 17x + 36 = 0$

$$2x^2 + 8x + 9x + 36 = 0$$

$$2x(x + 4) + 9(x + 4) = 0$$

$$(x + 4)(2x + 9) = 0$$

$$\Rightarrow x = -4, \frac{-9}{2}$$

II. $(4y + 9)^2 + 5y^2 = 31y + 63$

$$16y^2 + 81 + 72y + 5y^2 = 31y + 63$$

$$\Rightarrow 21y^2 + 41y + 18 = 0$$

$$21y^2 + 27y + 14y + 18 = 0$$

$$3y(7y + 9) + 2(7y + 9) = 0$$

$$(7y + 9)(3y + 2) = 0$$

$$\Rightarrow y = \frac{-9}{7}, \frac{-2}{3}$$

So, $y > x$.

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