Average

Q.No	Answer
	Type I
1	Correct Option: C So, let's make equation from the given information : Average = $(\frac{66 + 74 + 55 + 92 + 79}{5}) = \frac{366}{5}$ Average = 73.2% .
	Type II
1	Correct Option: B Multiples of 7 between 8 and 55 will be; 14, 21, 28, 35, 42, 49 Average = $(\frac{\text{First term + Last term}}{2}) = \frac{14 + 49}{2}$ $\Rightarrow$ 31.5.
2	Correct Option: C Multiple of 5 are: 5, 10, 15, 20, 25. so, Average = $\frac{\text{First term + Last term}}{2} = \frac{(5 + 25)}{2} = 15.$
3	Answer: Option 'C' Let the Consecutive odd numbers are x , x +2 , x + 4 , x+ 6, x+ 8. Given , Average of five Consecutive odd numbers = 35 => Average = (x + x + 2 + x + 4 + x + 6 + x + 8)/5 = 35 => (5x + 20) / 5 = 35 => 5x + 20 = 175 => 5x = 175 - 20 => 5x = 155 => x = 31 ---> which is the first term of the given consecutive odd series. The numbers are 31, 33, 35 and 37, 39 The greatest number is 39.
4	Answer: Option ''B Solution is : Average of first 30 natural numbers = (n + 1) / 2 = (30 + 1) / 2= 31 / 2= 15.5 Average of first 30 multiples of 8 = (Average of first 30 natural numbers) * 8 = 15.5 × 8= 124. The average of first 30 multiples of 8 = 124.
5	Answer: Option 'C' Average of 34 numbers is = 0 Therefore sum of all 34 numbers = 0 It is quite possible that 33 of these numbers may be positive and if their sum is a then 34th number is (-a)
6	Correct Option: A Let the number be x. then, $\frac{x + x^2}{2} = 7x$ $x^2 + x = 14x$, $x^2 - 13x = 0$, $x[x - 13] = 0$, $x = 0, 13$. So the number is 13 .
7	Correct Option: C Let the smallest odd number be x so acc. to the que. the consecutive num are x, x + 2, x + 4, x + 6, x + 8, x + 10, x +12. So the difference is x + 12 - x = 12. Hence, option C is correct.
8	Correct Option: C To solve this question, we can apply a short trick approach $1^3 + 2^3 + 3^3 + ...n^3 = \frac{n^2(n + 1)^2}{4}$

	By the short trick approach, we get $\frac{1^3 + 2^3 + 3^3 + ... + 5^3}{4} = \frac{5^2(5+1)^2}{4} = \frac{5^2 \times 6^2}{4}$ $\Rightarrow \left(\frac{25 \times 36}{4}\right) = (25 \times 9) \Rightarrow 225.$ So, Required average = $\left(\frac{225}{5}\right) = 45.$ Hence, option C is correct.
9	A Average for 100 odd nos is 100 (1+199)/2 =100 100*100 = 10000
	Type III
1	(3) Sum of total number of 8 students in exam = 8 × 51 = 408 Sum of total number of 9 students in exam = 9 × 68 = 612 Required average=408+612 /17= 1020 /17=60
2	(1) Using Rule 10, The required average marks $= \frac{55 \times 50 + 60 \times 55 + 45 \times 60}{55 + 60 + 45}$ $= \frac{2750 + 3300 + 2700}{160}$ $= \frac{8750}{160} = 54.68$
3	Correct Option: D Since the month begins with a Saturday , So there will be five Sunday's in the month, Req. Avg. = $\frac{430 \times 5 + 270 \times 26}{31} \Rightarrow \frac{2150 + 7020}{31}$ $\Rightarrow \frac{9170}{6} = 295.80 \approx 296.$ So, the around value of visitors per day is 296.
4	Correct Option: C Reqd Avg = $\frac{18 \times 45.55 + 4 \times 35.25}{18 + 4} \Rightarrow \frac{819.9 + 141}{22}$ $\Rightarrow \frac{960.9}{22} = 43.67$ kgs Hence, option (C) is correct.
5	Correct Option: C First, we find out the normal ages of candidates: **Grandparents(2 candidates)** = 56 x 2 **Parents (2 candidates)** = 27 x 2 **Two grandchildren** = 7 x 2. The total candidates are 6. then, Average = $\frac{56 \times 2 + 27 \times 2 + 7 \times 2}{2 + 2 + 2} \Rightarrow \frac{112 + 54 + 14}{6}$

	$= \frac{180}{6}$ = 30 years
Type IV	
1	Correct Option: A Total weight of 21 boys = 64 × 21 = 1344 kg Given that if the weight of the teacher was added, the average increased by one kg ∴ Total weight along with the teacher = 65 × 22 = 1430 kg Now, teacher's weight = 1430 – 1344 = 86 Hence, option (A) is correct.
2	**Answer – C)70** Explanation : $\frac{x}{5} = 42 => 42 \times 5 = 210$ $\frac{x}{4} = 35 => 35 \times 4 = 140$ 210-140=**70**
3	Ans:= C Total weight increased = (8 x 2.5) kg = 20 kg. Weight of new person = (65 + 20) kg = 85 kg.
4	Ans:- A Total =(2*8)+(35+45)=16+80=96 Average=96/2=48
5	Correct Option: B Let the number of family members be x. Therefore, the total weight = xy Equation in the 1st scenario: (x + 1) (y + 1) = xy + 30 xy + x + y + 1 = xy + 30 x + y = 29 .....(i) Equation in the 2nd scenario: (x + 1) (y - 1) = xy + 18 xy + y - x - 1 = xy + 18 y - x = 19 ....(ii) Solving equtions (i) and (ii), we get 2y = 48, Therefore, y = 24. Hence, option B is correct.
6	Correct Option: A Total age of 12 persons = 12 × 32 = 384 years Given that if the age of one person is added, the average decreases by one year ∴ Total age of 13 persons = 13 × 31 = 403 years Now, age of new person = 403 – 384 = 19 years Hence, option (A) is correct.
7	**Answer – D)74** Explanation :50+(8*3) = 50 + 24 = 74.
8	Answer – D)76 Explanation : {(15*75)-(35+46)+(38+63)} / 15 = (1125 – 81 + 101) / 15 = 1145/15 = 76.33 = 76
9	Correct Option: C Total number of marks = 88 × 6 = 528 Now, 528 – 86 + 68 = 510 Required average = $\frac{510}{6}$ = 85. Hence, option C is correct.
10	B
11	B
12	Answer – A)75 Explanation : P+Q+R = 84*3 = 252

	P+Q+R+S = 4*80 = 320 S = 320 – 252 = 68 Q+R+S+T = 79*4 = 316 Q+R+2S+3 = 316 S =68, Q+R =177 P = 252 – 177 = 75
	Type V
1	Correct Option: C As per the given information, we get Average of 15 numbers = 7. So, total of the numbers = 15 × 7 = 105 Average of first 8 numbers = 6.5. So, total of the numbers = 8 × 6.5 = 52 Average of last 8 numbers = 9.5. So, total of the numbers = 8 × 9.5 = 76 Hence, the 8th number = (52 + 76) – 105 = 128 – 105 = 23. Hence, option C is correct.
2	Correct Option: D To solve this question we can apply a short trick approach **Value of $(\frac{n+1}{2})^{th}$ result = $(\frac{n+1}{2})$ × (b + c) – n × a** Where n is the total number of term = 7 days b is the average of first four terms = 25 c is the average of last four terms = 25.5 a is the average of whole terms = 25.2 By the short trick approach, we get Value of $(\frac{n+1}{2})^{th}$ result = $(\frac{7+1}{2})$ × (25 + 25.5) – 7 × 25.2 = $(\frac{8}{2})$ × (50.5) – 176.4 ⇒ 202 – 176.4 = 25.6 **Traditional method:** Total average of first 4 days = 4 × 25 = 100 Total average of last 4 days = 4 × 25.5 = 102 Total average of 7 days = 7 × 25.2 = 176.4 Temperature 4th day's = 100 + 102 – 176.4 = 25.6 Hence, option D is corrrect.
3	Correct Option: B As per the given information, we get Average of 12 months = 3400. So, total salary of all 12 months = 3400 × 12 = ₹ 40800 (eq. 1) Average of first 8 months = 3160. So, total salary of first 8 months = 3160 × 8 = ₹ 25280 (eq. 2) Average of last 5 months = 4120. So, total salary of first 5 months = 4120 × 5 = ₹ 20,600 (eq. 3) Person's income in the eighth month = (25280 + 20600) – 40800 = 45880 – 40800 = ₹ 5080. ***Note: In such questions, when we calculate total of two different sets (for instance, first 8 months + last 5 months), one particular value (8th month in this case) is calculated twice. On subtracting the total of eq. 1 from the total of eq. 2 and 3 we are left with the value of the month that's been calculated twice in the question.*** Hence, option B is correct
4	D
	Type VI
1	Correct Option: D Let the numbers are 2x, x, 4x, then, Total of the numbers = 3 × 56 = 168 ⇒ 2x + x + 4x = 168 ⇒ 7x = 168 ⇒ x = 24 ∴ Required difference = 4x – 2x = (4 × 24) – (2 × 24) ⇒ 96 – 48 = 48. Hence, option D is correct.

2	Answer – **D.50** **Explanation :** (a+b)/2 = 25 + (b+c/2)
3	Correct Option: D We have to determine the average weight of A, B, C, F and J. But this can't be determined as we don't know the Score of J. Hence the data is inadequate to solve the given question. Therefore, option (D) is correct.
Type VII - Average Speed	
1	**Answer:** Option **C** **Explanation:** Total time taken = $\left(\frac{160}{64} + \frac{160}{80}\right)_{\text{hrs.}} = \frac{9}{2}$ hrs. $\therefore$ Average speed = $\left(320 \times \frac{2}{9}\right)_{\text{km/hr}}$ = 71.11 km/hr.
2	Answer – **A. 24 kmph** **Explanation:** Distance between home and Bank – x km Total distance = x + x = 2x Total time taken = x/60 + (x/2)/10 + (x/2)/30 = x/12 Average speed = 2x/(x/12) = 24 kmph
3	Answer – A. 18 kmph Explanation:= 3 * 10 * 20 * 60 / (200 + 1200 + 600)= 18 kmph
Type VIII -Cricket Based Questions	
1	Correct Option: C To solve this question, we can apply short approach **Average after n innings = x – y(n – 1)** Where, x = 120; y = 5; n = 12 $\therefore$ Required average = 120 – 5(12 – 1) = 120 – 55 = 65 runs Hence, option C is correct.
2	**Answer – B (37)** **Explanation** – Let the average after 16th innings be a, then total score after 17th innings => 16a+85 = 17 (a+3) a = 85-51 = 34 Average after 17 innings = a + 3 = 34 + 3 = 37
3	(3) Let the no. of wickets taken till the last match be n. $\therefore$ Total runs at 24.85 runs per wicket = 24.85n Total runs after the current match = 24.85n + 52 Total no. of wickets after the current match = n + 5 Bowling Average after the current match $\Rightarrow \frac{24.85n + 52}{n + 5} = 24.85 - 0.85$ $\therefore \frac{24.85n + 52}{n + 5} = 24$ or 24.85n + 52 = 24n + 120 or 0.85n = 120 – 52 or $n = \frac{68}{0.85} = 80$

4	(4) Required number of wickets = *x* (let) According to question, 12.4 × *x* + 26 = (*x* + 5) (12.4 – 0.4) = (*x* + 5) × 12 Þ 12.4*x* + 26 = 12*x* + 60 Þ 12.4*x* – 12*x* = 60 – 26 Þ 0.4*x* = 34 x=34/0.4=85
Type IX-Problems on Ages	
1	Correct Option: E The total age of all family members = 30 × 14 = 420 New baby born and after 4 years the total age of all the members = 420 + 15 × 4 = 420 + 60 = 480 Reqd average = $\frac{480}{15}$ = 32 years Hence, option E is correct.
2	**Answer – B (2 years)** **Explanation** – Total age of 5 members, 3 years ago = (17 x 5) years = 85 years Total age of 5 members now = (85 + 3 x 5) years = 100 years Total age of 6 members now = (17 x 6) years = 102 years Age of the baby = (102 – 100) years = 2 years
3	(1) Sum of the present ages of A, B and C = (51 × 3 + 3 × 7) years = (153 + 21) years = 174 years Again,A = B + 3 = C + 6 B = C + 3 A + B + C = 174 Þ C + 6 + C + 3 + C = 174 Þ 3C = 174 – 9 = 165 Þ C =165/3= 55 years A = C + 6 = 55 + 6 = 61 years B = C + 3 = 55 + 3 = 58 years
Type X	
1	Answer – E**. 7344 Explanation:** Total expenditure = 459x 36 students joined then total expenditure = 459x+81 average = 459x+81/495 = x-1 x = 16 original expenditure = 16*459 = 7344
2	Answer – **E. Rs.552 Explanation:** 54*(x−1)−46*x = 42 8x = 96 x = 12 Original total expenditure: 46*x = 46*12 = Rs.552