

Average =  $\frac{\text{sum of observations}}{\text{no of observations} - n}$

Sum: Avg \* n

$$n = \frac{\text{sum}}{\text{avg}}$$

What is the average of first six natural numbers, which are multiples of 3?

- 1. 10.5 ✓
  - 2. 11
  - 3. 12
  - 4. 9.5

2  
1x3, 2x3, 3x3, 4x3, 5x3, 6x3

$$\text{Avg} = \frac{\text{avg}}{2} = \frac{3+18}{2} = \frac{21}{2} = 0.5$$

What is the average of first 15 whole numbers?

X 1. 8

$$0, 1, 2, 3, \dots, \frac{14}{2}$$

✓ 2. 7 ✓

$$0, 1, \frac{2}{2}$$

✗ 3. 9

$$\frac{1}{15}$$

X 4. 10

$$\text{Ave: } \frac{\text{add}}{2} = \frac{0+14}{2} = \frac{14}{2} = 7$$

What is the average of first 15 odd numbers among the natural numbers?

X 1. 18

✓ 2. 15 ↗

X 3. 16

X 4. 17

Avg of 1st n odd no:  $\frac{n}{2}$

$$1 \times 2 - 1 = 2 - 1 = 1$$

Q

$$15 \times 2 - 1 = 30 - 1 = 29$$

$$\frac{1+29}{2} = \frac{30}{2} = 15$$

$$50 \times 2 - 1 : 100 - 1 = 99$$

What is the average of the first 15 even numbers starting from 2?

✓ 1. 16 ✓

✗ 2. 15

✗ 3. 17

✗ 4. 14

2

142

a: 2

15

$$15 \times 2 = 30$$

$$\ell = 30$$

$$\text{avg: } \frac{2+30}{2} = \frac{32}{2} = 16$$

What is the average of first seven prime numbers (correct to two decimal places)?

1. 7.14

2. 8.76

3. 7.64

4. 8.29 ✓

$$\frac{2 + 3 + 5 + 7 + 11 + 13 + 17}{7} = \frac{58}{7} = 8.285714285714286$$

The average of all the prime and composite numbers upto 100 is:

- 1. 51 ✓
- 2. 50
- 3. 50.5
- 4. 49.5

$$\frac{2+3+4+\dots+100}{100} = \frac{102}{2} = 51$$

$$\frac{2+3+4+\dots+100}{100} = \frac{102}{2} = 51$$

What is the average of all the natural numbers from 49 to 125?

X 1. 85

✓ 2. 87

X 3. 88

X 4. 86

$$49, 50, \dots, 125$$

1 2 3  $\dots$   $n$

$$\text{Avg} = \frac{49 + 125}{2}$$
$$= \frac{174 + 126}{2}$$
$$= \frac{300}{2}$$

$$\frac{125}{2}$$

$$87\frac{1}{2}$$

What is the average of all the multiples of 6 from 20 to 80?

- 1. 51 ✓
- 2. 50
- 3. 48
- 4. 52

$$\begin{array}{r} 24, 30, 36, 78 \\ \hline 6 \quad 6 \end{array}$$

$$\text{Avg} = \frac{12 + 39}{2} = 51$$

What is the average of first 8 multiples of 6 among the natural numbers?

- 1. 24
- 2. 26
- 3. 27 ↗
- 4. 28

$$\begin{array}{l} \text{1x6} \\ \text{a = 6} \\ \text{8x6} \\ \text{l = 48} \\ \text{Avg : } \frac{6+48}{2} = \frac{54}{2} = 27 \end{array}$$

The average of 36, 28, 43, 56, 74, 65, 12 and x is 45. What is the value of x?

- 1. 48
- 2. 42
- 3. 44
- 4. 46

$$\text{Avg} = \frac{\text{Sum}}{n}$$
$$45 = \frac{36+28+43+56+74+65+12+x}{8}$$

$$45 \times 8 = 360 + x$$
$$320 - 360 = 46$$
$$\underline{\underline{360}}$$

Average of 12 numbers is 48. If each number is increased by 11, then what will be the new average?

- 1. 13
- 2. 58
- 3. 64
- 4. 59

$$\begin{array}{r} 12 \rightarrow 48 \\ \underline{+ 11} \\ 59 \end{array}$$



A D    C    P  
—           —

Total sum = (A D-sum) + (C P-sum)

The average of six observations is 15. The average of first three among them is twice the average of the last three. What is the sum of the last three observations?

~~X~~ 1. 35

~~X~~ 2. 20 6

~~X~~ 3. 25 15

✓ 4. 30 ✓ 15<sup>x6</sup>

$$\begin{array}{r} 1 \quad 2 \quad 3 \\ \hline u \quad 5 \quad 6 \end{array}$$

$$2x$$

$$2x \times 3$$

$$x$$

$$x \times 3$$

- Sum

$$3x = 3 \times 10 = 30$$

$$15 \times 6 = 2x \times 3 + x \times 3$$

$$15 \times 6 = 6x + 3x$$

$$15 \times 6 = 9x$$
$$x = \frac{15 \times 6}{9} = 10$$

Out of four numbers the average of the first three is 16 and that of the last three is 15. If the last number is 21 then the first number is:

- 1. 28
- 2. 22
- 3. 21
- 4. 24 ✓

$$\frac{A+B+C}{3} = 16$$

$$A+B+C = 48$$

$$\frac{B+C+D}{3} = 15$$

$$B+C+D = 45$$

$$\underline{\underline{A - D = 3}}$$

$$3 \times 16 = 48$$

$$3 \times 15 = 45$$

$$\underline{\underline{D - D = 3}}$$

$$A - 21 = 3$$

$$D = 3 + 21 = 24$$

The average of 50 numbers is 75. If the average of first set of 25 numbers is 65, then what is the average of the second set of 25 numbers?

~~X~~ 1. 105

~~X~~ 2. 95

✓ 3. 85 ✓

~~X~~ 4. 75

$\frac{10 \times 25}{25} = 85$

$$\begin{array}{ccc} 50 & \rightarrow & 75 \\ 25 & \rightarrow & 65 \Rightarrow -10 = 25x - 10 \\ 25 & \rightarrow & 75+x \Rightarrow x = 25 \\ & & 75+x = 75+10 = 85 \end{array}$$

$$25x = 25 \times 10$$

$$x = 10$$

The average of four numbers is 20. If the average of the first two numbers is 15, then what is the average of the last two numbers?

- 1. 22
- 2. 18
- 3. 25
- 4. 20

$$\textcircled{1} \quad \frac{4}{2 \quad 2}$$

$$u \Rightarrow \begin{array}{l} 20 \\ 15 \\ 25 \end{array} - 5 + 5$$

$$\textcircled{2} \quad 20 \times u = 2 \times 15 + 2 \times x \quad \Rightarrow$$
$$x = \frac{20 \times u - 2 \times 15}{2} \Rightarrow$$

$$\textcircled{3} \quad \frac{5 \times 2}{2}$$

$$x = 40 - 15 = 25$$

$$20+5=25$$

The average of 21 data is 36 out of which the first 12 data are having an average of 15. The average of the rest 9 data is: \_\_\_\_\_

X 1. 87

X 2. 65

✓ 3. 64 ✓

X 4. 50

$$\begin{array}{c} 21 \rightarrow 36 \\ 12 \rightarrow 15 \\ 9 \rightarrow x \end{array}$$
$$\frac{21 - 36}{9} = \frac{12}{15} = \frac{28 + 36}{9} = 64$$

$$21 \times 36 = 12 \times 15 + 9x$$

$$9x = \frac{21 \times 36 - 12 \times 15}{9} = \frac{21 \times 6 - 6 \times 5}{9} = 6(21 - 5) = 6 \times 16 = 64$$

The average age of 12 boys is 15 years and the average age of 18 girls is 12 years. What is the combined average age of the boys and girls, taken together?

X 1. 15.4

✓ 2. 13.2

X 3. 16.6

X 4. 14.8

$$\begin{array}{ccc} B & & G \\ ? : 3 & & \checkmark \\ N & & \cancel{? : 18} \\ \text{Avg} & 15 & 12 \end{array}$$

$$\begin{array}{c} \text{Sum} \quad \frac{30 + 36}{S} = \frac{66}{3} \quad 13 \cdot 2 \\ \hline S \end{array}$$

$$\text{Avg: } 12 + \frac{7 \times 3 + 3 \cancel{+ 0}}{5}$$

$$= 12 + 6 \cancel{18}^{1 \cdot 2}$$

$$= 13.2$$

Set A contains seven numbers and the average of these numbers is 41. Set B contains five numbers and the average of these numbers is 44. The overall average of both the sets is:

X 1. 42.75

✓ 2. 42.25 ✓

X 3. 41.75

X 4. 42.5

NO

Avg

A

7

u1

$$= \frac{7 \times u1 + 5 \times uu}{12}$$

B

5

uu

$$= uu + \frac{-3 \times 7}{12}$$

$$= uu - \frac{21}{12} \\ uu - 1.75 = uu - 1.75 = uu - 1.75$$

$$\text{Avg: } u1 + \frac{5 \times 3}{12} = u1 + \frac{15}{12} = u1 + 1.25 = u2.25$$

There are 96 students in a class, out of which the number of girls is 40% more than that of the boys. The average score in mathematics of the boys is 40% more than the average score of girls. If the average score in mathematics of all the students is 63, then what is the average score of the girls in mathematics?

1. 51

2. 54 ✓

3. 55

4. 57

B	G
5	7
Avg	(S)

$$40\% = \frac{2}{100} : \frac{2}{5}$$

$$5 \times 1 \Rightarrow 10.8 \times 5$$

$$5 \Rightarrow 10.8 \times 5 = 50$$

$$\text{C. Avg: } \frac{35+35}{12} = \frac{70}{12} = 63$$

$$= \frac{63}{70} \times \frac{9}{12} = \frac{54}{8} = 10.8$$

The average of 13 numbers is 42. If a 14<sup>th</sup> number is included, then the average becomes 44. What is the 14<sup>th</sup> number?

- 1. 70
- 2. 62
- 3. 66
- 4. 68

$$\begin{array}{ccc} + & \left( \begin{array}{c} 13 \\ , 14 \end{array} \right) & \rightarrow \begin{array}{c} 42 \\ 44 \end{array} \\ \nearrow & & \searrow \end{array}$$

$$\text{14th no} = 13 \times 2 + 44$$

$$= 26 + 44$$

$$= 70$$

The daily average rainfall on 5 days of a week is 30 mm. If the rainfall on 6<sup>th</sup> and 7<sup>th</sup> day are 42 mm and 25 mm respectively, then what is the average daily rainfall for the 7 days?

✓ 1. 31 ✓

✗ 2. 29.5

✗ 3. 33

✗ 4. 28.5

$$\begin{array}{c} +2 \quad (5 \rightarrow 30) + x \\ 7 \rightarrow 30+x \\ 30+1=31 \end{array}$$

$$\begin{array}{r} 42 \\ 25 \\ \hline 67 \end{array}$$

$$\begin{aligned} 67 &= 2(30+x) + 5x \\ &= 60 + 2x + 5x \end{aligned}$$

$$7x = 67 - 60$$

$$\begin{aligned} 7x &= 7 \\ x &= 1 \end{aligned}$$

Average age of 9 men is 45 years. If age of one woman is included, then the average age becomes 44 years. What is the age of the woman?

- 1. 44 years
- 2. 30 years
- 3. 40 years
- 4. 35 years ✓

$$\begin{array}{ccc} \text{+1} & \xrightarrow{\text{Age}} & 45 - 1 \\ 10 & \xrightarrow{\text{Age}} & 44 \end{array}$$

$$\begin{aligned} \text{Age of woman} &= 44 - 1 \times 9 \\ &= 44 - 9 = 35 \end{aligned}$$

The average age of a group of 20 men is 30 years. A 50 year old man leaves the group, while a woman joins the group. The average age decreases by 1 year. What is the age of the woman?

- 1. 40 years
- 2. 30 years
- 3. 35 years
- 4. 38 years

$$\begin{array}{c} \text{A} \\ 0 ( \begin{array}{c} 20 \rightarrow 30 \\ 20 \rightarrow 29 \end{array} ) - 1 \\ \text{B} \end{array}$$

$$\underline{B - A = -20}$$

$$B - 50 = -20$$

$$B = -20 + 50 = 30$$

The average weight of 18 boys in a group is 35 kg. If four new boys of weights 20 kg, 22 kg, 26 kg and 28 kg are added to the group, then what is the average weight of the newly formed group?

- 1. 34 years
- 2. 32 years
- 3. 35 years
- 4. 33 years

$$+u \quad \begin{array}{c} 18 \rightarrow 35 \\ 22 \rightarrow 35+u \end{array} ) + u$$
$$\begin{array}{r} 20 \\ 22 \\ 26 \\ 28 \\ \hline 96 \end{array}$$

$$96 = 4 \times (35+u) + 18u$$

$$96 = 140 + 4u + 18u$$

$$-140 + 96 = 22u$$

$$22u = -44$$

$$35+u$$

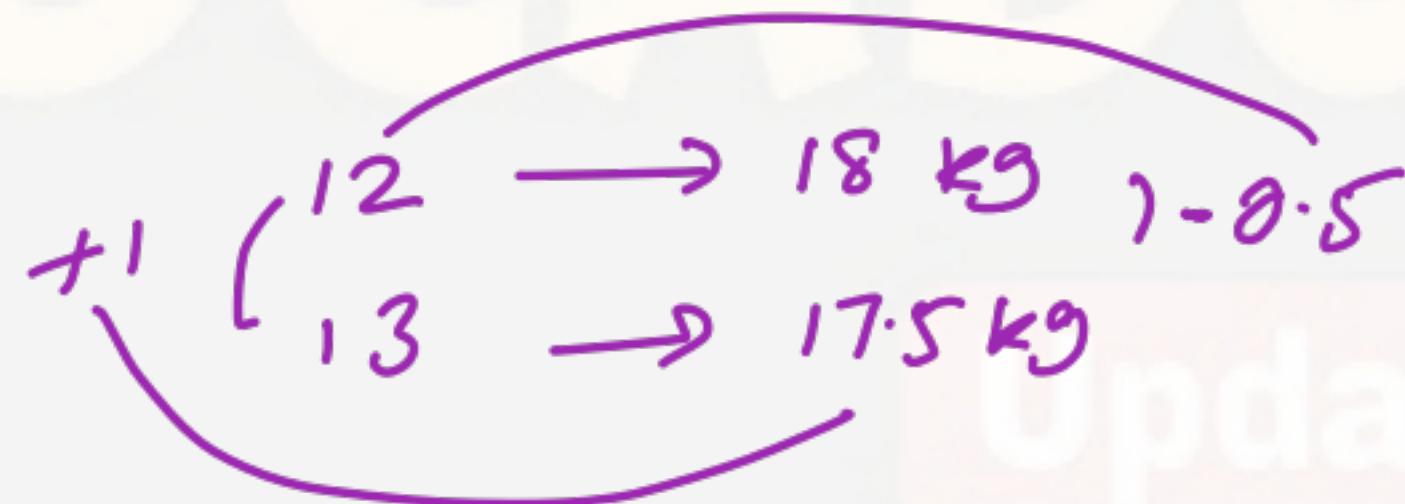
$$35-u = 33$$

$$u = \frac{-44}{22}$$

$$u = -2$$

The average weight of 12 articles is 18 kg. Addition of another new article reduces the average weight by 500g. What is the weight of the new article?

- 1. 11.5 kg
- 2. 15.0 kg
- 3. 11.0 kg
- 4. 10.1 kg



$$\begin{aligned} \text{wt of new Art} &= -12 \times 0.5 + 17.5 \\ &= -6 + 17.5 \\ &= 11.5 \end{aligned}$$

The average weight of a group of eight peoples increased by 2.5 kg when a person weighing 80 kg joined in place of one of the members of the group. The weight of the member replaced was:

- 1. 60 kg ✓
- 2. 77.5 kg
- 3. 70 kg
- 4. 62.5 kg

T  
B

$$\begin{array}{c} A \\ \times 8 \rightarrow x \\ \textcircled{B} \quad | \\ 0 \quad 8 \rightarrow x+2.5 \end{array} ) 2.5$$
$$\underline{B - A} = 8 \times 2.5 = 20$$

$$80 - A = 20$$

$$80 - 20 = A$$

$$A = 60$$

Average age of 12 students is 14 years. If the age of teacher is also included, the average becomes 15 years. What is the age of the teacher?

- 1. 23 years
- 2. 25 years
- 3. 27 years
- 4. 28 years

$$\begin{array}{ccc} +1 & \begin{matrix} 12 \\ 13 \end{matrix} & \rightarrow \begin{matrix} 14 \\ 15 \end{matrix} \end{array}$$

$$\begin{aligned} \text{Age of teacher} &= 15 + 12 \\ &= 27 \end{aligned}$$

Average of 50 numbers was calculated as 20 when three numbers, 26, 36 and 64 were wrongly read as 31, 46 and 59 respectively. What is the correct average? ↗

- 1. 26.2
- 2. 19.8
- 3. 20.2
- 4. 24.4

$$50 \rightarrow 20 \cdot 0$$
$$\begin{array}{r} -0 \cdot 2 \\ \hline 19 \cdot 8 \end{array}$$

A - 26 36 64

w → 31 46 59

$$\overline{-8 \cdot 10 + 5}$$

$$\frac{-10}{50} = \frac{-0 \cdot 2}{5}$$

$$= -0 \cdot 2$$

The average marks obtained by a student in 9 subjects is 98. On subsequent verification it was found that the marks obtained by him in a subject was wrongly copied as 86 instead of 68. The correct average of the marks obtained by him is:

- 1. 94
- 2. 95
- 3. 96 ✓
- 4. 97

$$9 \rightarrow 98$$
$$\begin{array}{r} -2 \\ \hline 96 \end{array}$$

$$A \rightarrow 68$$
$$w \rightarrow 86$$
$$\begin{array}{r} -18 \\ \hline 18 \end{array}$$
$$\frac{-18}{9} = -2$$

The average weight of 38 students is 42 kg. It was found later that the figure of 46 kg was misread as 26 kg in one of the readings. What is the correct average?

(correct to one decimal places)

✓ 1. 42.5 kg ✓

✗ 2. 45.5 kg ✗

✗ 3. 39 kg ✗

✗ 4. 44 kg ✗

38 → 42.5  
+ 0.5  
42.5

A      46  
w      26  
          20  
 $\frac{20}{38} = \frac{10}{19}$       0.5

Average of 10 numbers is 14.8. If two numbers 5 and 23 are replaced by 13 and 26 respectively, then what is the new average?

- 1. 15.9
- 2. 13.8
- 3. 16.3
- 4. 14.5

$$10 \rightarrow 14.8$$
$$\begin{array}{r} 1 \\ - \\ 14.8 \end{array}$$
$$\underline{15.9}$$

$$\begin{array}{r} 5 = 13 = 26 \\ A \\ W \\ \hline 5 \quad 23 \\ 8 + 3 = + \frac{11}{10} = 1.1 \end{array}$$

$$\text{Avg} = \frac{\text{Sum of observations}}{\text{No of obs}}$$

$$\begin{array}{r} 3. 5 \\ 7. 5 \end{array} \quad \text{NO:} \quad \begin{array}{r} 31215+6 \\ \hline 5 \end{array} : \begin{array}{r} 28.5 \\ 5 \end{array} = 5$$
$$\begin{array}{r} 5. 5 \\ 4. 5 \\ 6. 5 \\ \hline 25 \end{array} : 5$$

**Natural numbers** - 1, 2, 3, 4, ...

**Whole numbers** - 0, 1, 2, 3, 4, ...

**Prime numbers** - 2, 3, 5, 7, 11, ...  
2 factors

**Odd numbers** - 1, 3, 5, 7, 9, 11, ...

**Even numbers** - 2, 4, 6, 8, 10

**Composite numbers** - 2+ factors  
4, 6, 8, 10, 12, 15

$$\text{Sum of } 1^{\text{st}} n \text{ numbers} = \frac{n(n+1)}{2}$$

$1, 2, 3, 4, \dots, n$

$$\text{Sum of squares or } 1^{\text{st}} n^{\text{th}} \text{ numbers} = \frac{n(n+1)(2n+1)}{6}$$

$1^2, 2^2, 3^2, 4^2, \dots, n^2$

$$\text{Sum of cubes or } 1^{\text{st}} n \text{ nos} = \left[ \frac{n(n+1)}{2} \right]^2$$

$1^3, 2^3, 3^3, \dots, n^3$

$$\text{AVG} = \frac{\text{SUM}}{n}$$

Avg of consecutive

$$\underline{5, 6, 7, 8, 9}$$

nos

Avg of consecutive

$$\underline{3, 5, 7, 9, 11}$$

odd nos  
even nos

Avg of consecutive

$$\underline{\underline{6, 8, 10, 12}}$$

Avg of A.P

$$\underline{\underline{11, 15, 19, 23}}$$

when common  
↓ diff  
Avg = middle no

$$= \frac{a+d}{2}$$

a - starting no.

d - last no

4 < even - AVG 5

$$\begin{array}{r} \overline{? \ 4 \ 5 \ 6 \ 8} \\ \end{array}$$

5 odd org 7

$$\begin{array}{r} 2 \\ \hline 3 \ 5 \ 7 \ \frac{2}{9 \ 11} \end{array}$$

7 - 1.6x

$$\begin{array}{r} 3 \\ \hline x \ \frac{3}{\cdot \cdot} \end{array}$$

$$\begin{array}{r} 10 \\ \hline 5 \ \cancel{5} \ \cancel{5} \end{array}$$

The average of the first 100 positive integers is:

पहले 100 धनात्मक पूर्णांक संख्या का औसत क्या है:

(a) 100

(b) 51

(c) 50.5

(d) 49.5

$$\begin{array}{r} 1, 2, 3, 4, \dots \\ \bar{a}, \bar{b}, \bar{c}, \bar{d} \\ \hline \underline{\underline{50}} \\ ( \quad \underline{\underline{\frac{50}{2}}} \quad ) \\ 50.5 \end{array}$$

$$\frac{100}{2} = 50$$

$$\text{AVG: } \frac{a+l}{2} = \frac{1+100}{2} = \frac{101}{2} = 50.5$$

$$\text{Sum: } \frac{n(n+1)}{2} = \frac{100(100+1)}{2} = \frac{100 \cdot 101}{2} = 5050$$

The average of square of natural numbers from 1 to 71 is?

1 से 71 तक प्राकृत संख्याओं के वर्गों का औसत क्या है?

- a) 1616      b) 1716      c) 1728      d) 1692

$$\text{Sum} = \frac{n(n+1)(2n+1)}{6}$$

$$\text{Avg} = \frac{n(n+1)(2n+1)}{6 \times n} = \frac{12}{6} \times \frac{72 \times 143}{6}$$

$$= \frac{12}{3} \times \frac{143}{8} = 24 = 6$$

$$1^2, 2^2, 3^2, 4^2, \dots$$

$$\frac{1}{3} \frac{4}{5} a$$

$$\frac{a+8x}{2}$$

$$\text{Avg} = \frac{\text{Sum}}{n-71}$$

⑥

⑥

The average of odd numbers up to 100 is:

100 तक की सभी विषम संख्याओं का औसत होगा-

- (a) 50.5    (b) 50    (c) 49.5    (d) 49

$$1, 3, 5, 7, \dots, 99$$

$\overline{a}$

$\frac{1+99}{2} = \frac{100}{2} = 50$

$$\text{Avg} = \frac{a+l}{2} = \frac{1+99}{2} = \frac{100}{2} = 50$$

Average of all even numbers between 104 and 148  
is.....

104 और 148 के बीच की सभी सम संख्याओं का औसत कितना होगा? **104, 106, 108 . . .**

- (a) 128  
(c) 124  
**(d) 126**

$$\begin{array}{r} \cancel{52} \quad \cancel{74} \\ \cancel{104} + \cancel{108} \\ \hline 2 \end{array} = 126$$

$$\frac{104}{2} + \frac{148}{2}$$

$$\text{Avg: } \frac{100, '06, '08 + 100, '08}{2} = 100, '07, '08$$

$$= \frac{196}{252} = 126$$

The average of all odd numbers from 113 to 159  
is... ↑      ↓

113 से 159 तक की सभी विषम संख्याओं का  
औसत ..... है-

- (a) 135
- (b) 134
- (c) 133
- (d) 136 —

$$\text{AVG: } \frac{113+159}{2} = \frac{272}{2} = 136$$

What is the average of all numbers between 100  
and 200 which are divisible by 13?

- (a) 147.5      (b) 145.5  
(c) 143.5      (d) 149.5

100 101 102 103 (nu)  
104

$$a = \frac{104}{13}, \quad b = \frac{117}{13}, \quad c = \frac{195}{13}$$

$$\text{AVG} = \frac{100 + 195}{2} = \frac{299}{2}$$

$$\begin{array}{r} 1 \\ + 1 \\ \hline 2 \end{array}$$
  
$$\begin{array}{r} 2 \\ + 2 \\ \hline 4 \end{array}$$
  
$$\begin{array}{r} 3 \\ + 2 \\ \hline 5 \end{array}$$

Avg

$$2+2=4$$

Avg = 0

$$x, y, z$$

$$\begin{array}{r} x \\ b \end{array}$$
  
$$\begin{array}{r} x \\ b \end{array}$$
  
$$\begin{array}{r} x \\ b \end{array}$$

Avg:  $\frac{a+b+c}{3}$

$$T - x \div \text{Avg}$$

The average of 126 numbers is 951. If each number is multiplied by 0.2 and added to 3.6, the average of the new set of numbers is:

- (a) 193.8    (b) 28.8  
(c) 479.1    (d) CND

$$\frac{\overline{x}}{0.2} \quad \frac{\overline{x}}{0.2} + \frac{\overline{x}}{0.2} \quad \frac{\overline{x}}{0.2}$$

$$126 \rightarrow 95' \\ \times 0.2 \\ \hline 190.2 \\ + 3.6 \\ \hline 193.8$$

Average of 11 numbers is 32. If the average of first six numbers is 26 and the average of last six numbers is 36 then what is the value of the sixth number?

✓ 1. 20 ✓

✗ 2. 26

✗ 3. 32

✗ 4. 30

$$6 = 26 \Rightarrow 6 \times 6 = 36$$
$$6 = 36 \Rightarrow 6 \times 6 = 36$$

$$11 \rightarrow 32$$

---

$$\underline{20}$$

Numbers of boys and girls in a class are 'x' and 'y' respectively. Average Age of girls and boys are 'a' years and 'b' years respectively. The average age (in years) of all boys and girls is

- (a)  $\frac{x+y}{bx+ay}$     (b)  $\frac{bx+ay}{x+y}$     (c)  $\frac{ax+by}{x+y}$     (d)  $\frac{x+y}{ax+by}$

The average of a few numbers is 48. If 75% of the numbers are increased by 4 each and the rest are decreased by 6 each, then what is the average of the numbers, so obtained?

1. 50.4

2. 49

3. 49.5 ✓

4. 50

$$x - \cancel{2} \quad 48 \\ + 1 \cdot 5 \\ \hline 49.5$$

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

$$\frac{3 \cdot u + (1 \cdot 5)}{u} = \frac{12 - 6}{u} = \frac{6}{u} = 1.5$$

$$\begin{array}{r}
 1 \quad 2 \quad 3 \quad 4 \quad 5 \\
 + \quad + \quad + \quad - \quad - \\
 \hline
 2 \quad 2 \quad 2 \quad -2 \quad -2
 \end{array}$$

Avg = 3

) + 0.4

$$\frac{3 \times 2 + 2 \times -2}{5} = \frac{6 - 4}{5} = \frac{2}{5} = 0.4$$

= 0.4

3.4

The average of the 9 consecutive positive integers is 63. The product of the largest and smallest integer is *odd -* *a -*

9 लगातार धनात्मक पूर्णाकों का औसत 63 है। सबसे

बड़े एवं सबसे छोटे पूर्णांक का गुणनफल ज्ञात करें।

- (a) 3935      (b) 3953  
(c) 3853      (d) 3845

$$\begin{array}{r} & \overset{5}{\overbrace{\phantom{0000}}} \\ \underline{59} & 60 \underline{\phantom{0}} \overset{6}{\overbrace{61 \phantom{0}}} \overset{6}{\overbrace{62 \phantom{0}}} . \overset{6}{\overbrace{63 \phantom{0}}} \overset{6}{\overbrace{\underline{64 \phantom{0}} \underline{65 \phantom{0}} \underline{66 \phantom{0}}}} 6 \end{array}$$

$Cx_1 = v$

$$c x' = c$$

65-6:59 - 63X4 : 67  
547167

The average of 37 consecutive numbers is 54. The largest of these numbers is: odd =

37 लगातार संख्याओं का औसत 54 है। इन संख्याओं में सबसे बड़ा संख्या क्या है?

- (a) 74      (b) 73      (c) 72      (d) 71

$$\begin{array}{r} 18 \\ \hline 54 \ 55 \ 56 \end{array}$$

$$18 \times : \overset{54}{18} \quad \boxed{36}$$

$$18 \times : \overset{1}{18} \quad \frac{54}{72}$$

$$37 - 1 = \frac{36}{2} 18$$

The average of four consecutive even numbers P, Q, R and S respectively (in increasing order) is 51.

What is the product of P and S?

चार लगातार सम संख्याओं क्रमशः P, Q, R और S

(बढ़ते क्रम में) का औसत 51 है। P और S का गुणनफल क्या है?

- (a) 2592      (b) 2400  
(c) 2600      (d) 2808

Q - even  
 $\frac{2}{51} \frac{2}{}$   
48    50    52    54  
P    Q    R    S

48 × 54  
②

The average of 41 consecutive odd numbers is 49.

## What is the largest number?

41क्रमागत विषम संख्याओं का औसत 49 है। सबसे

## बड़ी संख्या क्या है?



$$2^0 \xrightarrow{49+00} 20\times 2$$

$$\textcircled{U_1} - \text{odd } U_{1-1} = \frac{00}{2} : 20$$

20                  20

69 51 53  
— —  
2 2

Total No.: 20

$$\text{Common Diff} = \frac{2}{40}$$

The average of 44 consecutive odd numbers is 144. What is the largest number?

44 क्रमागत विषम संख्याओं का औसत 144 है। सबसे  - even  
बड़ी संख्या कौन-सी है? 22 22



A hand-drawn diagram showing two parallel horizontal lines. The top line has the number '22' at both ends. The bottom line has the numbers 'u3', 'u4', 'u5', '23', and '21' from left to right. Arrows point from '22' on the top line to 'u3' and 'u5' on the bottom line, and from '22' on the top line to '23' on the bottom line.

Total No's = 21

$$\text{diff} := \frac{\frac{x^2}{42}}{\frac{45}{187}}$$

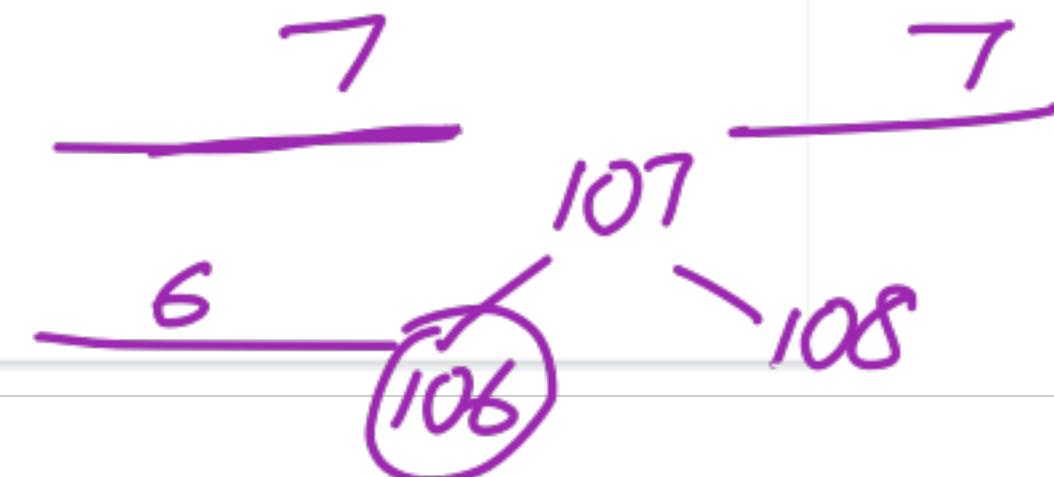
If average of 14 consecutive even numbers is 107.

Then, find the smallest number?

यदि 14 लगातार सम संख्याओं का औसत 107 है तो

सबसे छोटी संख्या ज्ञात करें?

- a) 93
- b) 94
- c) 92
- d) 89



$$6 \times 2 = 12$$

$$106 - 12 = 94$$

If average of 38 consecutive even numbers is 167,  
then find the sum of smallest and largest  
number?

यदि 38 लगातार सम संख्याओं का औसत 167 है। तो  
सबसे छोटी और सबसे बड़ी संख्या का योग ज्ञात  
कीजिए?

- 
- a) 167      b) 334      c) 332      d) 336
- 

$$\frac{a+l}{2} = \text{Avg}$$

$$a+l = 167 \times 2 = 334$$

The sum of seven consecutive even numbers of a set is 532. What is the average of first four consecutive even numbers of the same set?

एक समूह की सात लगातार सम संख्याओं का योग 532 है। इसी समूह की पहली चार सम संख्याओं का औसत क्या है ?

- (a) 76      (b) 75      (c) 74      (d) 73

$$N = 7 \quad \text{Sum: } 532$$

$$\text{Avg: } \frac{\text{Sum}}{n} = \frac{532}{7}$$

$$\begin{array}{r} 70 \ 72 \ \cancel{74} \ 76 \ \cancel{78} \\ \hline 73 \end{array}$$

$$76 \\ 8 \times 2 = 16$$

$$\begin{array}{r} 70 \quad + \quad 76 \\ \hline 2 \end{array}$$

If average of 29 consecutive even numbers is 446.  
then find difference between first and last  
number?

यदि 29 लगातार सम संख्याओं का औसत 446 है, तो  
पहली और अंतिम संख्या के बीच अंतर ज्ञात कीजिए?

- a) 58      c) 56      c) 60      d) 62

$$\frac{28}{2} = 14$$

$$16 \times 2 = \underline{28}$$

$$(29 - 1) \times 2 = 28 \times 2 = 56$$

$$\begin{array}{r} \underline{14} \\ 446 \\ \hline 474 \end{array}$$

$$\begin{array}{r} 446 \\ -28 \\ \hline 418 \end{array} \quad \begin{array}{r} 28 \\ \hline 474 \end{array}$$

If  $a, b, c, d, e$  are five consecutive odd numbers,  
their average is

यदि  $a, b, c, d, e$  पाँच क्रमिक विषम संख्याएँ हैं, तो

उनका औसत कितना होगा?

(a)  $5(a + 4)$

(c)  $5(a + b + c + d + e)$

(b)  ~~$\frac{abcde}{5}$~~

(d)  $a + 4$

C

$a+2 \quad a+4$

$a \quad b \quad c \quad d \quad e$   
 $\underline{2} \quad \underline{2} \quad \underline{2}$

The average of 7 consecutive natural numbers is K. The next three natural numbers are also included, how much more than K will the average of these 10 numbers be?

- (a) 1
- (b) 1.5
- (c) 2
- (d) 2.5

$$\frac{3}{2} : 1.5$$
$$K + 1.5$$

$$9 \rightarrow 1512$$
$$\therefore 4$$
$$\textcircled{7}$$

$$4\frac{1}{2} : 1$$
$$10\frac{1}{2} : 5$$
$$\left. \begin{array}{r} 100 \\ 101 \\ \hline 205 \\ 5 \\ \hline 200 \end{array} \right\}$$

. The average of 27 numbers is zero.  
Out of them, how many may be greater  
than zero. at the most?

- (a) 0  
(c) 26

- (b) 15  
(d) 20

$$27 - 1 = 26$$

$$\begin{array}{r} & 1 & 2 & 3 \\ 5000 + 1000 & - 12000 & : 0 \end{array}$$

$$\begin{array}{r} 1000 \\ 999 \\ + 1 \\ \hline = - \end{array}$$

. The average of 1088 real numbers is zero. At most how many of them can be negative?

1088 वास्तविक संख्याओं का औसत शून्य है। उनमें से अधिकतम कितनी नकारात्मक हो सकती है?

- A) 100
- B) 88
- C) 544
- D) 1087

— 100 . . +

If the average of 13 distinct integers is 58.  
Maximum how much numbers can be greater than 58?

यदि 13 अलग अलग पूर्णांको का औसत 58 है तो उनमें से अधिकतम कितनी संख्याएँ 58 से ज्यादा हो सकती हैं?

- a) 8
- b) 10
- c) 11
- d) 12

$$13 \times 58$$

$$12 \times \underline{59}$$

(13)

Out of four numbers the average of the first three is 26 and that of the last three is 24.5. If the last number is 19, then find first number?

a) 24.5      b) ~~23.5~~

c) 25      d) 25.5

A B C D'

Sum of 1<sup>st</sup> 3 no =  $3 \times 26$

$$A - D = 3 \times 1.5 = 4.5$$

$$\text{... " (arr 3" } = 3 \times 24.5$$

$$A = 4.5 + 19 = 23.5$$

$$\begin{aligned} A - D &= 3 \times 26 - 3 \times 24.5 \\ &= 3(26 - 24.5) \end{aligned}$$

The average weight of L, M and N is 93 kg. If the average weight of L and M be 89 kg and that of M and N be 96.5 kg, then the weight (in kg) of M is.....

- (a) 92
- (b) 86
- (c) 101
- (d) 95

$$\begin{array}{r} \overline{3} \\ \overline{\cancel{2}0\cancel{2}} \\ 2 \rightarrow 89 \Rightarrow -1 \times 2 = -8 \\ 2 \rightarrow 96.5 \Rightarrow 3.5 \times 2 = 7 \\ 3 \longrightarrow \frac{93}{92} \end{array}$$

Out of 90 students in a class, 60% are girls and rest are boys. The average score in English of boys is 30% more than that of girls. If the average score in English of all the students is 56, then what is the same for the girls?

- A 48
- B 62
- C 50 ✓

~~N0 2 3~~

~~AVS  $\frac{13}{10-R}$~~

~~sum  $\frac{26+30}{5} = \frac{56}{R} R = 56$~~

$\cdot R = 5$

$10y^1 \Rightarrow 5y10$

$10R = 50$

$60\% = \frac{60}{100} = \frac{3}{5}$

$30\% = \frac{30}{100} = \frac{3}{10} = 3/10 - 3$

In a class of 40 students, 45% are girls and the remaining are boys. If the average of the girls' marks is 54 and that of the boys is 46, what is the average of the whole class?

- (a) 49.8
- (b) 49.7
- (c) 49.6
- (d) 49.5

$$45\% = \frac{45}{100} = \frac{9}{20}$$

	B	G
NO	"	a
Avg	ub	su
	<hr/>	

$$= ub + \frac{axg}{20} = ub + \frac{ub}{20} \cdot 3.6 = ub + 3.6 \\ = ua.6$$

In a class of 60 students, 40% are girls. The average weight of the whole class is 59.2kg and the average weight of the girls is 55kg. What is the average weight of the boys?

- (a) 63 kg
- (b) 60 kg
- (c) 61 kg
- (d) 62 kg

	B	G
NO	3	2
Avg	x	55

$$\frac{3x}{5} = 37.2 \quad \text{Avg SHTA} = \frac{3x + 110}{5} = 59.2$$

$$x = \frac{372}{3} \times 5 = 62.0 \\ = 62$$

$$\frac{3x}{5} + \frac{110}{5} = 59.2$$

$$\frac{3x}{5} = 59.2 - 22$$

$$40\% = \frac{40}{100} = \frac{2}{5}$$

The number of students in a class is 75, out of which  $33\frac{1}{3}\%$  are boys and the rest are girls. The average score in mathematics of the boys is  $66\frac{2}{3}\%$  more than that of the girls. If the average score of all the students is 66, then the average score of the girls is:

- (a) 58
- (b) 55
- (c) 52
- (d) 54 ✓

$$33\frac{1}{3}\% = \frac{1}{3}$$

$$66\frac{2}{3}\% = \frac{2}{3}$$

$$\begin{matrix} B & G \\ 1 & 2 \end{matrix}$$

AB

$$\frac{5}{3} = \frac{1+R}{3} R = 6$$

$$R = 3 \times 6$$

$$3R = 3 \times 6 \times 3 = 54$$

The average score of 42 students in a test is 69. The ratio of the number of boys to that of girls is 10 : 11. The average score of the boys is 20% more than that of the girls. The average score of the boys is:

- (a) 73.5
- (b) 75.2
- (c) 82.8
- (d) 75.6

$$\text{NO} \quad \begin{matrix} B & G \\ 10 & 11 \end{matrix}$$

$$\text{Avg} \quad \frac{65}{60+55}$$

$$R = \frac{115}{21} R = 69 = 18 \times 0.2$$

75.6

$$20\% = \frac{20}{100} = \frac{1}{5} = 15$$

$$GR = \frac{3}{4} \times \frac{115}{45} \times 6 = 8$$

$$\frac{1.8}{336} = 0.0054$$

The average age of all the students of a class is 22 years. The average age of boys of the class is 24 years and that of the girls is 20 years. If the number of girls in the class is 30, then find the number of students in the class.

$$\begin{array}{ccc} \text{B} & & \text{G} \\ \text{AVG} & \underline{24} & \underline{20} \\ & \swarrow & \searrow \\ \text{NO} & 2 : 2 & \\ & \quad | : 1 - 80 & \\ & 30 & \end{array}$$

$$30 + 30 = 60$$

The mean weight of a class of 35 students is 45 kg. If the weight of the teacher be included, the mean weight increases by 500 g. Find the weight of the teacher.

- 1. 63 kg
- 2. 64 kg
- 3. 60 kg
- 4. 75 kg

+1 ( 35 → 45  $\rightarrow$  45.5 )  
36  $\rightarrow$  45.5

$$\text{wt of teacher} = 45.5 + \frac{35 \times 0.5}{36}$$
$$= 45.5 + 17.5$$
$$= 63.0$$

The average age of 24 boys and the teacher is 15 years. When the teacher's age is excluded, the average decreases by 1. What is the age of the teacher ?

$$\begin{array}{c} -1(25 \rightarrow 15) -1 \\ 20 \rightarrow 14 \end{array}$$

$$= -25 - 14 = -39$$

Age of the teacher = 39

The mean of five numbers is 28. If one of the numbers is excluded, the mean gets reduced by 2. Find the excluded number.

$$\begin{aligned} -1 \left( \begin{array}{c} 5 \rightarrow 28 \\ 4 \rightarrow 26 \end{array} \right) - 2 \\ = -26 - 10 \\ = -36 \end{aligned}$$

$\textcircled{36}^{\text{✓}}$

The average weight of 8 members in a family increases by 2.5 kg when a new member comes in place of one of them weighing 40 kg. Find the weight of new member.

$$\begin{array}{ccc} 40 \text{ kg} - A & \xrightarrow{\text{of } 8} & x \\ B & \xrightarrow{\text{of } 8} & x + 2.5 \end{array}$$

$$B - A = 20$$

$$B - 40 = 20$$

$$B = 20 + 40 = 60 \text{ kg}$$

The average weight of 10 members in a family decreases by 2.5 kg when a new member comes in place of one of them weighing 70 kg. Find the weight of new member.

$$\begin{array}{c} 70 - A \\ \text{is } 0 \text{ of } 10 \end{array} \quad \begin{array}{l} \xrightarrow{\hspace{1cm}} x \\ \xrightarrow{\hspace{1cm}} x - 2.5 \end{array} \quad ) - 2.5$$

$$B - A = -25$$

$$B - 70 = -25$$

$$B = -25 + 70 = 45 \text{ kg} \rightarrow$$

Average weight of m boys is 43 kg if the weight of their teacher who weighs 63 kg is also included then average becomes 45 kg. Find the value of m.

$$\begin{array}{ccc} +1 & \left( \begin{array}{c} m \\ mt+1 \end{array} \right) & \rightarrow \begin{array}{c} 43 \\ 45 \end{array} \end{array}$$

$$63 = 2m + 45$$

$$2m = 63 - 45$$

$$m = \frac{18}{2} \text{ or } m = 9 \checkmark$$

The average age of 8 men is increased by 2 years when two of them whose ages 21 and 23 years replaced by two new men. The average age of the two new men is :

A	8 →	$x$	$x+2$	21 23 44
B	8 →	$2x+2$		
a,b			$B -$	

$$B - A = 16$$

$$B - 44 = 16$$

$$B = 60$$

$$a+b=60$$

$$\frac{a+b}{2} = \frac{60}{2} = 30 \rightarrow$$

The average of  $n$  numbers is 58. If each of 65% of the numbers is increased by 16 and each of the remaining numbers is decreased by 9, then the new average of the numbers:

- (a) 67.125  
(c) 65.25

- (b) 64.75  
(d) 66.5

$$65\% = \frac{65}{100} = \frac{13}{20}$$

$$\begin{array}{r} n \rightarrow 58 \\ + 7.25 \\ \hline \cancel{65.25} \end{array}$$

$$\begin{array}{c} 20-n \\ / \quad \backslash \\ 13 \quad 7 \\ \hline \frac{13 \times 16 + 7 \times -9}{20} = \frac{208 - 63}{20} = \frac{\frac{29}{4} - 1.75}{4} = + 7.25 \end{array}$$

The average marks of 40 students was found to be 68. If the marks of two students were incorrectly entered as 48 and 64 instead of 84 and 46 respectively, then what is the correct average?

- (a) 68.15
- (b) 68.25
- (c) 68.35
- (d) 68.45

$$\frac{40}{40} \rightarrow \frac{68}{\cancel{84}} \frac{\cancel{64}}{18}$$

- (b) 68.25
- (d) 68.45

$$\begin{array}{r} \text{Actual} & 84 & 46 \\ \text{Wrong} & 48 & 64 \\ \hline & 36 & -18 \end{array}$$

$$\frac{18}{20} = \frac{9}{10} = \frac{36-18}{20+0.45} = 0.45$$

The average marks of 50 students in an examination was 65. It was later found that the marks of one student had been wrongly entered as 83 instead of 38. The correct average is?

- (a) 63.9      (b) 64.5  
(c) 64.7      (d) 64.1

$$\begin{array}{r} 50 \rightarrow 65 \\ -0.9 \\ \hline 64.1 \end{array}$$

$$\begin{array}{r} A \rightarrow 38 \\ w \rightarrow \underline{83} \\ -45 \\ \hline 45 \end{array}$$

$$\begin{array}{r} -0.9 \\ \hline 50 \\ \hline 10 \end{array} = -0.9$$

Average marks of 40 students is 72. Three numbers 64, 62 & 84 were mistakenly read as 68, 65, 73 respectively. Find the actual average.

$$\text{C.O} \rightarrow 72 + 0.1 \\ = 72.1$$

$$A \rightarrow 64 \quad 62 \quad 84 \\ w \rightarrow 68 \quad 65 \quad 73 \\ \hline -4 -3 + 11 = 10$$

$$\frac{1}{40} : 0.1$$

A batsman scores 92 runs in his 15<sup>th</sup> innings, which increases his batting average by 4. What will be his batting average after the 15<sup>th</sup> innings?

- (a) 32
- (c) 40

- (b) 36
- (d) 35

$$\begin{array}{ccc} 11 & \xrightarrow{x+u} & x \\ 15 & \xrightarrow{} & x+u \end{array}$$

$32+u = 36$

new score:  $11x + u + x + u$

$$a_2 = 56 + u + u$$

$$u + 60 = 92$$

$$x = a_2 - 60 = 32$$

The average run of a batsman in his 23 matches is 62. He scores 122 in his 24<sup>th</sup> match. Find his new average.

- a) 64.5
- b) 63
- c) 62.5
- d) 65

$$\begin{array}{c} \text{+1} \\ 23 \xrightarrow{\quad} 62 \\ - 24 \xrightarrow{\quad} 62+x \\ \hline 62+2.5 = 64.5 \end{array}$$

$$23x + 62x = 122$$

$$24x = 122 - 62 = 60$$

$$x = \frac{30}{24} \text{ vs } 5$$

$$= \frac{60}{24} = \frac{2.5}{1} = 2.5$$

The average weight of 8 persons is increased by 2.5 kg when one of them who weights 56 kg is replaced by a new man. Find the weight of new man.

- a) 73 kg
- b) 76 kg
- c) 86 kg
- d) 82 kg

A, <sup>56 kg</sup> 8 →  $x$  )<sub>+2.5</sub>  
B 8 →  $x+2.5$

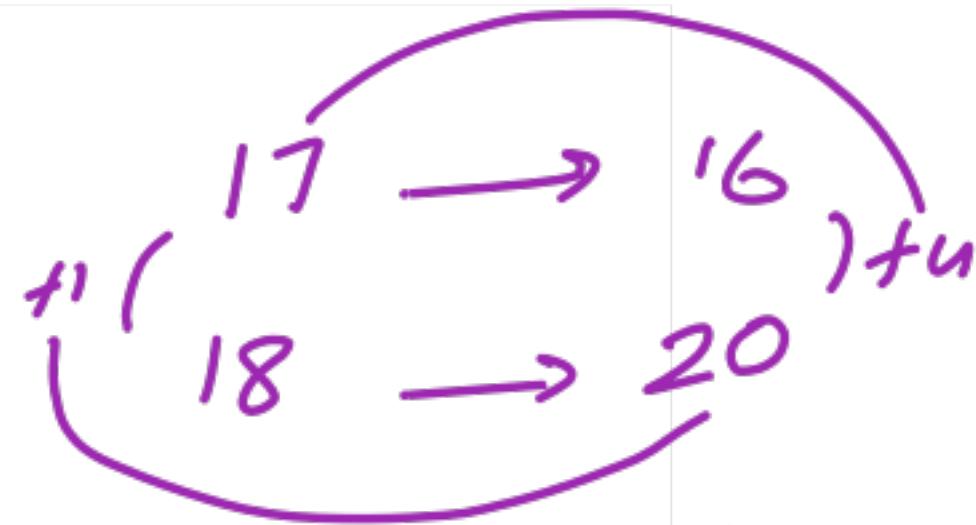
$$B - A = 20$$

$$B - 56 = 20$$

$$B = 20 + 56 = 76 \text{ kg}$$

Average age of 17 student of a class is 16 years. If a new student join the class then average age becomes 20.  
Then find the age of new student.

एक कक्षा में 17 विद्यार्थीयों की औसत आयु 16 साल है और अगर एक विद्यार्थी और आ जाये तो औसत आयु 20 साल हो जाती है।  
तो नये विद्यार्थी की आयु कितनी है?



$$\text{Age of new stud} = 20 + 17 \times 4$$

$$= 20 + 68$$

$$= 88$$

There is some average of 11 innings of a batsman. He scores 80 runs in 12th innings then average is decreased by 6 runs. Find his current average.

$$+1 \left( \begin{array}{l} 11 \rightarrow x \\ 12 \rightarrow x-6 \end{array} \right) -6$$

$$80 = 11x - 6 + x - 6$$

$$80 = -66 + x - 6$$

$$x - 72 = 80$$

$$x = 80 + 72 = 152$$

$$\begin{aligned} x - 6 &= 152 - 6 \\ &= 146 \uparrow \end{aligned}$$

**There is some average of 11 innings of a batsman. He scores 90 runs in 12th innings then average is decreased by 5 runs. Find his current average.**

एक बल्लेबाज की 11 पारियों का कुछ औसत है 12वीं पारी में उसने 90 रन बनाये और उसका औसत 5 घट गया तो अब उसका औसत कितना है?

$$+1 \quad ( \begin{array}{c} 11 \rightarrow x \\ 12 \rightarrow x-5 \end{array} ) - 5$$

$$11x - 5 + x - 5 = 90$$

$$-55 + x - 5 = 90$$

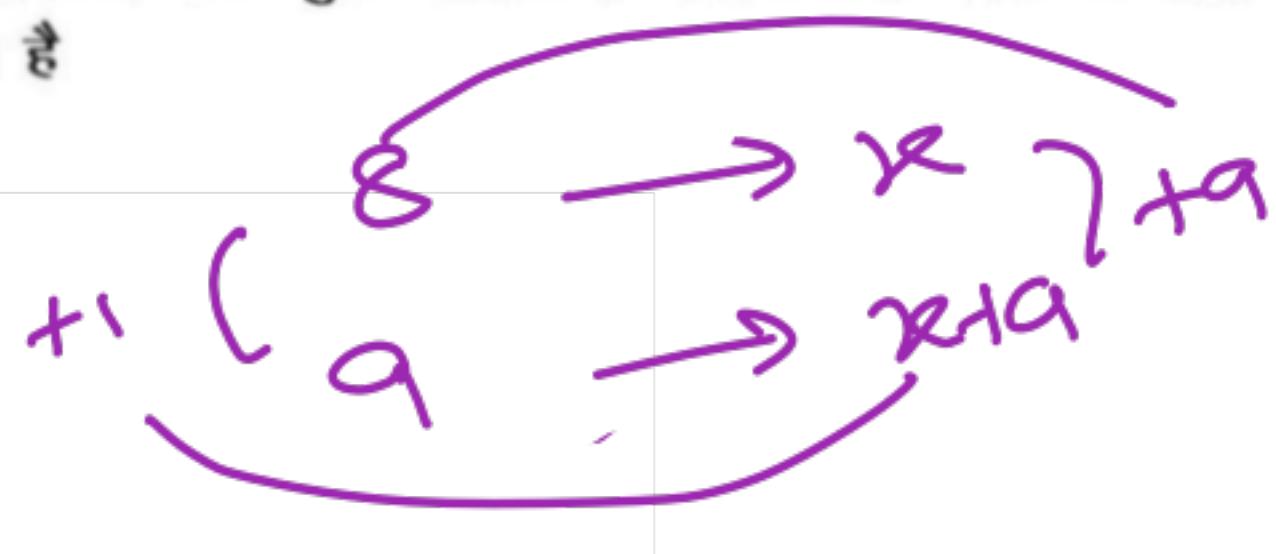
$$x - 60 = 90$$

$$x = 150$$

$$\begin{aligned} x - 5 &= 150 - 5 \\ &= 145 \checkmark \end{aligned}$$

There is some average of 8 innings of a batsman. He scores 100 runs in 9th inntings then average is increased by 9 runs. Find his current average.

एक बल्लेबाज की 8 पारियों का कुछ औसत है उसने 9वीं पारी में 100 रन बनाये तो औसत 9 बढ़ गया तो अब उसका औसत कितना है



$$72 + x \times 9 = 100$$

$$x = 100 - 72 = 28$$

$$x \times 9 = 28 \times 9 = 252$$

The average temperature from Monday, Tuesday, Wednesday is  $38^{\circ}\text{C}$ . While the average temperature of Tuesday, Wednesday, Thursday is  $43^{\circ}\text{C}$ . If the average temperature of Monday and Thursday is  $18.5^{\circ}\text{C}$ . Find the temperature of Monday.

$$M + T + W = 38 \quad (1)$$

$$T + M + W = 43 \quad (2)$$

$$\frac{M+T}{2} = 18.5$$

$$M+T = 37 \quad (3)$$

$$T - M = 15$$

$$T + M = 37$$

$$M = \frac{37 - 15}{2} = \frac{22}{2} = 11$$

$$T = \frac{37 + 15}{2} =$$

$$M = 11^{\circ}\text{C}$$

Batting Avg =  $\frac{\text{Total Runs -}}{\text{no of inn's -}}$

$\frac{12}{13} \rightarrow \text{Avg}$   
 $\uparrow$   
 $\rightarrow "$

Bowling Avg =  $\frac{\text{Total Runs -}}{\text{no of wickets -}}$

The bowling average of a bowler is 12.4. He took 5 wickets for 26 runs in his last match then his average improves by 0.4. Find the number of wickets before last match.

एक गेदबाज का बालिंग औसत 12.4 है। अंतिम मैच में ये खिलाड़ी 26 रन देकर 5 विकेट लेता है। और उसकी बालिंग औसत में 0.4 का सुधर हो जाता है। तो अंतिम मैच से पहले उसने कितने विकेट लिये थे

Wickets	AVG
$x$	$12.4$
$x+5$	$12$

$+5$

$$x = \frac{34}{0.4} \times 10.5$$

$$x = 17.25 = 85 \checkmark$$

$$-0.4x + 60 = 26$$

$$0.4x = 60 - 26$$

$$0.4x = 34$$

The bowling average of a bowler is 12.4. He took 5 wickets for 26 runs in his last match then his average improves by 0.2. Find the number of wickets before last match.

एक गेदबाज का बालिंग औसत 12.4 है। अंतिम मैच में ये खिलाड़ी 26 रन देकर 5 विकेट लेता है। और उसकी बालिंग औसत में 0.2 का सुधर हो जाता है। तो अंतिम मैच से पहले उसने कितने विकेट लिये थे

$$\begin{array}{c}
 \text{Diagram showing the relationship between averages:} \\
 \begin{array}{ccc}
 & \xrightarrow{x} & 12.4 \\
 +5 & \nearrow & \downarrow -0.2 \\
 x+5 & \xrightarrow{} & 12.2
 \end{array}
 \end{array}$$

$$-\ 0.2x + 61 = 26$$

$$0.2x = 61 - 26$$

$$= 35$$

$$\begin{aligned}
 x &= \frac{35}{0.2} \times 10^5 \\
 x &= 175
 \end{aligned}$$

A bowler whose bowling average is 24.85 runs per wicket, takes 5 wickets for 52 runs in next inning and thereby decreases his average by 0.85. Find the number of wickets before last match.

$$+5 \quad (x \rightarrow 24.85, ) - 0.85 \\ 2x + 5 \rightarrow 24$$

$$120 - 0.85 x = 52$$

$$0.85 x = 120 - 52$$

$$x = \frac{68}{0.85} \times \frac{100}{20} = 80$$

Average of 13 number is 82. Average of first 7 number is 81. Average of last 7 number is 84. Find 7th number.

$$\begin{aligned} \overline{7} &\Rightarrow 81 \Rightarrow -1 \times 7 = -7 \\ \overline{7} &\Rightarrow 84 \Rightarrow 2 \times 7 = 14 \\ 13 \Rightarrow & 82 = \frac{82}{89} \text{ } 7^{\text{th}} \text{ no} \end{aligned}$$

Average of 17 number is 163. Average of first 9 number is 164. Average of last 9 number is 161. Find 9th number.

$$9 = 164 = +1 \times 9 = 9$$

$$9 = 161 = -2 \times 9 = -18$$

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$$\frac{163}{154} \swarrow 9^{\text{th}} \text{ no}$$