GATE
ALL BRANCHES

General Aptitude
QUANTITATIVE APTITUDE

Lecture No.- 04

By- Amulya Ratan Sir

PW

Recap of Previous Lecture

Topic Averages

Topics to be Covered

Topic-1 Percentages

Average of Even & Odd

$$\frac{\boxed{n+1}}{2} \in N$$

Starting

E
$(n+1)$

O
n

$$5 \in 1, 3, \boxed{5}, 7, 9$$

$$3 \in 1, \boxed{3}, 5$$

S
$2, 4, \boxed{6}, 8, 10 \Rightarrow 6$

$$9 \in 2, 4, 6, \boxed{8, 10}, 12, 14, 16$$

8

Sum of Even & Odd

$$A = \frac{Sum}{No.}$$

$$\boxed{A \times No. = Sum}$$

$$\left(\boxed{n+1}\right) \times n = \boxed{n(n+1)} \rightarrow Sum\ of\ Even\ no$$

$$n \times n = \boxed{n^2} \rightarrow Sum\ of\ odd\ no.$$

#Q.   What is the average of first five multiples of 12?

A   42

B   40

C   36

D   48

12   24   36   48   60

36

#Q. A class with 20 students has the average age as 14 years. When the teacher is included in the group, the average becomes 16 years. What would be the age of that teacher?
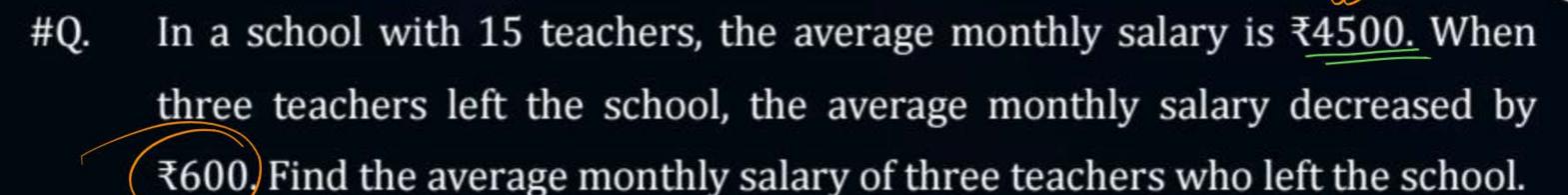
Logically

$$14 + 42 = 56$$

$$A = \frac{Sum}{No.}$$

$$A \times No. = Sum$$
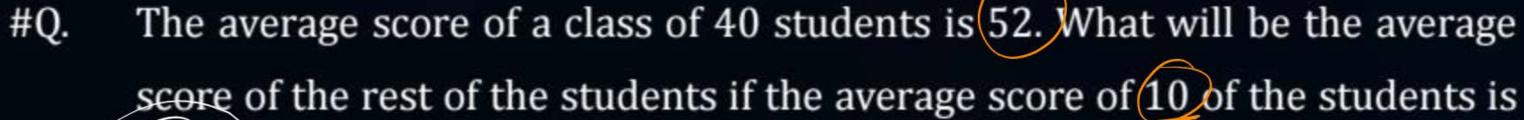
$$14 \times 20 = 280$$

$$16 \times 21 = 336$$

56

#Q. A team of 10 employees has the average age as 20 years. If team leader is excluded from the group the average of remaining 9 employees decreases by two months. Find the age of the team leader.
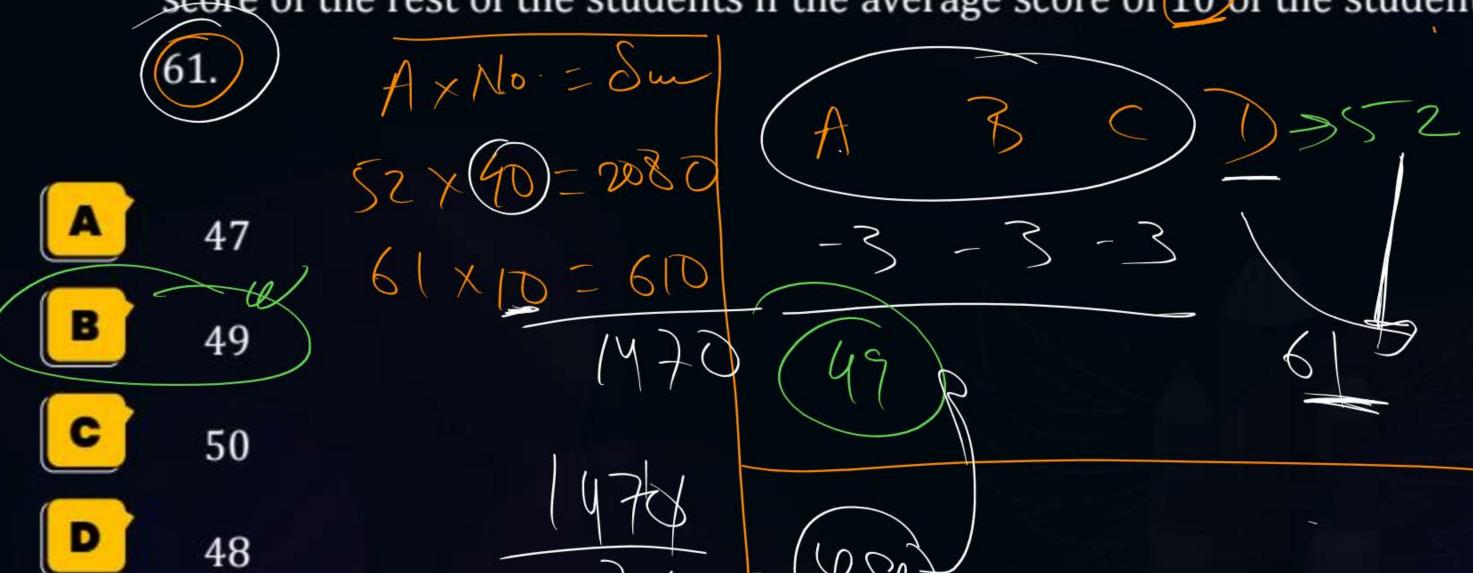
$$\frac{119}{\cancel{6}_2} \times \frac{3}{\cancel{9}}$$

$$= \frac{357}{2}$$

$$A \times No. = Sum$$

$$20 \times 10 = 200 \checkmark$$

$$\boxed{19\frac{10}{12}_{6}^{5} \times 9} = 178.5$$

$$\frac{178.5}{21.5}$$

21 years 6 months

#Q. In a school with 15 teachers, the average monthly salary is ₹4500. When three teachers left the school, the average monthly salary decreased by ₹600. Find the average monthly salary of three teachers who left the school.

$$A \times No. = Sum$$

$$4500 \times 15 = 67500$$

$$3900 \times 12 = 46800$$

$$Sum \Rightarrow 20700$$

$$\frac{20700^4}{3} = 6900$$

$$\frac{6900}{}$$

#Q. The average score of a class of 40 students is 52. What will be the average score of the rest of the students if the average score of 10 of the students is 61.

A 47

B 49

C 50

D 48

$$A \times No. = Sum$$

$$52 \times 40 = 2080$$

$$61 \times 10 = 610$$

$$\overline{1470}$$
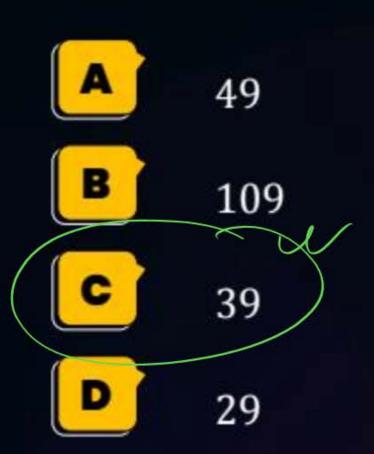
$$\frac{1470}{30} = 49$$
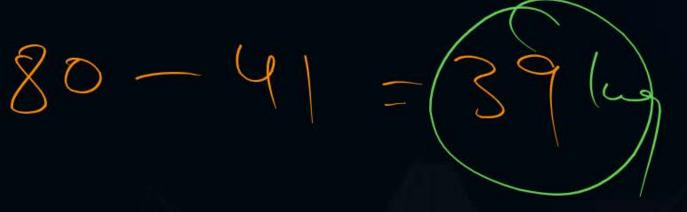
A   B   C   D ⟹ 52

−3 −3 −3

49

61

#Q. The average weight of a school of 40 teachers is 80 kg. If, however, the weight of the principle be included, the average decreases by 1 kg. What is the weight of the principal?

$$80 - 41 = 39 \text{ kg}$$

A 49

B 109

C 39

D 29

#Q.   The average age of Abhijeet and Daya is 20 years. Their average age 5 years hence will be
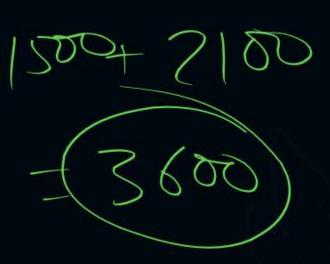
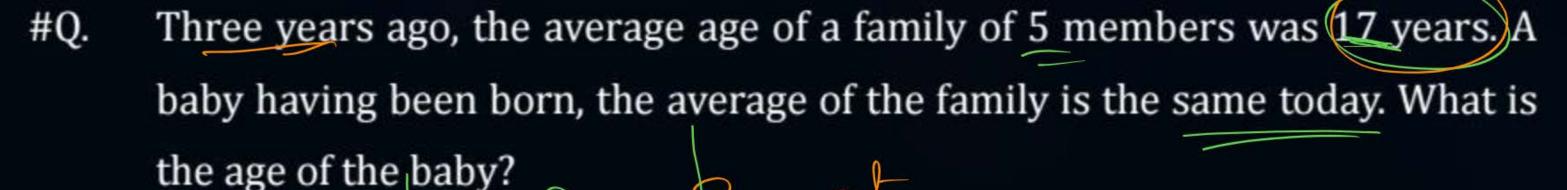$$20 + 5 = 25$$

A   20

B   30

C   25

D   22

P
W

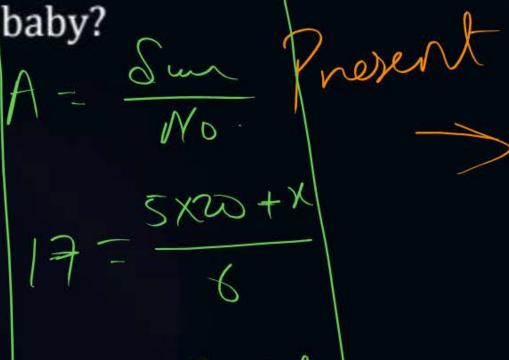**#Q.**   The average monthly salary of 20 employees is ₹1500. If the manager's salary is added the average becomes ₹1600. The manager's salary is

A   ₹ 3500

B   ₹ 3600

C   ₹ 3800

D   ₹ 3900

$1500 + 2100$

$= 3600$

#Q. Three years ago, the average age of a family of 5 members was 17 years. A baby having been born, the average of the family is the same today. What is the age of the baby?

A 6 months

B 9 monthjs

C 1 year

D 2 years

$$A = \frac{Sum}{No.}$$

Present

$$17 = \frac{5 \times 20 + x}{6}$$

$$\Rightarrow 102 = 100 + x$$

$$\therefore x = 2$$

$$20$$
$$-18$$
$$2 \text{ yrs}$$

$$17$$

#Q.   12 years ago, the average age of a husband and his wife was 20yrs. The average age is same today, they having two children. What is the present age of the youngest child if children differ in age by 2yrs?
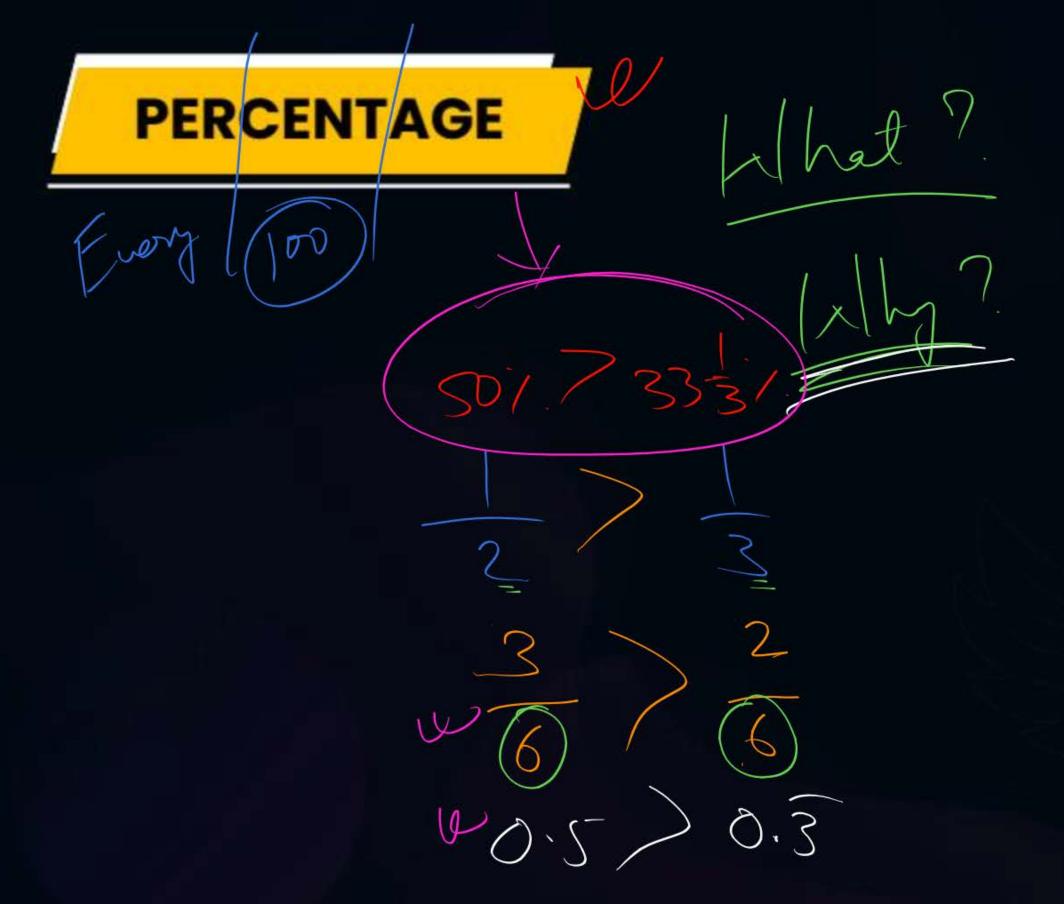
Assignment

A   8

B   6

C   7

D   9

#Q. The average of 5 consecutive integers starting with x is y. What is the average of 6 consecutive numbers starting with (x+2)?

Assignment

A $\quad y + 3$

B $\quad \dfrac{2y + 9}{2}$

C $\quad y + 2$

D $\quad \dfrac{2y + 5}{2}$

PERCENTAGE

Every $\boxed{100}$

What ?

Why ?

$50\% > 33\frac{1}{3}\%$

$\dfrac{\overline{2}}{} \quad > \quad \dfrac{\overline{3}}{}$

$\dfrac{3}{\boxed{6}} \quad > \quad \dfrac{2}{\boxed{6}}$

$0.5 > 0.\overline{3}$

$\dfrac{712}{\boxed{800}} \quad ?$

$\dfrac{455}{500} \quad ?$

PERCENTAGE

$$\frac{x}{y} \quad \times 100$$

12.5% of 1800

$\dfrac{1}{8}$

$x\%$ $\longrightarrow$ fraction

$\div 100$

50% of 1800

$$100\% = 1 = 1$$

$$5\% = \frac{1}{20} = 0.05$$

$$65\%$$

$$66\frac{2}{3}\% = \frac{2}{3} = 0.6 \quad 10\% = \frac{1}{10} = 0.1$$

$$70\%$$

$$15\% = \frac{3}{20} = 0.15$$

$$20\% = \frac{1}{5} = 0.2 \qquad \frac{6}{5} = 120\% = 1.2$$

$$25\% = \frac{1}{4} = 0.25$$

$$30\% = \frac{3}{10} = 0.3$$

$$30\%$$

$$33\frac{1}{3}\% = \frac{1}{3} = 0.\overline{3}$$

$$35\%$$

Successive

$$10\%\uparrow + 10\%\uparrow + 10\%\uparrow$$

$$33.1\%\uparrow$$

$$50\%\downarrow + 50\%\downarrow = 75\%\downarrow$$

$$50\%\downarrow + 20\%\downarrow = 60\%\downarrow$$

$$50\%\uparrow + 50\%\downarrow = 25\%\downarrow$$

Topics

Averages & Percentages