GATE

ALL BRANCHES

GENERAL APTITUDE

Quantitative Aptitude

Lecture No: 02

By-Amulya Ratan Sir

TOPICS TO BE COVERED

1. Definition of Percentage
2. Utilisation and Concept of the Topic
3. Questionnaire on Percentage

Q. A cricketer has certain average of runs for his 64 innings. In his 65th innings, he is bowled out for no score on his part. This brings down his average by 2 runs. His new average is?

Assignment

A. 130

B. 128

C. 70

D. 68

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

$A - 2 = \frac{64A + 0}{65}$

$130 - 2$

128

Q. In an organisation, in 2020, there were 30 employees with the average age of 40 years. In 2022, 4 employees retired at the age of 60. Two new employees were hired in 2023, whose total age was 74. What is the average age of company in 2023?

Assignment

A. 41 years

B. 42 years

C. 43 years

D. 44 years

43 61

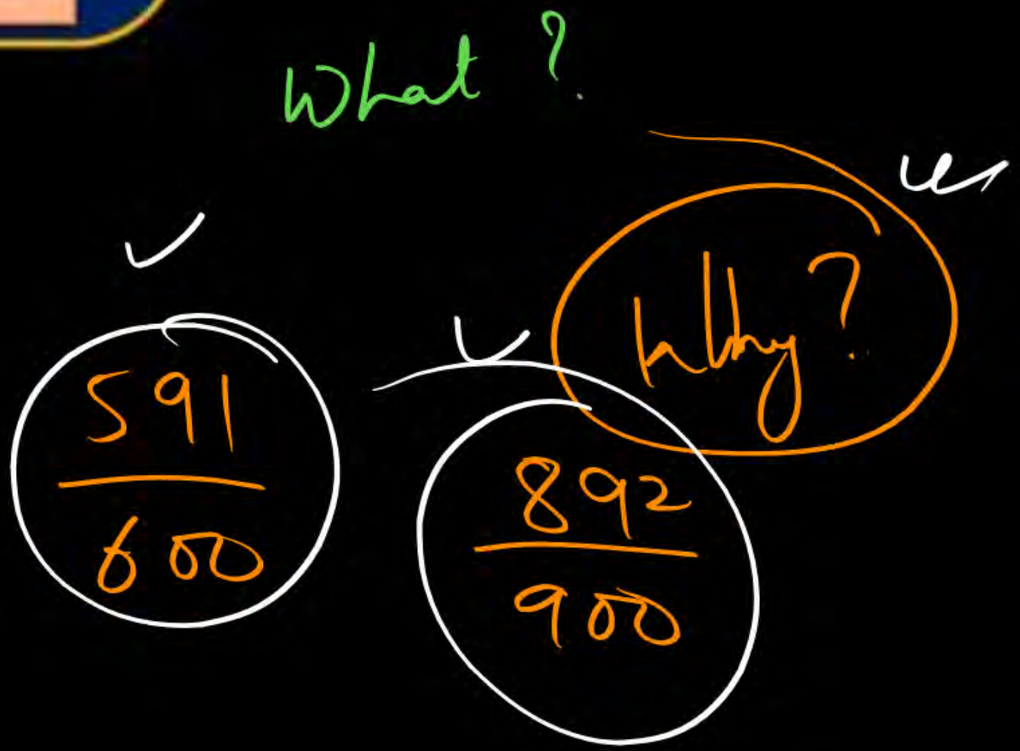
40 yrs

$$\frac{43\times30-4\times61+74}{28}$$

$$=\frac{1290-244+74}{28}=\frac{1046+74}{28}=\frac{1120}{28}=$$

PERCENTAGE

Every / 100 /



12.5% of $\frac{1680}{8}$

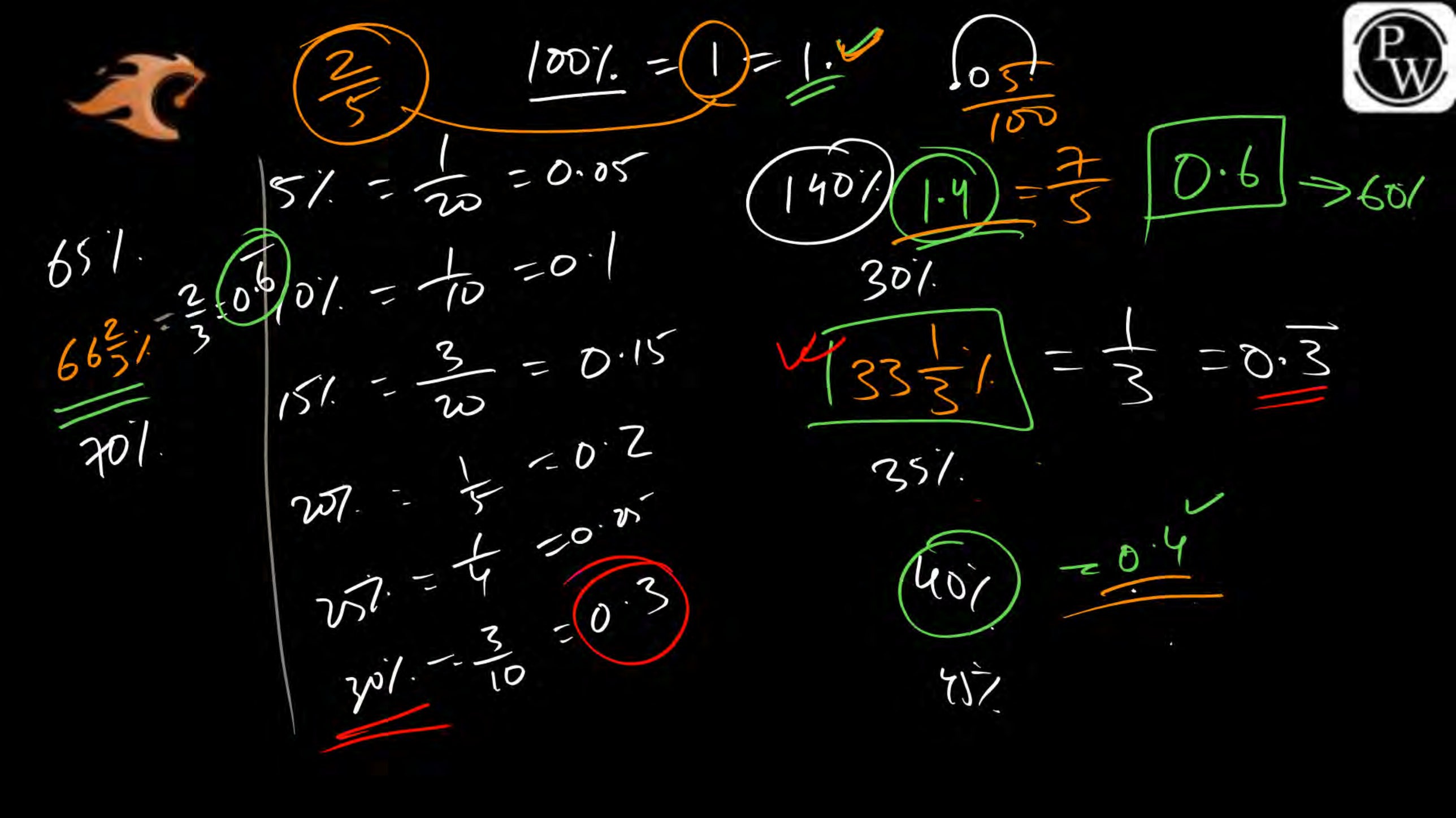
$\frac{x}{y} \times 100 \Rightarrow \%$

50% of $\frac{1050}{2}$

525

Percentage $\Rightarrow$ fraction

$a\% \Rightarrow \frac{a}{100}$


2/5
100% = 1 = 1.
5% = 1/20 = 0.05
10% = 1/10 = 0.1
15% = 3/20 = 0.15
20% = 1/5 = 0.2
25% = 1/4 = 0.25
30% = 3/10 = 0.3
65%
66 2/3% = 2/3 = 0.6
70%
140%
1.4 = 7/5
0.6 => 60%
30%
33 1/3% = 1/3 = 0.3
35%
40%
= 0.4
45%
05/100

"Consecutive

60

33

How?

0.25 = 0.5 × 0.5

0.4 = 0.5 × 0.8

0.75

0.75 = 1.5 × 0.5

= 1.33 | 1.1 × 1.1 × 1.1

2100 → 25

50% + 50% = 75%

50% + 20% = 60%

50% + 50% = 25%

10% + 10% + 10% = 33.1%

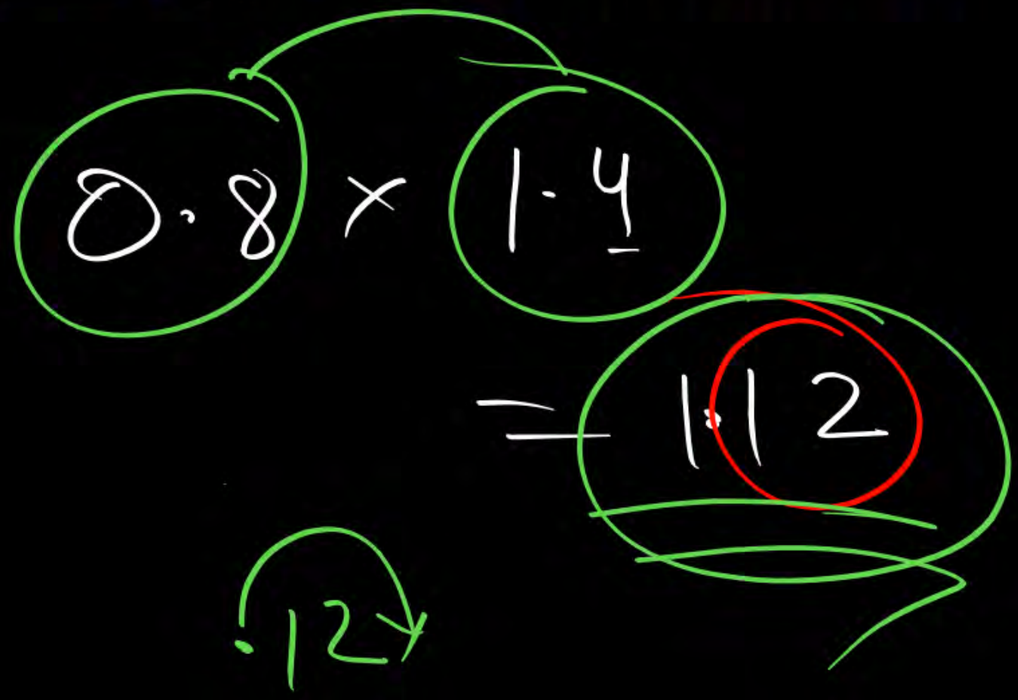
Q. When the price of mobile reduced by 20%, the number of mobile sold increased by 40%. The effect on the sale was?

A. 12% increase

B. 12% decrease

C. 32% increase

D. 40% decrease



1 − 0.684 = 0.316

Q. A trader offers three successive discounts of 20%, 10% and 5% to a customer. How much is overall single discount?

(1) ⇒ 100%

$\frac{2}{3} \times \frac{2}{3} \times \frac{2}{3}$

$\frac{8}{27} \times 100$

$0.8 \times 0.9 \times 0.95$

$= 0.72 \times 0.95$

$= 0.684$

A. 30% ✗

B. 31.6%

C. 68.4%

D. 35% ✗

$\frac{12}{100} \times 60$ of 'x'

Q. 8% of the people eligible to vote are between 20 and 25 years of age. In an election 85% of those eligible to vote, who were between 20 and 25 actually voted. In that election number of person between 20 and 25, who actually voted, was what percentage of those eligible to vote?

6.8

$0.85 \times 0.08 \times$ Total Voters

A. 4.2%

B. 6.4%

C. 6.8%

D. 8%

$= 680$

$= 0.068$

No. of Voters $= x$

$\frac{8}{100} \times x$

$\frac{85}{100} \times \frac{8}{100} \times x$

Comparision

25% More

Q. If P is 25% more than Q, then Q is how much percent less than P?

$125 \times \frac{20}{100} = 25$

$P = 125\% \text{ of } Q$

$\frac{100}{125} P = Q$

$0.8P = Q$

0.2

20% ↓

Q. If the petrol rate is increased by 40%, then by how much percentage we should decrease our consumption, in order to maintain same budget?

A. 71.42%

B. 40%

C. 28.57%

D. 60%

$B = \frac{\text{Rate} \times \text{Consumption}}{100}$

$A = l \times b$

$\frac{5}{7} \quad \frac{100}{140} = 0.714$

$1 - 0.714 = 0.286$

28.6%

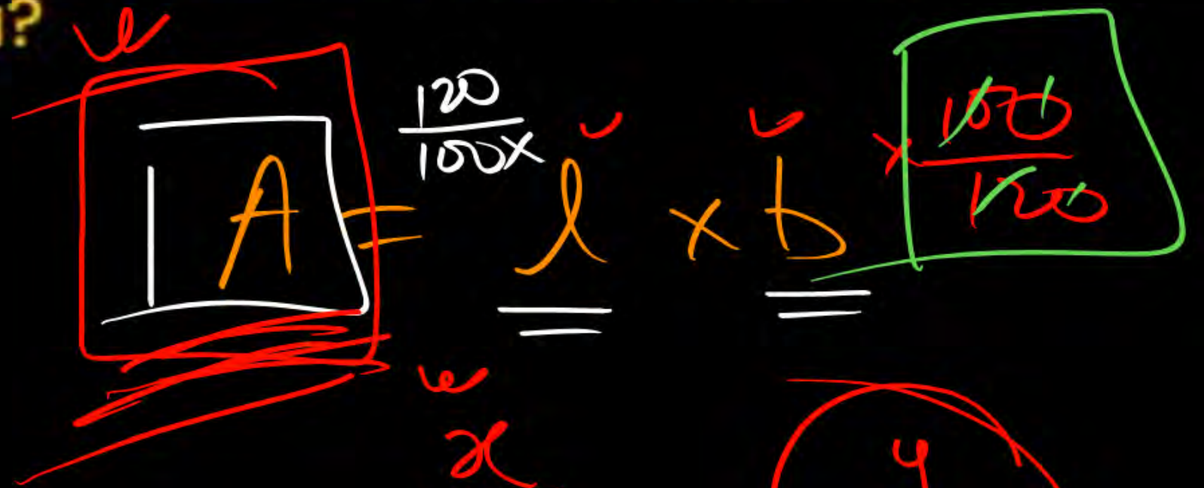
Q. If the length of a rectangle increase by 20%, then by how much percent we should decrease the breadth in order to maintain same area?

A. 20%

B. 67%

C. 83.33%

D. 81.33%



$0.1\overline{6}$

$16.\overline{6}\%$

$\frac{5}{6} = 0.8333\ldots$

$= 0.8\overline{3}$

$$\text{\% change} = \frac{\text{diff}}{\text{A.V}} \times 100$$

\% increase

\% decrease

$$\frac{\text{diff}}{\text{A.V}} \times 100$$

64

46

$$\frac{18}{64} \times 100$$

12,000 → 18,000

$$\frac{16k}{12k} \times 100$$

$= 50\%$

Q. Manoj saves 20% of his income. If his income is increased by 20% and expenditure decreased by 10%, then find the percentage change in his savings.

140% ↑

	I	S	Expenditure
	100	20	80
	120	48	72

20 → 48 (+28)

$\frac{28}{20} \times 100 = 140\%$

Q. If the side of a square is increased by 20%, then what is the percentage change in its area?

A. 44%

B. 80%

C. 22%

D. 144%

$A = S \times S$

$= 1.2 \times 1.2$

$= 1.44$

$B = \text{Rate} \times \text{Rate}$

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

Q. The population of a town doubled every 5 years from 2000 to 2015. What is the percentage increase in population in this period?

A. 800%

B. 400%

C. 700%

D. 600%

3

$2 \times 2 \times 2 = 8$

7 1

Q. If P is 60% taller than Q, by what percent is Q shorter than P?

A. 40%

B. 37.5%

C. 62.5%

D. None of these

$\frac{160}{100} \rightarrow \frac{160}{160} \frac{5}{8}$

$= 0.625$

$\rightarrow 0.375$

Q. A is twice B and B is 200% more than C. By what percent is A more than C?

A. 200%

B. 400%

C. 500%

D. 600%

$A = 2B$

$B = 3C$

$A = 2 \times 3C$

$A = 6C$

Q. The population of a village is 5500. If the number of males increases by 11% and the number of females increases by 20%, then the population becomes 6330. The population of the female in the village is

Assignment

A. 2000

B. 2500

C. 3000

D. 3500

Q. Rohan spends 40% of his monthly income on food items and 50% of the remaining on clothes and conveyance. He saves one-third of the remaining amount after spending on food, clothes and conveyance. If he saves Rs. 19200 every year, what is his monthly income?

Assignment

A. 32000

B. 16000

C. 6000

D. 12000

Q. In a test of 80 questions, Santosh answered 75% of first 60 questions correctly. What % of remaining questions he has to answer correctly so that he can secure an overall percentage of 80 in the test?

Q. 5% of income of P is equal to 15% of income of Q and 10% of income of Q equal 20% of income of R. If R's income is 2000, then What is total income of P, Q and R?

Assignment

A. 9000

B. 12000

C. 15000

D. 18000

Thank You!