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INTRODUCTION

Percentage is of immense importance when it comes to problem solving in quantitative aptitude (QA) and data interpretation (DI). Despite the fact that the number of questions asked from this concept is not very high in the BANKING EXAMS, a sound understanding and good practice of percentage calculations comes handy in almost all the topics of QA and DI. However, percentage is an important concept for all the other competitive exams and aptitude examinations.

Percentage means 'per hundred'

Example what is 20% of 50% of 40% of 20?

Solution Percentage means 'per hundred'. So, 20% of 50% of 40% of 20 = $(20/100) \times (50/100) \times (40/100) \times 20 = 0.8$ what we can observe here is that even if we change the order of values, the final result will be the same

Basic statement 1

what is x% of y = $\frac{x \cdot y}{100}$

It can also be seen that x% of y = y% of x.

Using this, we can see that if we have to calculate 24% of 25 (or any other calculation of similar nature), it is better to find out 25% of 24 $\rightarrow (1/4) \times 24 \rightarrow 6$

This one simple fact can be also used to divide or multiply any number. We are trying to find out the value of $25 \times 32 \rightarrow (100/4) \times 32 \rightarrow 800$

Basic statement 2

What percentage of x is y? $\Rightarrow \frac{y \times 100}{x}$

Basic statement 3

Change in value

(a) Percentage change = $\frac{\text{Change}}{\text{Initial value}} \times 100$

(b) x is what % more than y = $\frac{(x-y)}{y} \times 100$

Remember x is more on y so y will be the base value

(c) x is what % less than y = $\frac{(y-x)}{y} \times 100$

Remember x is more on y so y will be the base value

PERCENTAGE CHANGE & FINAL VALUE

Initial value + % change \rightarrow Final value

Percentage change and value resulting after change are frequently used in almost all chapters of quantitative aptitude. Student should understand it in depth from various perspectives.

We will discuss here atleast three different ways to analyse percentage change and final value after change.

Percentage change as addition

Percentage change as Multiple

Percentage change as fractions (Unitary Method)

Note: As per requirement of question you can switch among three conceptions given below. It can make your calculations easy and enhance your speed of solving questions dramatically.

Let us now take 40 as initial value and percentage change = 20%. Now let us analyse % change and final value in three different forms

Percentage change as addition

Thought process:

40(initial) $\xrightarrow[\rightarrow +8]{\begin{matrix} 20\% \uparrow \\ \rightarrow 20\% \text{ of } 40=8 \end{matrix}}$ 48(final)

Now, think in reverse manner:

? $\xrightarrow{20\% \uparrow}$ 48(final)

It is difficult to find initial value if final value is already given in the question.

Percentage change as Multiple

Thought process:

Think % increase and decrease in following way:

20% \uparrow = 1.20

30% \uparrow = 1.30

20% \downarrow = 0.80

So,

40(initial) $\xrightarrow[\rightarrow \times 1.2]{20\% \uparrow}$ 48 (final)

This concept is easy and very useful.

Now, think in reverse manner:

? $\xrightarrow{20\% \uparrow \rightarrow \times 1.2}$ 48(final)

In case of reverse just divide 48 by 1.2 as rather multiply. $48/1.2 = 40$ (initial)

Percentage change as fractions

Thought process:

Think % increase and decrease in following way:

20% \uparrow = $\frac{20}{100} = \frac{1(\text{change})}{5} \rightarrow \frac{5+1}{5} \rightarrow \frac{6(\text{final})}{5(\text{initial})}$

Now Compare

$\frac{6(\text{final})}{5(\text{initial})} \xrightarrow[\times 8]{\times 8} ? \rightarrow \frac{48}{40}$

Finally

40(initial) $\xrightarrow[\rightarrow \frac{48}{40}]{\begin{matrix} 20\% \uparrow \\ \frac{1}{5} \rightarrow \frac{6}{5} \rightarrow \frac{?}{40} \rightarrow \frac{48}{40} \end{matrix}}$ 48(final)

Now, think in reverse manner:

? $\xrightarrow{20\% \uparrow \rightarrow \frac{6}{5}}$ 48(final)

If 6 \rightarrow 48

Then 1 \rightarrow 8

So, 5 \rightarrow 40

Let us summarise above concepts

$$\begin{aligned} & \xrightarrow{+8} \text{20\% (addition)} \\ & \rightarrow \times 1.2 \text{ (multiplication)} \\ & \rightarrow \frac{1}{5} \rightarrow \frac{6}{5} \text{ (Fraction)} \end{aligned}$$

$$40(\text{initial}) \longrightarrow 48(\text{final})$$

SUCCESSIVE PERCENTAGE CHANGE

Suppose we have to increase a quantity successively by 20% and then increase by 30%. Ideally, this should be done by taking 100 as the initial value and then changing this initial value first by 20% and then by 30%.

$$100 \xrightarrow[+20]{20\% \uparrow} 120 \xrightarrow[+36]{30\% \uparrow} 156 \text{ (Net change } 56\% \uparrow)$$

Also by multiple method

$$20\% \uparrow \rightarrow 1.2$$

$$30\% \uparrow \rightarrow 1.3$$

$$\text{Net change} = 1.2 \times 1.3 = 1.56 \rightarrow (\text{Net change } 56\% \uparrow)$$

Similarly, if we have to increase a quantity successively by 20% and then decrease by 30%.

$$100 \xrightarrow[+20]{20\% \uparrow} 120 \xrightarrow[-36]{30\% \downarrow} 84 \text{ (Net change } 16\% \downarrow)$$

Also by multiple method

$$20\% \uparrow \rightarrow 1.2$$

$$30\% \downarrow \rightarrow 0.70$$

$$\text{Net Change} = 1.2 \times 0.70 \rightarrow 0.84 \text{ (Net change } 16\% \downarrow)$$

PRODUCT CONSTANCY METHOD

In a number of topics and concepts, we encounter the relationship where the product of two quantities equals the third quantity.

For example,

$$\text{Speed} \times \text{Time} = \text{Distance}$$

$$\text{Price} \times \text{Consumption} = \text{Expenditure}$$

$$\text{Number of persons} \times \text{Days} = \text{Work done}$$

$$\text{Length} \times \text{Breadth} = \text{Area of rectangle}$$

Imagine above variables in following format

$$1 \times 1 = 1$$

$$\uparrow \times \downarrow = 1$$

Apart from these examples, many times we see instances where one quantity is increased to get another quantity, e.g., if we increase cost price to obtain a certain profit, we obtain selling price or if we increase principal, we obtain amount.

If we generalize product stability ratio, then it can be as

$$A \times B = P$$

Now, if A is increased by a certain percentage, then B is required to be decreased by certain percentage so that the product (P) remains stable.

For example,

if we increase A by 25% and P has to be constant, then B is required to be decreased by 20%. This procedure can be summed up in the following way:

Change in A	Change in B	Change in P
100%↑	50%↓	0%
50%↑	33.33%↓	0%
33.33%↑	25%↓	0%
25%↑	20%↓	0%
20%↑	16.66%↓	0%
16.66%↑	14.28%↓	0%
14.28%↑	12.5%↓	0%
12.5%↑	11.11%↓	0%
11.11%↑	10%↓	0%
10%↑	9.09%↓	0%
9.09%↑	8.33%↓	0%
and so on		

APPLICATION OF PRODUCT CONSTANCY METHOD TO DIFFERENT CHAPTERS

So, if A is increased by 25%, then we need to decrease B by 20% to maintain the product stable.

In all the below -given situations, just one mathematical information has been used, i.e., if A is increased by 25%, then B decreases by 20%.

This mathematical information can be used in so many forms:

1. Percentage If A is 25% more than B, then by how much percentage B is less than A?

Solution

Normal Method Let us assume B = 100, then A = 125. Now, B is 25 less than A. Percentage of B is less than A = $\frac{25}{125} \times 100 = 20\%$

Product Constancy Method Using product stability rule, since A is 25% more than B, so B is 20% less than A.

Fraction Method

$$\text{Or } 25\% \uparrow \rightarrow \frac{1}{4} \rightarrow \frac{5(A)}{4(B)} \xrightarrow{\times 20} \frac{100(A)}{80(B)}$$

2. Profit and loss An article is sold for ₹125 at a profit of 25%. What is the cost price of the article?

Solution

Normal Method $CP \times 1.25 = SP$ So, $CP = \frac{SP}{1.25} = \frac{125}{1.25} = ₹100$

Product Constancy Method If we increase CP by 25%, we will get SP. So, if we decrease SP by 20%, we will get CP. Hence, CP = ₹100

Fraction Method - Try yourself

3. Time, Speed, and Distance (TSD) When speed of a car is increased by 25%, time taken reduces by 20 minutes in covering a certain distance. What is the actual time taken to cover the same distance by actual speed?

Solution

Normal Method Since we know $S = V \times T$ (Distance = Speed \times Time) New speed = 1.25 V, so new time = $T/1.25$
So, reduction in time = $T - T/1.25 = 0.25 T/1.25 = T/5$
 $T/5 = 20 \text{ min} \Rightarrow T = 100 \text{ min}$

Fraction Method

if $(S \uparrow) 25\% \rightarrow \frac{1}{4} \rightarrow \frac{5}{4}$ then $(T \downarrow) \rightarrow \frac{4}{5} \rightarrow \frac{1(\downarrow) \rightarrow 20 \text{ Min}}{5 \rightarrow 100 \text{ Min}}$

Product Constancy Method Since speed has been increased by 25%, so time will reduce by 20%. Now, 20% $T(\text{Time}) = 20 \text{ min}$ So, Total time = 100 min

4. TSD Mayank goes to his office from his home at a speed of 20 kmph and gets late by 10 min. However, when he increases his speed to 25 kmph, he is 20 min early. What is the distance from his office to his home?

Normal Method Let us assume that distance = D
So, $D/20 - D/25 = 30/60 \text{ h} = 1/2$ So, $D = 50 \text{ km}$

Fraction Method

Speed $(S \uparrow) = 20 \uparrow 25 \rightarrow 25\% \uparrow$

Time $(T \downarrow) = 10 \text{ min late} + 20 \text{ min early} = 30 \text{ minutes}$

if $(S \uparrow) 25\% \rightarrow \frac{1}{4} \rightarrow \frac{5}{4}$ then $(T \downarrow) \rightarrow \frac{4}{5} \rightarrow \frac{1(\downarrow) \rightarrow 30 \text{ Min}}{5 \rightarrow 150 \text{ Min} = 2.5 \text{ Hour}}$

So $D = 20 \times 2.5 = 50 \text{ KM}$

Product Constancy Method $S = V \times T \rightarrow (S) 25\% \uparrow \rightarrow (T) 20\% \downarrow \rightarrow 30 \text{ min} \rightarrow T = 150 \text{ min} = 2.5 \text{ hour}$ So, total distance = $20 \times 2.5 = 50 \text{ km}$

5. Time and Work Efficiency of Amit is 25% more than Vinit. Vinit takes 20 days to complete a work. How many days will Amit take to do the same work?

Solution Normal Method Vinit is taking 20 days to complete the work, i.e., Vinit is doing 100% work in 20 days. So, Vinit is doing 5% work in a day. Since efficiency of Amit is 25% more than Vinit, so Amit is doing 6.25% work per day. So, number of days taken by Amit = $100/6.25$ days = 16 days

Product Constancy Method Efficiency of Amit is 25% more than Vinit. So, Amit will take 20% less days than Vinit. So, number of days taken by Amit = 16 days

6. Time and Work 20 men can do some job in 50 days. In how many days will 25 men do the same job?

Solution Normal Method Using Work = Number of persons \times Number of days Work = $20 \times 50 = 1000$ Now, $1000 = 25 \times D$ So, $D = 40$

Product Constancy Method Number of persons increases by 25%, so number of days will decrease by 20%. So, number of days = 40 days

7. Simple Interest (SI) Rate of interest is 12.5% per annum SI. What is the principal if amount obtained after two years is ₹1250?

Solution Normal Method Using the formula for SI = $PRT/100$ $P = (SI \times 100)/RT$ Putting the values gives us $P = ₹1000$

$12.5\% \rightarrow \frac{1}{8} \rightarrow \frac{1 \times 2}{8} \rightarrow \frac{2}{8} \rightarrow \frac{2+8}{8} \rightarrow \frac{10(A) \rightarrow 1250}{8 \rightarrow 1000 \text{ ANS}}$

Product Constancy Method Interest for two years = 25% So, if we decrease the amount by 20%, then we will get the principal. Hence, Principal = ₹1000

8. Percentage Due to a price hike of 25%, 5 kg less sugar is available for ₹100. What is the original price per kg?

Solution Normal Method Let us assume that original price per kg = ₹P per kg So, final price per kg = ₹1.25 P Hence, $(120/P) - (120/1.25P) = 5$ Solving this equation gives $P = ₹4$ per kg

Product Constancy Method Since, the price hike is 25%, 20% less quantity of sugar will be available for ₹100. $20\% = 5 \text{ kg} \Rightarrow 100\% = 25 \text{ kg}$ So, 25 kgs were available for ₹100 initially. So, Price = ₹4/kg

9. Mensuration Length of a rectangle is increased by 25%. By what percentage should the breadth be decreased so that area remains constant?

Solution Product Constancy Method Till now, it must have become very obvious that the breadth will decrease by 20% to keep the area constant

Example My Reliance India phone bill for the month of May is ₹B. Moreover, there is a service tax of S% which is to be levied upon this value. However, since they are overcharging their customers, they get a discount of D% on it. So, now I have the following two options to make the payment: $₹B \rightarrow S\% \uparrow \rightarrow D\% \downarrow \rightarrow \text{Final bill } ₹B \rightarrow D\% \downarrow \rightarrow S\% \uparrow \rightarrow \text{Final bill}$ Which option is beneficial for me if $S > D$?

Solution Prima facie, it might appear that the 1st one is better than the 2nd one or the 2nd one is better than the 1st one, but a close and deep inspection will reveal that the final bill is same in both the cases. It can be checked with the help of assuming values also. $B = ₹100$, $S\% = 20\%$ and $D\% = 10\%$ $₹100 - (20\% \uparrow) - ₹120 \rightarrow (10\% \downarrow) - ₹108$ (final bill) $₹100 - (10\% \downarrow) - ₹90 \rightarrow (20\% \uparrow) - ₹108$ (final bill) So, both the values are same at the end.

Hence, if the final value and percentage increase or percentage decrease are given and we have to find out the initial value, then it can be done in similar way.

Using $S \rightarrow 30\% \uparrow \rightarrow S \times 1.3 = 195$ So, if the final value 195 and $30\% \uparrow$ is given, then the initial value $S = 195/1.3 = 150$

SUCCESSIVE PERCENTAGE CHANGE

Suppose we have to increase a quantity successively by 20% and 30%. Ideally, this should be done by taking 100 as the initial value and then changing this initial value first by 20% and then by 30%. It can be seen below: $100 \rightarrow 20\% \uparrow \rightarrow 120 \rightarrow 30\% \uparrow \rightarrow 156$ So, net percentage increase = 56% This is known as straight line method of solving the problems.

Example The price of petrol is increased by 20%. However, expenses increase only by 10%. What is the percentage increase or decrease in consumption?

Solution If consumption remains constant, then the expenses should have also increased by 20%. However, since expenses increased by only 10%, consumption has been reduced. These kinds of problems can be done in three ways: (i) Straight line method 100 (Initial expenditure) $\rightarrow 20\% \uparrow$ in price $\rightarrow 120 \rightarrow x\% \downarrow$ in consumption $\rightarrow 110$ (final expenditure), $x\% = 10$ $120 \times = 100$ 83.3%

PERCENTAGE-RATIO EQUIVALENCE

The essence of percentage-ratio equivalence lies in the fact that most of the percentage calculations like 25%, 37.5%, 33.33%, etc., hover around some particular ratios only. Having a good command over these ratios is definitely going to give a good percentage calculation speed

	1	2	3
1	100%	200	300
1/2	50	100	150
1/3	33.33	66.66	100
1/4	25	50	75
1/5	20	40	60
1/6	16.66	33.33	50
1/7	14.28	28.56	42.85
1/8	12.5	25	37.5
1/9	11.11	22.22	33.33
1/10	10	20	30
1/11	9.09	18.18	27.27

TYPE 1

Successive % change (Chain Rule)

Example: A number is increased by 10% and then it is decreased by 10%. The net change in the number is:

(a) 2% decrease (b) 1% increase (c) 2% increase (d) 1% decrease

Solution

$$100 \xrightarrow[+00]{10\% \uparrow} 110 \xrightarrow[-11]{10\% \downarrow} 99 \text{ (Net change } 1\% \downarrow)$$

Example: A number is increased by 15% and then decreased by 25% and the number becomes 22 less than the original number. The original number is (a) 140 (b) 160 (c) 120 (d) 100

Solution

By Fraction Method

$$15\% \uparrow \rightarrow \frac{15}{100} \rightarrow \frac{3 \uparrow}{20} \rightarrow \frac{23}{20}$$

$$25\% \downarrow \rightarrow \frac{25}{100} \rightarrow \frac{1 \downarrow}{4} \rightarrow \frac{3}{4}$$

Net change =

$$\frac{23}{20} \times \frac{3}{4} = \frac{69}{80} \rightarrow \frac{80 - 69}{80} \rightarrow \frac{11}{80}$$

Compare

$$\frac{11 \rightarrow 22 \text{ (given)}}{80 \rightarrow (?) } \rightarrow \frac{22}{160 \text{ (ans)}}$$

Example: The population of a town increases by 5% every year. If the present population is 9261. The population 3 years ago was: (a) 5700 (b) 6000 (c) 7500 (d) 8000

$$5\% \rightarrow \frac{5}{100} \rightarrow \frac{1}{20} \rightarrow \frac{21}{20} \rightarrow \frac{21}{20} \times \frac{21}{20} \times \frac{21}{20} \rightarrow \frac{9261 \text{ (final)}}{8000 \text{ (initial)}}$$

TYPE 2

A person gave 20% of his income to his elder son, 30% of the remaining to the younger son and 10% of the balance, he donated to a trust, He is left with 10080. His income was:

Solution CHAIN RULE THINK

$$100 \xrightarrow{-20\%} 80 \xrightarrow[-30\% (\downarrow 24)]{} 56$$

$$\xrightarrow[-10\% (\downarrow 5.6)]{} 50.4$$

Compare Now

According to the question,

$$50.4 \text{ units} = \text{Rs. } 10080$$

$$1 \text{ units} = 1080/50.4 = \text{Rs. } 200$$

$$100 \text{ units} = 200 \times 100 = \text{Rs. } 20000$$

Hence, Required income = Rs. 20000

TYPE 3

Product Constancy Method

Example: A reduction of 25% in the price of rice enables Bhuvnesh to buy 2 kg more rice for R 240. The reduced per kg price of rice is

(a) Rs. 30 (b) Rs 25(c) Rs 20 (d) Rs 15

Solution By Product constancy Method

Price (P) × Consumption (C) = Expend. (Constant)

$P \times C = \text{Constant}$

$1 \times 1 = 1$

Reduction in price = 20%

Think 20% as fraction

$$20\% \downarrow = \frac{20}{100} = \frac{1 \downarrow}{5} \rightarrow \frac{5-1}{5} = \frac{4}{5}$$

From above

$1 \times 1 = 1$

$$\frac{4}{5} \times \frac{5}{4} \rightarrow 1$$

If Price becomes $\frac{4}{5}$ then consumption should become $\frac{5}{4}$.

$$\frac{5(\text{final})}{4(\text{initial})} \rightarrow \frac{5-4}{4} = \frac{1(\text{change})}{4(\text{initial})}$$

Compare now

$$\frac{1 \rightarrow 2\text{kg}}{4 \rightarrow ?} \rightarrow \frac{2\text{kg}}{8\text{kg}}$$

8kg → 240 Rs.

1kg → 30 Rs. (Ans)

Thought Process (Summary)

Price	Consumption	Expenditure
1	×1	1
$\frac{4}{5}$	$\frac{5}{4}$	1
	$\frac{5-4}{4} \rightarrow \frac{1}{4}$	
	$\frac{1 \rightarrow 2\text{kg}}{4 \rightarrow ?} \rightarrow \frac{2\text{kg}}{8\text{kg}}$	
	8kg → 240 Rs.	
	1kg → 30 Rs.	

TYPE 4

Mixtures by fraction (ratio) Method

Example: 200 litres of a mixture contains 15% water and the rest is milk. The amount of milk that must be

added so that the resulting mixture contains 87.5% milk is:

Solution

15% = $\frac{3}{10}$ (3 → Water, 10 → Mixture)

87.5% = $\frac{7}{5}$ (7 → Milk, 8 → Mixture)

	Milk	:	Water
Initial →	17	:	3
Final →	(↓) 7 × 3	:	(↓) 1 × 3
Final →	21	:	3

Note: Milk is added in the mixture hence quantity of water will be same.

According to the question,

20 units = 200 litres

1 units = $\frac{200}{20}$ litres = 10 litres

4 units = $10 \times 4 = 40$ units

Hence, Required quantity of milk

= 40 litres

TYPE 5

Venn Diagram Method

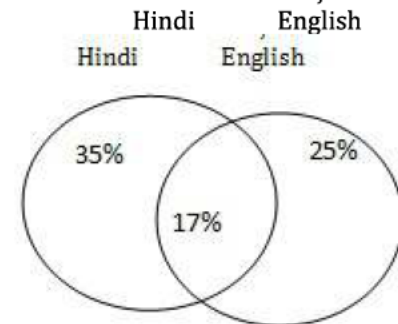
Example: In an examination, 52% students failed in Hindi and 42% in English. if 17% failed in both the subjects, what percentage of students passed in both the subjects?

Solution

Students failed in Hindi = 52%

Students failed in English = 42%

Students failed in both subjects = 17%



Total % of passed students in both subjects

$$= 100 - (35 + 17 + 25)$$

$$= 100 - 77 = 23\%$$

Hence, required percentage = 23%

TYPE 6

% by Unit Method & comparisons

TYPE9

Example: In a class, the number of girls is 20% more than that of the boys. The strength of the class is 66. If 4 more girls are admitted to the class, the the number of boys to that of the girls is:

Solution

20% = $\frac{1}{5}$ = $\frac{6}{5}$ (6 = Gilrs , 5 = Boys)

Boys : Girls

5 : 6

According to the question,

$$(5 + 6) \text{ units} = 66$$

$$11 \text{ units} = 66$$

$$1 \text{ units} = 6 \times 5 = 30$$

$$\text{Girls} = 6 \times 6 = 36$$

The number of girls when 4 is admitted

$$= (36 + 4) = 40$$

$$\text{Required ratio} = 30 : 40 = 3 : 4$$

Example: In an election there were only two candidates. One of the candidates secured 40% of votes and is defeated by the other candidate by 298 votes. The total number of votes polled is;

$$100 \Rightarrow 40(\text{loser}) \xleftarrow{+20} 60(\text{winner})$$

Compare Now

As per question

$$20 \text{ units} = 298$$

$$1 \text{ units} = 298/20$$

$$100 \text{ units} = 298/20 \times 100 = 1490$$

TYPE 7

Example: In an examination, a student must get 36% marks to pass. A student who gets 190 marks failed by 35 marks. The total marks in that examination is:

Solution

(a) Student gets 190 marks and fails by 35 marks

$$\text{total marks need to pass} = 190 + 35 = 225$$

Thus, 36 % Marks are pass marks

$$\rightarrow 36\% = 225$$

$$\rightarrow 100\% = 225/36 \times 100$$

$$\rightarrow 100\% = 625$$

$$\rightarrow \text{Total marks} = 625$$

TYPE 8

Example: The income of C is 20% more than B's and the income of B is 25% more than A's. Find by how much percent is C's income more than A's?

Solution $20\% = 1/5$, $25\% = 1/4$

$$25\% \text{ more} \rightarrow \frac{1}{4} \rightarrow \frac{(4 + 1) = 5(B)}{4(A)}$$

$$A : B = 4 : 5$$

Similarly,

$$20\% \text{ more} \rightarrow \frac{1}{5} \rightarrow \frac{(5 + 1) = 6(C)}{5(B)}$$

$$B : C = 5 : 6$$

$$\text{So, } A : B : C = 4 : 5 : 6$$

$$A : C = 4 : 6 \rightarrow C \text{ is 2 more than A} \rightarrow 2/4$$

$$2/4 \rightarrow 1/2 \rightarrow 50\%$$

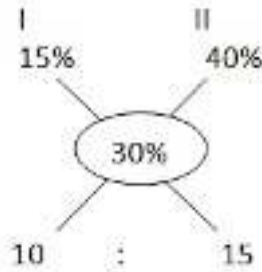
TYPE 9

Alligation Method

Example: The ratio in which two sugar solutions of the concentrations 15% and 40% are to be mixed to get a solution of concentration 30% is:

Solution

(b) By using Alligation Rule,



Ratio of quantity $\rightarrow 2 : 3$

- If x is 80% of y, what percent of x is y?
(a) 400 (b) 300
(c) 160 (d) 150
- If x is 80% of y, what percent of x is y?
(a) 75% (b) 80%
(c) 100% (d) 125%
- If 8% of x is the same as 4% of y, then 20% of X is the same as :
(a) 10% of y (b) 16% of y
(c) 80% of y (d) 50% of y
- If 120 is 20% of a number, then 120% of that number will be :
(a) 20 (b) 120
(c) 480 (d) 720
- If x is less than y by 25% then y exceeds X by :
(a) 100/3% (b) 25%
(c) 75% (d) 200/3%
- If P % of P is 36, then P is equal to :
(a) 3600 (b) 600
(c) 60 (d) 15
- 2 is what percent of 50?
(a) 2% (b) 2.5%
(c) 4% (d) 5%
- 2/3 is what percent of 1/3?
(a) 50% (b) 100/3%
(c) 150% (d) 200%
- If 10% of m is the same as 20% of n, m:n is equal to
(a) 2:1 (b) 1:2
(c) 1:10 (d) 1:20
- The ratio 5 : 4 expressed as a percent equals :
(a) 125% (b) 80%
(c) 40% (d) 12.5%
- 0.15% of 100/3% of rs.10000 is :
(a) Rs 5 (b) Rs.150
(c) Rs. 0.05 (d) Rs 105
- 30% of x is 72 .The value of x is :
(a) 216 (b) 240

- (c) 480 (d) 640
13. If 15% of $(A+B) = 25\%$ of $(A - B)$, then what percent of B is equal to A?
(a) 10% (b) 60%
(c) 200% (d) 400%
14. What is 20% of 25% of 300?
(a) 150 (b) 60
(c) 45 (d) 15
15. If X% of $25/2$ is 150, then the value of x is:
(a) 1000 (b) 1200
(c) 1400 (d) 1500
16. If 50% of $(x-y) = 30\%$ of $(x + y)$, then what percent of x is y?
(a) 25% (b) $100/3\%$
(c) 40% (d) 400%
17. If 50% of P = 25% of Q, then P = x% of Q, Find x
(a) 0.5 (b) 2
(c) 50 (d) 0.005
18. If 20% of A = 50% of B, then what percent of A is B?
(a) 30% (b) 40%
(c) 25% (d) 15%
19. 18% of which number is equal to 12% of 75?
(a) 50 (b) 100
(c) 2 (d) $3/2$
20. If the income of Ram is $25/2\%$ more than that of Shyam, the income of Shyam is less than that of Ram by
(a) $100/9\%$ (b) $97/8\%$
(c) $100/11\%$ (d) $122/11\%$
21. X's income, 20% more than that of Y what percent of Y's income less than X?
(a) $250/3\%$ (b) $50/3\%$
(c) $251/3\%$ (d) $49/3\%$
22. The time duration of 1 hour 45 minutes is what percent of a day?
(a) 7.218 (b) 7.291
(c) 8.3 (d) 8.24
23. Which number is 40% less than 90% of 100?
(a) 36 (b) 54
(c) 50 (d) 60
24. If 30% of A = 0.25 of B = $1/5$ of C, then A : B : C is equal to
(a) 5 : 6 : 4 (b) 5 : 24 : 5
(c) 6 : 5 : 4 (d) 10 : 12 : 15
25. .01 is what per cent of 0.1?
(a) 10% (b) $1/10\%$
(c) 100% (d) $1/100\%$
26. The difference of two numbers is 15% of their sum. the ratio C the larger number to the smaller number is:
(a) 23: 17 (b) 11:9
(c) 17: 11 (d) 23: 11
27. P is six times as large as Q, The percent that Q is less than P, is :
(a) $250/3\%$ (b) 70%
(c) $190/3\%$ (d) 50%
28. 65g is what per cent of 2 kg?
(a) $13/4\%$ (b) $65/2\%$
(c) $15/8\%$ (d) $13/8\%$
29. Half of 1 percent, written as a decimal, is:
(a) 0.2 (b) 0.02
(c) 0.005 (d) 0.05
30. The time duration of 2 hour 45 minutes is what percent of day
(a) 7.2.18% (b) 11.45%
(c) 8.3% (d) 8.24%
31. 1.14 expressed as a percent of 1.9 is:
(a) 6% (b) 10%
(c) 60% (d) 90%.
32. .01 is equivalent to:
(a) 10% (b) 1%
(c) 0.01% (d) 0.1%
33. If 60% of A = $3/4$ of B, then A : B is.
(a) 9 : 20 (b) 20 : 9
(c) 4 : 5 (d) 5 : 4
34. If 30% of $(B - A) = 18\%$ of $(B + A)$, then the ratio A : B is equal to
(a) 4 : 1 (b) 1 : 4
(c) 5 : 4 (d) 5 : 9
35. 32 is what per cent of 80
(a) 24% (b) 25.6%
(c) 36% (d) 40%
36. If 90% of A = 30% of B and B is x of A, then the value of X is
(a) 800 (b) 300
(c) 700 (d) 400
37. If 90% of A = 30% of B and B = $2x\%$ of a, then the value of x is
(a) 450 (b) 400
(c) 300 (d) 150
38. One- third of 1206 is what per cent of 134?
(a) 100% (b) 150%
(c) 200% (d) 300%
39. If 120% of a is equal to 80% of b, then $(b+a)/(b-a)$ is equal to
(a) 5 (b) 7
(c) 7 (d) 8
40. If 20% of $(a+b) = 50\%$ of B, then value of $(2A-B)/(2A+B)$ is
(a) $1/2$ (b) $1/3$
(c) $1/4$ (d) 1
41. If 40% of $(A+B) = 60\%$ of $(A-B)$ then $(2A-3B)/A+B$ is
(a) $7/6$ (b) $6/7$
(c) $5/6$ (d) $6/5$
42. What percent of 3.6 is 72 gms?
(a) 80 (b) 180
(c) 400 (d) 125
43. If 125% of x is 100, then x is
(a) 80 (b) 180
(c) 400 (d) 125
44. If 50% of $(P-Q) = 30\%$ of $(P+Q)$ and Q = x% of P, then the value of x is:
(a) 30 (b) 25
(c) 20 (d) 50
45. 25% of 120 + 40% of 380 = ? of 637

- (a) $\frac{2}{7}$ (b) $\frac{1}{7}$
 (c) $\frac{4}{7}$ (d) $\frac{3}{7}$
46. What is 27% of 36% of $\frac{5}{9}$ of 4500?
 (a) 239 (b) 241
 (c) 243 (d) 245
47. 1% of 1% of 25% of 1000 is:
 (a) 0.025 (b) 0.0025
 (c) 0.25 (d) 0.000025
48. If 8% of $x = 4\%$ of y , then 20% of x is:
 (a) 10% of y (b) 16% of y
 (c) 40% of y (d) 80% of y
49. If 60% of $A = 30\%$ of B , $B = 40\%$ of C and $C = x\%$ of A , then the value of x is :
 (a) 800 (b) 200
 (c) 300 (d) 500
50. If 20% of $A = 30\%$ of $B = \frac{1}{6}$ of C , then $A:B:C$ is :
 (a) 2:3:16 (b) 3:2:16
 (c) 10:15:18 (d) 15:10:18
51. If 50% of $x = 30\%$ of y , then $x:y$ is
 (a) 2:3 (b) 3:2
 (c) 5:3 (d) 3:5
52. If 80% of a number added to 80 gives the result as the number itself, then the number is
 (a) 200 (b) 300
 (c) 400 (d) 500
53. A person who spends $\frac{200}{3}\%$ of his income is able to save Rs. 1200 per month his monthly expenses (in rs.) is :
 (a) 1200 (b) 2400
 (c) 3000 (d) 3200
54. The income of C is 20% more than B 's and the income of B is 25% more than A 's, Find by how much percent is C 's income more than A 's?
 (a) 150% (b) 50%
 (c) 25% (d) 35%
55. If A exceeds B by 40%, B is less than C by 20%, then $A:C$ is :
 (a) 28:25 (b) 26:25
 (c) 14:27 (d) 27:14
56. In a school 70% of the students are girls the number of boys are 510. Then the total number of students in the school is :
 (a) 850 (b) 1700
 (c) 1830 (d) 1900
57. If 60% of the students in a school are boys and the number of girls is 972, how many boys are there in the school?
 (a) 1258 (b) 1458
 (c) 1324 (d) 1624
58. When 60 is subtracted from 60% of a number, the result is 60. The number is :
 (a) 120 (b) 150
 (c) 180 (d) 200
59. When 75% of a number is added to 75, the result is the same number, Find the number :
 (a) 225 (b) 270
 (c) 300 (d) 325
60. The difference of two numbers is 20% of the larger number. If the smaller number is 20, the larger number is :
 (a) 25 (b) 45
 (c) 50 (d) 80
61. If A 's income is 40% less than that of B , how much percent B 's income is more than that of A ?
 (a) 60% (b) 40%
 (c) 66.66% (d) 33.33%
62. Two numbers are respectively 20% and 50% of a third number, What percent is the first number of the second?
 (a) 10% (b) 20%
 (c) 30% (d) 40%
63. Two number are respectively 25% and 20% less, than a third number What percent is the first number of the second?
 (a) $33\frac{5}{4}\%$ (b) $49\frac{5}{5}$
 (c) $24\frac{2}{3}\%$ (d) $37\frac{5}{4}\%$
64. If a number x is 10% less than another number y is 10% more than 125, then x is equal to :
 (a) 150 (b) 143
 (c) 140.55 (d) 123.75
65. If 70% of the students in a school are boys and the number of girls be 504, the number of boys is:
 (a) 1176 (b) 1008
 (c) 1208 (d) 3024
66. Two numbers are more than the third number by 20% and 50% respectively. Find the first number is what percent of the second number?
 (a) 100% (b) 150%
 (c) 80% (d) 120%
67. Two numbers are respectively $25\frac{1}{2}\%$ and 25% more than a third number, The first number is what percent of the second number :
 (a) 50% (b) 60%
 (c) 75% (d) 90%
68. If 60% of A 's income is equal to 75% of B 's income, then B 's income is equal to $x\%$ of A 's income is equal to the sum of 10% of the larger number and 25, then the smaller number is:
 (a) 70 (b) 60
 (c) 80 (d) 90
69. Two numbers are in the ratio 2:3 if 20% of the smaller number added to 20 equal to the sum of 10% of the larger number and 25, then the smaller number is
 (a) 100 (b) 160
 (c) 180 (d) 200
70. Two number are respectively 20% and 50% more than a third number, Then the ratio of the two numbers is:
 (a) 2:5 (b) 3:5
 (c) 4:5 (d) 6:7
71. 15% of 45% of a number is 105.3, What is 24% of that number,
 (a) 385.5 (b) 374.4
 (c) 390 (d) 375

72. The monthly income of a person was R 13,500 and his monthly expenditure was R 9,000. Next year his income increased by 14% and his expenditure increased by 7%. The percentage increase in his savings.
(a) 7% (b) 2.1%
(c) 28% (d) 35%
73. The difference of two numbers is 45% of their sum. The ratio of the larger number to the smaller number is
(a) 20: 9 (b) 9: 20
(c) 29 : 11 (d) 11 : 29
74. A number if reduced by 25% becomes 225. By what percent should it be increased so that it becomes 375?
(a) 2.5% (b) 30%
(c) 35% (d) 75%
75. Out of two numbers, 40% of the greater number is equal to 60% of the smaller,if the sum of the numbers is 150, then the greater number is
(a) 70 (b) 80
(c) 90 (d) 60
76. If A's height is 10% more than B's height, by how much per cent is B's height less than that of A?
(a) 10% (b) 91/9%
(c) 111/11 % (d) 100/9%
77. Given that, 10% of A's income = 15% of B's income = 20% of C's income. If sum of their incomes is R 7800, then B's income is :
(a) 3600 (b) 3000
(c) 2400 (d) 1800
78. If three-fifth of sixty percent of a number is 36, the number is
(a) 100 (b) 80
(c) 75 (d) 90
79. A's salary is 50% more than that of B. How much percent is B's salary less than that of A
(a) 50% (b) 100/3
(c) 45% (d) 200/3%
80. If Nita's salary is 25 percent more than Papiya's salary, then the percentage by which Papiya's salary is less than Nita's salary is:
(a) 15% (b) 20%
(c) 25% (d) 32%
81. X has twice as much money as that of Y and Y has 50% more money than that of Z.if the average money of all of them is Rs. 110, then the money which X has is:
(a) 55 (b) 60
(c) 90 (d) 180
82. If x earns 25% more than y. What percent less does y earn than x?
(a) 16% (b) 10%
(c) 20% (d) 25%
83. Tulsilam's salary is 20% more than that of Kashyap. If tulsiram saves Rs. 720 which is 4% of his salary, then Kashyap's salary is
(a) Rs 15,000 (b) Rs. 12,000
(c) Rs. 10, 000 (d) Rs. 22,000
84. Two numbers are less than a third number by 30% and 37% respectively. The percent by which the second number is less than the first is:
(a) 10% (b) 7%
(c) 4% (d) 3%
85. Mita's income is 25% more than that of Sita. What percent is Sita's income less than that of Mita?
(a) 25% (b) 24%
(c) 45/2% (d) 20%
86. If A's income is 25% less than B's income then by what percent is B's income more than that of A ?
(a) 25% (b) 30%
(c) 100/3% (d) 200/3%
87. A's salary is 40% of B's salary and B's salary is 25% more than C's salary then C's salary is how much percentage more than A?
(a) 50% (b) 100%
(c) 150% (d) 200%
88. If A's income is 50% less than that of B's, then B income is what percent more than that of A?
(a) 125% (b) 100%
(c) 75% (d) 50%
89. A's salary is 25% more than B's salary then B's salary is how much percent less than A's salary?
(a) 20% (b) 24%
(c) 25% (d) 27.5%
90. If A exceeds B by 60% and B is less than C by 20%, then A : C is:
(a) 32 : 25 (b) 25 : 32
(c) 8 : 5 (d) 4 : 5
91. In an examination 93% of students passed and 259 failed. The total number of students appearing at the examination was:
(a) 3700 (b) 3850
(c) 3950 (d) 4200
92. If 24 carat gold is considered to be hundred per cent pure gold, then the percentage of pure gold in 22 carat gold is:
(a) 367/4 % (b) 275/3 %
(c) 274/3 % (d) 272/3%
93. If 30% of A is added to 40% of B, the answer is 80% of B, What percentage of A is B?
(a) 30% (b) 40%
(c) 70% (d) 75%
94. First and second number are less than a third number by 20% and 40% respectively. The second number is less than the first by:
(a) 7% (b) 4%
(c) 3% (d) 25%
95. One-third of a number is 96,what will 67% of that number be?
(a) 192.96 (b) 181.44
(c) 169.92 (d) 204.48.
96. If x% of a is the same as y% of b, then z% of b will be
(a) yz/x % of a (b) zx/y % of a
(c) xy/z % of a (d) y/z % of a
97. If y% of one hour is, 1 minute 12 seconds, then y is equal to

- (a) 2 (b) 1
(c) $1/2$ (d) $1/4$
98. A team played 40 games in a season and won 24 of them. What percent of games played did the team win?
(a) 70% (b) 40%
(c) 60% (d) 35%
99. A number is divided into two parts in such a way that 80% of 1st part is 3 more than 60% of 2nd part and 80% of 2nd part is 6 more than 90% of the 1st part, Then the number is:
(a) 125 (b) 130
(c) 135 (d) 145
100. A number, on subtracting 15 from it reduces to its 80%, What is 40% of the number?
(a) 75 (b) 60
(c) 30 (d) 90
101. 498 is 17% less than a number then the number is:
(a) 610 (b) 580
(c) 600 (d) 620
102. Given A is 50% larger than C and B is 25% larger than C, then A is what percent larger than B?
(a) 25% (b) 50%
(c) 75% (d) 20%
103. What is to be added to 15% of 160 so that the sum may be equal to 25% of 240
(a) 24 (b) 84
(c) 60 (d) 36
104. A number when reduced by 10% gives 30 as result. The number is:
(a) $67/2$ (b) $100/3$
(c) 40 (d) 35
105. If 15% of x is same as 20% of y then x : y is:
(a) 4 : 3 (b) 5 : 4
(c) 6 : 5 (d) 3 : 4
106. In an examination. A got 25% marks more than B, B got 10% less than C and C got 25% more than D. If D got 320 marks out of 500, the marks obtained by A were
(a) 405 (b) 450
(c) 360 (d) 400
107. A number increased by $45/2$ % gives 98 as result. The number is;
(a) 45 (b) 18
(c) 80 (d) 81
108. When 75 is added to 75% of a number, the answer is the number, Find 40% of that number,
(a) 100 (b) 80
(c) 120 (d) 160
109. The number that is to be added 10% of 320 to have the sum as 30% of 230 is:
(a) 37 (b) 23
(c) 23 (d) 73
110. If X is 20% less than Y, then find the value of $(Y - X)/Y$ and $X/(X - Y)$:
(a) $1/5, -4$ (b) $5, -1/4$
(c) $2/5, -5/2$ (d) $3/5, -3/5$
111. In a village 30% of the population is literate. If the total population of the village is 6,600, then the number of literate is:
(a) 1980 (b) 4620
(c) 2200 (d) 3280
112. If A's salary is 50% more than that of B, that B's salary is less than A's by :
(a) 33% (b) $121/3$ %
(c) $133/3$ % (d) $100/3$ %
113. Two numbers A and B are such that the sum of 5% of A and 4% of B is $2/3$ rd of the sum of 6% of A and 8% of B, the ratio A:B is :
(a) 4:3 (b) 3:4
(c) 1:1 (d) 2:3
114. A number is increased by x %; to get back in the original number, it is to be reduced by?
(a) $10x/(10+x)$ % (b) $100x/(10+x)$ %
(c) x% (d) $x/(100+x)$ %
115. One-fifth of half of a number is 20. Then 20% of that number is
(a) 80 (b) 60
(c) 20 (d) 40
116. $250/3$ % of Rs. 90 is equal to 60% of ?
(a) 122 (b) 125
(c) 123 (d) 124
117. 51% of a whole number is 714, 25% of that number is
(a) 250 (b) 350
(c) 450 (d) 550
118. Price of sugar rises by 20%. By how much percent should the consumption of sugar be reduced so that the expenditure does not change?
(a) 20 % (b) 10%
(c) $50/3$ % (d) 15%
119. What percent decrease in salaries would exactly cancel out the 20 percent increase?
(a) 20% (b) $50/3$ %
(c) $100/3$ % (d) 18%
120. If food prices go up by 10%, by how much should a man reduce his consumption so as not to increase his expenditure?
(a) $100/11$ % (b) 10%
(c) $101/11$ % (d) the data is not sufficient
121. The price of an article is decreased by 10%. To restore its former value the new price must be increased by:
(a) 10% (b) 11%
(c) $89/8$ % (d) $100/9$ %
122. In the new budget, the price of kerosene oil rose by 25%. By how much per cent must a person reduce his consumption of kerosene oil so that his expenditure on it does not increase.
(a) 20% (b) 25%
(c) 50% (d) 40%
123. Salary of a person is first increased by 20%, and then it is decreased by 20%. Then the percentage change in his salary is :
(a) 4% decreased (b) 8% increased

- (c) 8% decreased (d) 20% increased
- 124.** A number is increased by 20% and then it is decreased by 10%. Find the net increase or decrease percentage
(a) 10% increase (b) 10% decrease
(c) 8% increase (d) 8% decrease
- 125.** The tax imposed on an article is decreased by 10% and its consumption is increased by 10%. Find the percentage change in revenue from it.
(a) 10% increase (b) 2% decrease
(c) 1% decrease (d) 11% increase
- 126.** The price of an article was increased two times successively by 10% each time. By what percent should the new price be reduced so as to restore the original price.
(a) 15% (b) 17.36%
(c) 17% (d) 16.36%
- 127.** If price of a book is first decreased by 25% and then increased by 20%, the net change in the price of the book will be :
(a) 10% decrease (b) 5% decrease
(c) no change (d) 5% increase
- 128.** A number is increased by 10% and then it is decreased by 10%. The net change in the number is:
(a) 2% decrease (b) 1% increase
(c) 2% increase (d) 1% decrease
- 129.** A worker suffers a 20% cut in his wage, He may regain his original wages by obtaining a rise of how much %.
(a) 27.5 % (b) 25.0 %
(c) 22.5% (d) 20.6%
- 130.** The salary of a person was reduced by 10%. By what percent should his reduced salary be raised so as to bring it up with his original salary?
(a) 9% (b) 100/9%
(c) 100/11% (d) 11%
- 131.** A number is increased by 20% and then again by 20%. By what per cent should the increased number be reduced so as to get back the original number?
(a) 275/9% (b) 600/31%
(c) 40% (d) 44%
- 132.** The number of employees working in a farm is increased by 25% and the wages per head are decreased by 25%. If it results in X% decrease in total wages, then the value of x is
(a) 0% (b) 25%
(c) 20% (d) 25/4%
- 133.** The price of an article was increased by r%. Later the new price was decreased by r%. If the latest price was Rs 1, then the original price was
(a) 1 (b) $(1-r^2)/100$
(c) $(\sqrt{1-r^2})/100$ (d) $(10000/10000-r^2)$
- 134.** The price of petrol is increased by 25%. By how much percent a car owner should reduce his consumption of petrol so that the expenditure on petrol would not be increased?
(a) 25% (b) 30%
(c) 50% (d) 20%
- 135.** A number is first decreased by 10% and then increased by 10%. The number so obtained is 50 less than the original number. The original number is :
(a) 5900 (b) 5000
(c) 5500 (d) 5050
- 136.** The Government reduced the price of sugar by 10 per cent. By this a consumer can buy 6.2 kg more sugar for Rs 837. The reduced price per kg of sugar is
(a) Rs. 12.50 (b) Rs. 13.00
(c) Rs. 13.50 (d) Rs. 14.00
- 137.** The price of sugar is increased by 20%. If the expenditure of sugar has to be kept the same as earlier, the ratio between the reduction in consumption and the original consumption is:
(a) 1 : 2 (b) 1:4
(c) 1:6 (d) 1:5
- 138.** If the price of a commodity is decreased by 20% and its consumption is increased by 20%, what will be the increase or decrease in the expenditure on the commodity ?
(a) 4% increase (b) 4% decrease
(c) 8% decrease (d) 8% increase
- 139.** The price of a certain item is increased by 15%. If a consumer wants to keep his expenditure on the item the same as before, how much per cent must he reduce his consumption of that item?
(a) 15% (b) 300/23%
(c) 50/3% (d) 250/23%
- 140.** If the price of petrol be raised by 20%, then the percentage by which a car owner must reduce his consumption so as not to increase his expenditure on petrol is:
(a) 49/3% (b) 50/3%
(c) 47/3% (d) 46/3%
- 141.** A number is first increased by 10% and then it is further increased by 20%. The original number is increased altogether by:
(a) 30% (b) 15%
(c) 32% (d) 36%
- 142.** The length of a rectangle is increased by 10% and breadth decreased by 10%. The area of the new rectangle is:
(a) neither decreased or increased (b) increased by 1%
(c) decreased by 1% (d) decreased 10%
- 143.** B got 20% marks less than A. What percent marks did A get more than B?
(a) 20% (b) 25%
(c) 12% (d) 80%
- 144.** Bhuvnesh' salary was reduced by 10% and then the reduced salary was increased by 10%. His new salary in comparison with his original salary is :
(a) the same (b) 1% more
(c) 1% less (d) 5% less
- 145.** If the price of a commodity is increased by 50% by what fraction must its consumption be reduced so

- as to keep the same expenditure on its consumption ?
 (a) 1/4 (b) 1/3
 (c) 1/2 (d) 2/3
- 146.** If the duty on an article is reduced by 40% of its present rate by how much per cent. must its consumption increase in order that the revenue remains unaltered?
 (a) 60% (b) 187/3 %
 (c) 72% (d) 200/3%
- 147.** If the price of sugar is raised by 25%, find by how much percent a house holder consumption of sugar so as not to be increased his expenditure?
 (a) 10% (b) 20%
 (c) 18 % (d) 25%
- 148.** The price of an article is reduced by 25% but the daily sale of the article is increased by 30%. The net effect on the daily sale receipts is:
 (a) 5/2 % increase (b) 5/2% decrease
 (c) 2% increase (d) 2% decrease
- 149.** The price of sugar is reduced by 20%. Now a person can buy 500g more sugar for R 36. The original price of the sugar per kilogram was:
 (a) Rs.14.40 (b) Rs.18
 (c) Rs. 15.60 (d) 16.50
- 150.** The salary of a person is decreased by 25% and then the decreased salary is increased by 25%. His new salary in comparison with his original salary is:
 (a) the same (b) 6.25% more
 (c) 6.25% less (d) 0.625% less
- 151.** Two successive price increases 10% and 10% on an article are equivalent to a single price increase of
 (a) 19% (b) 20%
 (c) 21% (d) 22%
- 152.** The price of an article was first increased by 10% and then again by 20%. If the last increased price was Rs. 33, the original price was
 (a) Rs. 30 (b) Rs.27.50
 (c) Rs. 26.50 (d) Rs.25
- 153.** If a number is increased by 20% and the resulting number is again increased by 20% ,what percent is the total increase:
 (a) 48% (b) 44%
 (c) 41% (d) 40%
- 154.** A reduction of 20% in the price of wheat enables bhuvnesh to buy 5 kg more wheat for rs. 320 . The original rate (in rupees per kg) of wheat was:
 (a) 16 (b) 18
 (c) 20 (d) 21
- 155.** A reduction of 25% in the price of rice enables Bhuvnesh to buy two kg more rice for R 240. The reduced per kg price of rice is
 (a) Rs. 30 (b) Rs 25
 (c) Rs 20 (d) Rs 15
- 156.** The price of an article is reduced by 25% but the daily sale of the article is increased by 30%. The net effect on the daily sale receipts is
 (a) 5/2% increase (b) 5/2% decrease
 (c) 2% increase (d) 2% decrease
- 157.** The cost of an, article was Rs. 75. The cost was first increased by 20% and later on it was reduced by 20%. The present Cost of the article is
 (a) Rs. 72 (b) Rs.60
 (c) Rs. 75 (d) Rs.90
- 158.** The price of a commodity rises from Rs.6 per kg to Rs.7.50 per kg.If the expenditure cannot increase, the percentage of reduction in consumption is:
 (a) 15% (b) 20%
 (c) 25% (d) 30%
- 159.** The price of a commodity has increased by 60%. By what percent must a consumer reduce the consumption of the commodity so as not to increase the expenditure?
 (a) 37% (b) 37.5%
 (c) 40.5% (d) 60%
- 160.** When the price of an article was reduced by 20%, its sale increased by 80%.What was the net effect on the sale?
 (a) 44% increase (b) 44% decrease
 (c) 66% increase (d) 75% increase
- 161.** When the price of cloth was reduced by 25%, the quantity of cloth sold increased by 20%. What was the effect on gross receipt of the shop?
 (a) 5% increase (b) 5% decrease
 (c) 10% increase (d) 10% decrease
- 162.** The cost of an article Worth Rs. 100 is increased by 10% first and again increased by 10%. The total increase in rupees is
 (a) 20 (b) 21
 (c) 110 (d) 121
- 163.** When the price of sugar decreased by 10%, a man could buy 1 kg more for Rs. 270. Then the original price of sugar per kg is:
 (a) Rs. 25 (b) Rs.30
 (c) Rs. 27 (d) Rs.32
- 164.** A reduction of 10% in the price of an apple enables a man to buy 10 apples more for Rs. 54. The reduced price of apples per dozen is
 (a) 6.48 (b) 12.96
 (c) 10.80 (d) 14.40
- 165.** If the height of a cylinder is increased by 15% and the radius of its base is decreased by 10% then the percentage change in its curved surface area is :
 (a) 2.5% increase (b) 3.5% increased
 (c) 2.5% decreased (d) 3.5% decreased
- 166.** A's salary is increased by 10% and then decreased by 10%. And then decrease by 10% . then change in salary is:
 (a) 0% (b) 1% decrease
 (c) 1% increase (d) 2% decrease
- 167.** If the price of rice be raised by 25% the percent by which a house holder must reduce his consumption of rice so as not to increase his expenditure on rice is:
 (a) 22.5% (b) 25.75%
 (c) 25% (d) 20%

168. Price of milk has increased by 20% To keep the expenditure unchanged, the present consumption is to be reduced by
(a) 20% (b) 18%
(c) 10% (d) 50/3%
169. If a number is increased by 25% and the resulting number is decreased by 25%, then the percentage increase or decrease finally is
(a) no change (b) decreased by 25/4%
(c) increased by 25/4% (d) increased by 6%
170. The price of an article is first decreased by 20% and then increased by 30%. If the resulting price is Rs. 416, the original price of the article
(a) Rs. 350 (b) Rs. 405
(c) Rs. 400 (d) Rs. 450
171. If each side of a cube is increased by 10% the volume of the cube will increase by:
(a) 40% (b) 30%
(c) 33.1% (d) 25%
172. The difference between the value of the number increased by 20% and the value of the number decreased by 25% is 36. Find the number
(a) 7.2 (b) 0.8
(c) 720 (d) 80
173. A number is first decreased by 20% the decreased number is then increased by 20% The resulting number is less than the original number by 20. Then the original number is
(a) 200 (b) 400
(c) 500 (d) 600
174. A reduction of 21% in the price of an item enables a person to buy 3 kg more for Rs. 100, The reduced price of item per kg is:
(a) Rs. 5.50 (b) Rs. 7.50
(c) Rs. 10.50 (d) Rs. 7.00
175. The percentage increase in the surface area of a cube when each side is doubled is:
(a) 200% (b) 300%
(c) 150% (d) 50%
176. In a factory, the production of cycles rose to 48,400 from 40,000 in 2 years. The rate of growth per annum is?
(a) 10.5% (b) 9%
(c) 8% (d) 10%
177. Water tax is increased by 20% but its consumption is decreased by 20%. Then the increase or decrease in the expenditure of the money is
(a) 4% increase (b) 4% decrease
(c) No change (d) 5% decrease
178. If radius of a circle is increased by 5% then the increase in its area is
(a) 10.25% (b) 5.75%
(c) 10% (d) 5%
179. The price of an antique is reduced by 20% and then this price is again reduced by 10%. The total reduction of the price is
(a) 25% (b) 23%
(c) 30% (d) 28%
180. In an examination there were 1000 boys and 800 girls. If 60% of the boys and 50% of the girls passed. Find the percentage of the failed candidates?
(a) 46.4% (b) 48.4%
(c) 44.4% (d) 49.6%
181. In an examination a candidate must secure 40% marks to pass. A candidate, who gets 220 marks, fails by 20 marks, Find the maximum marks for the examination?
(a) 1200 (b) 300
(c) 600 (d) 450
182. In a class 60% of the students pass in Hindi and 45% pass in Sanskrit. If 25% of them pass in both subjects, what percentage of the students fail in both the subjects?
(a) 80% (b) 75%
(c) 20% (d) 25%
183. In an examination 70% of the candidates passed in English, 80% passed in Mathematics 10% failed in both the subjects if 144 candidates passed in both, the total number of candidates was:
(a) 125 (b) 200
(c) 240 (d) 375
184. The ratio of the number of boys and girls in a college is 3: 2. If 20% of boys and 25% of girls are adults, the percentage of those students who are not adults is:
(a) 58% (b) 67.5%
(c) 78% (d) 82.5%
185. The ratio of the number of boys to that of girls in a school is 4: 1. If 75% of boys and 70% of the girls are scholarship-holders, then the percentage of students who do not get scholarship is:
(a) 50% (b) 28%
(c) 75% (d) 26%
186. A student has to obtain 33% of total marks to pass. He got 25% of total marks and failed by 40 marks. The number of total marks is:
(a) 800 (b) 300
(c) 500 (d) 600
187. In an examination, 70% of the candidates passed in English, 80% passed in mathematics and 10% failed in both the subjects. If 84 candidates passed in both, the total number of candidates was:
(a) 125 (b) 200
(c) 240 (d) 375
188. A candidate who goes 20% marks in an examination failed by 30 marks but another candidate who gets 32% gets 42 marks more than the pass marks then the percentage of pass marks is:
(a) 52% (b) 50%
(c) 33% (d) 25%
189. In an examination there were 640 boys and 360 girls, 60% of boys and 80% of girls were successful. The percentage of failure was:
(a) 20% (b) 60%
(c) 30.5% (d) 32.8%

190. In an examination, 34% failed in Mathematics and 42% failed in English. If 20% failed in both the subjects, the percentage of students who passed in both subjects was:
 (a) 54% (b) 50%
 (c) 44% (d) 56%
191. A candidate secured 30% marks in an examination and failed by 6 marks, Another secured 40% marks and got 6 marks more than the pass marks. The maximum marks are:
 (a) 150 (b) 120
 (c) 100 (d) 180
192. Two students appeared at an examination one of them secured 9 marks more than the other and his mere 56% of the sum of their marks. The marks obtained by them are:
 (a) 12,33 (b) 43,34
 (c) 41,32 (d) 39,30
193. In an examination, 52% students failed in Hindi and 42% in English. If 17% failed in both the subjects, what percentage of students passed in both the subjects?
 (a) 38% (b) 33%
 (c) 23% (d) 18%
194. In a group of students, 70% can speak English and 65% can speak Hindi, If 27% of the students can speak none of the two languages, then what percent of the group can speak both the languages?
 (a) 38% (b) 62%
 (c) 28% (d) 23%
195. 25% of the candidates who appeared in an examination failed and only 450 students qualify the exam. The number of students who appeared in the examination was:
 (a) 700 (b) 600
 (c) 550 (d) 500
196. In a school 40% of the students play football and 50% play cricket. If 18% of the students neither play football nor cricket, the percentage of the students playing both is:
 (a) 40% (b) 32%
 (c) 22% (d) 8%
197. In a class, the number of girls is 20% more than that of the boys. The strength of the class is 66. If 4 more girls are admitted to the class, the number of boys to that of the girls is:
 (a) 1 : 2 (b) 3 : 4
 (c) 1 : 4 (d) 3 : 5
198. In two successive years 100 and 75 students of a school appeared at the final examination. respectively 75% and 60% of them passed. The average rate of pass is:
 (a) 480/7 % (b) 78%
 (c) 161/2% (d) 8%
199. A student has to secure minimum 35% marks to pass in an examination. If he gets 200 marks and fails by 10 marks, then the maximum marks are:
 (a) 300 (b) 400
 (c) 500 (d) 600
200. A candidate who scores 30 percent fails by 5 marks, while another candidate who scores 40 percent marks gets 10 more marks than minimum pass marks, The minimum marks required to pass are:
 (a) 50 (b) 70
 (c) 100 (d) 150
201. In an examination, 65% of the students passed in Mathematics, 48% passed in Physics and 30% passed in both. How much per cent of students failed in both the subjects?
 (a) 17% (b) 43%
 (c) 13% (d) 47%
202. 72% of the students of a certain class took Biology and 44% took Mathematics, If each student took at least one subject from Biology or Mathematics and 40 took both then the total number of students in the class is :
 (a) 200 (b) 240
 (c) 250 (d) 320
203. In an examination 60% of the candidates passed in English and 70% of the candidates passed in Mathematics, but 20% failed in both of these subjects. If 2500 candidates passed in both the subjects, the number of candidates who appeared at the examination was:
 (a) 3000 (b) 3500
 (c) 4000 (d) 5000
204. In a test a student got 30% marks and failed by 25 marks, In the same test another student got 40% marks and secured 25% marks more than the essential minimum pass marks, The maximum pass marks for the test were
 (a) 400 (b) 480
 (c) 500 (d) 580
205. In a village each of the 60% of families has a cow, each of the 30% of families has a buffalo and each of the 15% of families has both a cow and a buffalo. In all there are 96 families in the village. How many families do not have a cow or a buffalo?
 (a) 20 (b) 24
 (c) 26 (d) 28
206. In an examination, 80% of the boys passed in English and 85% passed in Mathematics, while 75% passed in both. If 45 boys failed in both. The number of boys who sat for the examination Was:
 (a) 400 (b) 450
 (c) 200 (d) 150
207. In an examination, 35% of the candidates failed in Mathematics and 25% in English. If 10% failed in both mathematics and English, then how much percent of candidates passed in both the subjects?
 (a) 50% (b) 55%
 (c) 57% (d) 60%
208. In an examination, a student had to obtain 33% of the maximum marks to pass. He got 125 marks and failed by 40 marks, The maximum marks were
 (a) 500 (b) 600
 (c) 800 (d) 1000

209. For an examination it is required to get 36% of maximum marks to pass, A student got 113 marks and failed by 85 marks. The maximum marks for the examination are::
 (a) 590 (b) 550
 (c) 565 (d) 620
210. A student scored 32% marks in science subjects out of 300. How much should he score in language papers out of 200 if he is to get overall 46% marks?
 (a) 72% (b) 67%
 (c) 66% (d) 60%
211. 90% of the students in school passed in school passed in English, 85% passed in Mathematics and 150 students passed in both the subjects. If no student failed in both the subjects, find the total number of students.
 (a) 120 (b) 220
 (c) 200 (d) 300
212. In a college, 40% of the students were allotted group A, 75% of the remaining were given group B and the remaining 12 students were given group C. Then the number of students who applied for the group is:
 (a) 100 (b) 60
 (c) 80 (d) 92
213. The ratio of the number of boys and girls in a school is 2 : 3. If 25% of the boys and 30% of the girls are scholarship holders, the percentage of the school students who are not scholarship holders is :
 (a) 72% (b) 36%
 (c) 54% (d) 60%
214. In the annual examination Ankita got, 10% less marks than Eakta mathematics, Ankita got 81 marks. the marks of Eakta are:
 (a) 90 (b) 87
 (c) 88 (d) 89
215. In an examination, 19% students fail in Mathematics and 10% students fail in English. If 7% of all students fail in both subjects, then the percentage of students passed in both subjects is:
 (a) 36% of all students (b) 64% of all students
 (c) 71% of all students (d) 78% of all students
216. In an examination, a student must get 36% marks to pass. A student who gets 190 marks failed by 35 marks The total marks in that examination is:
 (a) 625 (b) 450
 (c) 500 (d) 810
217. The ratio of the number of boys to that of girls in a village is 3: 2. If 30% of boys and 70% of girls appeared in an examination, the ratio of the number of students, appeared in the examination to that not appeared in the same examination is
 (a) 1 : 1 (b) 27: 23
 (c) 9 : 14 (d) 23: 27
218. In an examination there are three subjects of 100 marks each. A student scores 60% in the first subject and 80% in the second subject. He scored 70% in aggregate, His percentage of marks in the third subject is
 (a) 80 (b) 60
 (c) 65 (d) 70
219. A person gave 20% of his income to his elder son, 30% of the remaining to the younger son and 10% of the balance, he donated to a trust, He is left with 10080. His income was:
 (a) ₹ 50000 (b) ₹ 40000
 (c) ₹ 30000 (d) ₹ 20000
220. Ram spends 40% of his salary on food, 20% on house rent, 10% on entertainment and 10% on conveyance. If his savings at the end of a month are Rs. 1500, then his salary per month (in Rs.) is :
 (a) Rs. 8000 (b) Rs. 7500
 (c) Rs. 6000 (d) Rs. 10000
221. Out of 2500 people, Only 60% have the saving habit. If 30% save with bank, 32% with post office and the rest with shares, the number of shareholders are :
 (a) 450 (b) 570
 (c) 950 (d) 1250
222. Bhuvnesh spends 30% of his salary on food and donates 3% in a charitable trust. He spends Rs. 2310 on these two items, then total salary for that month is:
 (a) Rs. 6,000 (b) Rs. 8,000
 (c) Rs. 9000 (d) Rs. 7,000
223. A man had a certain amount with him. He spent 20% of that to buy an article and 5% of the remaining on transport. Then he gifted Rs. 120. If he is left with Rs. 1400, the amount he spent on transport is:
 (a) Rs. 76 (b) Rs. 61
 (c) Rs. 95 (d) Rs. 80
224. In a big garden 60% of the trees are coconut trees. 25% of the number of coconut trees is mango trees and 20% of the number of mango trees is apple trees. If the number of apple trees in the garden is 1440 then find the total number of trees in the garden:
 (a) 48000 (b) 50000
 (c) 51000 (d) 45000
225. Out of his total income, Mr. Kapur spends 20% on house rent and 70% of the rest on house-hold expenses. If he saves Rs. 1800, what is his total income (in rupees)?
 (a) Rs. 7800 (b) Rs. 70000
 (c) Rs. 8000 (d) Rs. 7500
226. Bhuvnesh spends 75% of his income and saves the rest. His income is increased by 20% and he increases his expenditure by 10%. Then the increase in savings (in percentage) is:
 (a) 50% (b) 52%
 (c) 45% (d) 48%
227. Mr. X spends 35% of his salary on food and 5% of his salary on children's education. In January 2011, he spent Rs. 17,600 on these two items. His salary for that month is:
 (a) Rs. 40000 (b) Rs. 44000

- (c) Rs.48000 (d) Rs.46000
- 228.** A Man gives 50% of his money to his son and 30% to his daughter 80% of the test is donated to a trust if he is left with 16000 now how much money did he have in the beginning?
(a)Rs. 400000 (b) Rs.40000
(c) Rs. 90000 (d) Rs.80000
- 229.** 8% of the voters in an election did not cast their votes in this election there were only two candidates the winner by obtaining 48% of the total wards defeated his contestant by 1100 voters the total number of voters in the election was;
(a) 21000 (b)23500
(c)22000 (d)27500
- 230.** in an election between two candidates 75% of the voters cast their votes out of which 2% votes were declared invalid a candidate got 9261 votes which were 75%of the valid votes the total number of voters enrolled in that election was:
(a)16000 (b)16400
(c) 16800 (d) 18000
- 231.** a man spends 25/ 2% of his salary on items of daily use and 30% of the remainder on house rent after that he is left with rupees 2940 how much is his salary
(a) Rs. 4800 (b) Rs. 5200
(c) Rs.4500 (d) Rs.4000
- 232.** In an election between two candidates, the candidate getting 60% of the votes polled is elected by a majority of 14000 votes. The number of votes obtained by the winning candidates is:
(a)28000 (b)32000
(c) 42000 (d) 46000
- 233.** A man spends 40% of his monthly salary on food and one-third of the remaining on transport. If he saves Rs. 4500 per month which is equal to half the balance after spending on food and transport, his monthly salary is:
(a) Rs. 11250 (b) Rs. 22500
(c) Rs. 25000 (d) Rs. 45000
- 234.** In an election there were only two candidates. One of the candidates secured 40% of votes and is defeated by the other candidate by 298 votes. The total number of votes polled is;
(a)745 (b)1460
(c) 1490 (d) 1500
- 235.** In an assembly election, a candidate got 55% of the total valid votes 2% of the total votes were declared invalid. If the total number of voters is 104000, then the number of valid votes polled in favour of the candidate is:
(a)56506 (b) 56650
(c) 56560 (d) 56056
- 236.** Two candidates contested in an election. One got 60% of the votes and won by 1600 votes. What is the number of votes polled:
(a) 9000 (b) 8000
(c)10000 (d) 7500
- 237.** In an election, there are three candidates contested. The first candidates got 40% votes and the second got 36% votes. If total number of votes polled were 36000, find the number of votes got by the 3rd candidate.
(a) 8040 (b) 8640
(c) 9360 (d) 9640
- 238.** Two persons contested in election of Parliament. The winning candidate secured 57% of the total votes polled and won by a majority of 42000 votes, the number of total votes polled is:
(a)500000 (b) 600000
(c) 300000 (d)400000
- 239.** In an election, a candidate who gets 84% of the votes is elected by a majority of 476 votes. What is the total number of votes polled?
(a)900 (b)810
(c)600 (d) 700
- 240.** At an election there were two candidates. A candidate got 38% of the votes and lost by 7200. The total number of valid votes are:
(a)13000 (b)13800
(c)16200 (d) 30000
- 241.** A district has 64000 inhabitants. If the population increases at the rate of 5/2% per annum. The number of inhabitants at the end of the 3 years will be:
(a) 70000 (b)69200
(c)68921 (d)68911
- 242.** The value of a property depreciates every year by 10% of its value at the beginning of the year. The present value of the property is Rs. 8100. What was its value 2 years ago?
(a) Rs. 10000 (b) Rs. $(90/11)^2 \times 100$
(c)Rs. $(100/101)^2 \times 8100$ (d) Rs.9801
- 243.** The population of a village has increases annually at the rate of 25%. If at the end of 3 years it is 10,000 the population in the beginning of the first year was:
(a) 5120 (b)5000
(c) 4900 (d)4500
- 244.** The population of a town 2 years ago was 62500. Due to migration to big cities, it decreases every year at the rate of 4%. The present population of the town is;
(a)57600 (b)56700
(c) 76000 (d)75000
- 245.** The population of a town increases every year by 4%. If population was 50000 in starting, then after 2 years it will be:
(a)53900 (b)54000
(c) 54080 (d) 54900
- 246.** The value of a commodity depreciates 10% annually if it was purchased 3 years ago and its present value is Rs. 5832. What was its purchase price?
(a)Rs.7200 (b) Rs.7862
(c) Rs. 8000 (d)Rs.8500

247. A man received Rs. 880000 as his annual salary of the year 2007 which was 10% more than his annual salary in 2006. His annual salary in the year 2006 was:
 (a) Rs.480000 (b) Rs.800000
 (c) Rs. 400000 (d) Rs.840000
248. The value of equipment depreciates by 20% each year. How much less will the value of the equipment be after 3 years?
 (a)48.8% (b)51.2%
 (c)54% (d) 60%
249. Present population of a village is 67600, it has been increasing annually at the rate of 4%. What was the population of the village two years ago?
 (a) 62500 (b) 63000
 (c)64756 (d) 65200
250. The value of a property decreases every year at the rate of 5%, if its present value is Rs. 411540, what was its value 3 years ago?
 (a)450000 (b)460000
 (c)475000 (d)480000
251. The value of a machine depreciates by 5% every year. if its present value is Rs. 200000, its value after 2 years will be
 (a)Rs. 180500 (b) Rs. 199000
 (c) Rs. 180000 (d) Rs. 210000
252. If the population of a town is 64000 and its annual increase is 10%, then its population at the end of 3 years will be:
 (a) 80000 (b)85184
 (c) 85000 (d)85100
253. The population of a village decreases at the rate of 20% per annum. If its population 2 years ago was 10000 the present population is
 (a)4600 (b) 6400
 (c) 7600 (d) 6000
254. A clerk received an annual salary of Rs. 3660 in the year 1975. This was 20% more than his salary in 1974. What was his salary in 1974.
 (a) 3005 (b) 3000
 (c) 3500 (d) 3050
255. The enhanced salary of a man becomes Rs. 24000 after 20% increment. His previous salary was:
 (a) 20000 (b) 21000
 (c) 16000 (d) 18000
256. The value of a machine is Rs. 6250. It decreases by 10% during the first year, 20% during the second year and 30% during the third year. What will be the value of the machine after 3 years?
 (a) 2650 (b) 3050
 (c) 3150 (d) 3510
257. the value of a machine depreciates every by 10%. If its present value is Rs. 50000 then the value of the machine after 2 year will be:
 (a) 40050 (b) 45000
 (c) 40005 (d) 40500
258. The value of a machine depreciates every year at the rate of 10% on its value at the beginning of that year. If the current value of the machine is Rs. 729, its worth 3 years ago was:
 (a) 1000 (b) 750.87
 (c) 947.10 (d) 800
259. Raman's salary is increased by 5% this year. If his present salary is Rs. 1806, the last year's salary was:
 (a) 1720 (b) 1620
 (c) 1520 (d) 1801
260. The strength of a school increases and decreases in every alternate year by 10%. It started with increase in 2000, then the strength of the school in 2003 as compared to that in 2000 was:
 (a) increased by 8.9% (b) decreased by 8.9%
 (c) increased by 9.8% (d) decreased by 9.8%
261. The population of a town increases each year by 4% of its total at the beginning of the year. If the population on 1st January 2001 was 500000, what was it on 1st January 2004?
 (a) 562432 (b) 652432
 (c) 465223 (d) 564232
262. The population of a village increase by 5% annually. if its present population is 4410, then its population 2 year ago was:
 (a) 4500 (b) 4000
 (c) 3800 (d) 3500
263. The population of a town increases by 5% every year. If the present population is 9261. The population 3 years ago was:
 (a) 5700 (b) 6000
 (c) 7500 (d) 8000
264. The income of a company increases 20% per annum. If its income is Rs. 2664000 in the year 2012. Then its income in the year 2010 was:
 (a) 2120000 (b) 1850000
 (c) 2820000 (d) 2855000
265. In an alloy, there is 12% of copper, to get 69kg of copper, how much alloy will be required?
 (a) 424 kg (b) 575 kg
 (c) 828 kg (d) 5210/3 kg
266. 40 litres of a mixture of milk and water contains 10% of water, the water to be added, to make the water content 20% in the new mixture is:
 (a) 6 litre (b) 6.5 litre
 (c) 5.5 ltr (d) 5ltr
267. A sample of 50litres of glycerine is found to be adulterated to the extent of 20%. How much pure glycerine should be added to it so as to bring down the percentage of impurity to 5%.
 (a) 155 ltr (b) 150 ltr
 (c) 150.4 ltr (d) 140 ltr
268. Fresh fruit contains 68% water and dry fruit contains 20% water. How much dry fruit can be obtained from 100kgs of fresh fruits?
 (a) 32 kg (b) 40 kg
 (c) 52 kg (d) 80kg

269. 1 litre of water is added to 5 litre of alcohol water **solution** containing 40% alcohol strength. The strength of alcohol in the new **solution** will be:
 (a) 30% (b) 33%
 (c) 101/3% (d) 100/3%
270. 200 litres of a mixture contains 15% water and the rest is milk. The amount of milk that must be added so that the resulting mixture contains 87.5% milk is:
 (a) 30ltr (b) 35 ltr
 (c) 40 ltr (d) 45 ltr
271. In what ratio must a mixture of 30% alcohol strength be mixed with that of 50% alcohol strength so as to get a mixture of 45% alcohol strength?
 (a) 1 : 2 (b) 1 : 3
 (c) 2 : 1 (d) 3 : 1
272. The ratio in which two sugar solutions of the concentrations 15% and 40% are to be mixed to get a **solution** of concentration 30% is:
 (a) 2 : 3 (b) 3 : 2
 (c) 8 : 9 (d) 9 : 8
273. A vessel has 60 litres of **solution** of acid and water having 80% acid. How much water is added to make it a **solution** in which acid will be 60%?
 (a) 48 ltr (b) 20ltr
 (c) 36 ltr (d) none of these
274. 75 gm of sugar **solution** has 30% sugar in it. Then the quantity of sugar that should be added to the **solution** to make the quantity of the 70% in the **solution** is:
 (a) 125gm (b) 100gm
 (c) 120 gm (d) 130 gm
275. How much water must be added to 100ml of 80 percent **solution** of boric acid to reduce it to a 50 percent solution?
 (a) 30ml (b) 40 ml
 (c) 50ml (d) 60 ml
276. In one litre of a mixture of alcohol and water, water is 30%. The amount of alcohol that must be added to the mixture so that the part of water in the mixture becomes 15% is:
 (a) 1000 ml (b) 700 ml
 (c) 300 ml (d) 900ml
277. One type of liquid contains 20% water and the second type of liquid contains 35% of water. A glass is filled with 10 part of first liquid and 4 parts of second liquid. The water in the new mixture in the glass is:
 (a) 37 % (b) 46 %
 (c) 85/7 % (d) 170/7 %
278. 15 litres of a mixture contains alcohol and water in the ratio 1:4, if 3 litres of water is mixed in it, the percentage of alcohol in the new mixture will be:
 (a) 15% (b) 50/3%
 (c) 17% (d) 37/2%
279. In what ratio must 25% of alcohol to be mixed with 50% of alcohol to get a mixture of 40% strength alcohol?
 (a) 1 : 2 (b) 2 : 1
 (c) 2 : 3 (d) 3 : 2
280. 20 litres of a mixture contains 20% alcohol and the rest is water. If 4 litres of water be mixed in it, the percentage of alcohol in the new mixture will be:
 (a) 100/3 % (b) 50/3%
 (c) 25% (d) 25/2 %
281. The percentage of metals in a mine of lead ore is 60%. Now the percentage of silver is 3/4% of metals and the rest is lead. If the mass of ore extracted from this mine is 8000kg, the mass (in kg) of lead is:
 (a) 4763 (b) 4764
 (c) 4762 (d) 4761
282. 300 grams of sugar **solution** has 40% of sugar in it. How much sugar should be added to make it 50% in the solution?
 (a) 10 gms (b) 60 gms
 (c) 40 gms (d) 80gms
283. In 2 kg mixture of copper and aluminium, 30% is copper. How much aluminium powder should be added to the mixture so that the quantity of copper becomes 20%?
 (a) 900gms (b) 800gms
 (c) 1000gms (d) 1200gms
284. Due to an increase of 50% in the price of eggs, 4 eggs less are available for Rs. 24. The present rate of eggs per dozen is:
 (a) 24 (b) 27 0
 (c) 36 (d) 42
285. Due to an increase of 20% in the price of eggs 2 eggs less are available for Rs. 24. The present rate of eggs per dozen is:
 (a) 25.00 (b) 26.20
 (c) 27.80 (d) 28.80
286. If a man receives on one-fourth of his capital 3% interest, on two third 5% and on the remaining 11% the percentage interest he receives on the whole is:
 (a) 4.5 % (b) 5%
 (c) 5.5 % (d) 5.2%
287. A reduction in the price of apples enables a person to purchase 3 apples for Rs. 1 instead of Rs. 1.25. what is the % of reduction in price?
 (a) 20% (b) 25%
 (c) 30% (d) 100/3%
288. The expenses on rice, fish and oil of a family are in the ratio 12: 17: 3. The price of these articles is increased by 20%, 30% and 50% respectively. The total expenses of family on these articles are increased by:
 (a) 113/8% (b) 57/8%
 (c) 185/8% (d) none of these
289. The bus fare and train fare of a place from Kolkata were Rs. 20 and Rs. 30 respectively. Train fare has been increased by 20% and the bus fare has been

- increased by 10%. The ratio of new train fare to new bus fare is:
 (a) 11 : 18 (b) 18 : 11
 (c) 5 : 3 (d) 3 : 5
290. Ram's expenditure and savings are in the ratio 5 : 3. If his income increased by 12% and expenditure by 15%, then by how much percent does his savings increase?
 (a) 12% (b) 7 %
 (c) 8 % (d) 13%
291. The ratio of two numbers is 4 : 5, when the first is increased by 20% and the second is decreased by 20%, then the ratio of the resulting numbers is:
 (a) 4 : 5 (b) 5 : 4
 (c) 5 : 6 (d) 6 : 5
292. A man spends 75% of his income. His income increased by 20% and he increased his expenditure by 15%. His savings will then be increased by:
 (a) 33% (b) 100/3 %
 (c) 35% (d) 40%
293. A man spends 75% of his income. His income increased by 20% and his expenditure also increases by 10%. The percentage of increases in his savings is:
 (a) 40 % (b) 30 %
 (c) 50 % (d) 25 %
294. If the annual increase in the population of town is 4% and the present population be 17576, what was it three years ago?
 (a) 15675 (b) 15625
 (c) 15624 (d) 15728
295. A student multiplied a number by $\frac{3}{5}$ instead of $\frac{5}{3}$. What is the percentage error in the calculation?
 (a) 44 % (b) 34 %
 (c) 54 % (d) 64 %
296. In a town, the population was 8000. In one year, male population increased by 10% and female population increased by 8% but the total population increased by 9%. The number of males in the town was;
 (a) 4000 (b) 4500
 (c) 5000 (d) 6000
297. The sum of the number of boys and girls in a school is 150. If the number of boys is x, the number of students. The number of boys is:
 (a) 90 (b) 75
 (c) 25 (d) 60
298. If the sales tax on a television set increases from $15\frac{1}{2}\%$ to 8%, what more amounts will have to be paid for the television. Whose price (excluding sales taxes) in Rs. 19000.
 (a) 190 (b) 95
 (c) 180 (d) 90
299. A fruit seller had some apples. He sells 40% apples and still has 420 apples. Originally, he had:
 (a) 588 (b) 600
 (c) 672 (d) 700
300. If the monthly salary of a fan employee is increased by $\frac{8}{3}\%$, he gets 72 rupees more. His monthly salary in rupees is:-
 (a) 7200 (b) 3600
 (c) 2700 (d) 2000
301. If the total monthly income of 16 persons is Rs. 80800 and the income of one of them is 120% of the average income, then his income is:
 (a) 5050 (b) 6060
 (c) 6160 (d) 6600
302. A spider climber $12\frac{1}{2}\%$ of the height of the pole in one hour and in the next hour it covered $25\frac{1}{2}\%$ of the remaining height. If pole's height is 192m, then the distance climbed in second hour is:
 (a) 3m (b) 5m
 (c) 7m (d) 9m
303. An individual pays 30% income tax. On this tax he has to pay a surcharge of 10%. Thus, the net tax rate, he has to pay is:
 (a) 45% (b) 40%
 (c) 33% (d) 27%
304. A batsman scored 110 runs which included 3 boundaries and 8 sixes what per cent of his total score, did he make by running between the wickets/
 (a) 45% (b) $\frac{500}{11}\%$
 (c) $\frac{600}{11}\%$ (d) 55%
305. If the numerator of a fraction is increased by 20% and the denominator is decreased by 5%, the value of the new fraction becomes $\frac{5}{2}$, the original fraction is:
 (a) $\frac{24}{19}$ (b) $\frac{3}{18}$
 (c) $\frac{95}{48}$ (d) $\frac{48}{95}$
306. An interval of 3 hours 40 minutes is wrongly estimated as 3 hours 45.5 minutes. The error percentage is:
 (a) 5.5% (b) 5.2%
 (c) 5% (d) 2.5%
307. The ratio of the number of boys and girls in a school is 3 : 2. If 20% of the boys and 30% of the girls are scholarship holders, then the percentage of the students who do not get scholarship is:
 (a) 50% (b) 72%
 (c) 75% (d) 76%
308. If the income tax is increased by 19%, the net income is reduced by 1%. The rate of income tax is:
 (a) 6% (b) 4%
 (c) 5% (d) 7.2%
309. The population of a village was 9800. In a year with the increase in population of males by 8% and that of females by 5% the population of the village became 10458. What was the number of males in the village before increase?
 (a) 4200 (b) 4410
 (c) 5600 (d) 6084
310. In the expression xy^2 the values of both variable x and y are decreased by 20%. By this, the value of the expression is decreased by:
 (a) 40% (b) 80%

- (c)48.8% (d)51.2%
- 311.** A and B are two fixed points 5 cm apart and C is a point on AB such that AC is 3 cm. if the length of AC is increased by 6%, the length of CB is decreased by:
 (a) 6% (b) 7%
 (c) 8% (d) 9%
- 312.** A man invests a part of Rs. 10000 at 5% and the remainder at 6%. The 5% investment yields annually Rs. 76050 more than the 6% investment. The amount invested at 6% is:
 (a) 3600 (b) 3550
 (c) 3850 (d) 4000
- 313.** Each side of a rectangular field is diminished by 40%. By how much percent is the area of the field diminished?
 (a) 32 (b) 64
 (c) 25 (d) 16
- 314.** Ram saves 14% of his salary while Shyam saves 22%. If both get the same salary and Shyam saves Rs. 1540, what is the savings of Ram?
 (a) 900 (b) 980
 (c) 890 (d) 880
- 315.** The ratio of the number of boys and girls in a school is 3 : 2. If 20% of the boys and 25% of the girls are scholarship holders, then the percentage of the students, who do not get the scholarship is:
 (a) 78% (b) 75%
 (c) 60% (d) 55%
- 316.** When 60% of a number is subtracted from another number, the second number reduces to its 52%, the ratio of the first number to the second number is:
 (a) 6:5 (b) 5:3
 (c) 5:4 (d) 4:5
- 317.** In an examination in which full marks were 500. A got 25% more than C, C got 20% less than D. if A got 360 marks. What percentage of full marks who obtained by D?
 (a) 72% (b) 80%
 (c) 50% (d) 60%
- 318.** In an examination 1100 boys and 900 girls appeared, 50% of the boys and 40% of the girls passed the examination. The percentage of candidates who failed?
 (a) 45% (b) 45.5%
 (c) 50% (d) 54.4%
- 319.** In a factory 60% of the workers are above 30 years and of these 75% are males and the rest are females. If there are 1350 male workers above 30 years, the total number of workers in the factory is:
 (a) 3000 (b) 2000
 (c) 1800 (d) 1500
- 320.** In a class the average score of girls in an examination is 73 and that of boys is 71. The average score for the whole class is 71.8. find the percentage of girls.
 (a) 40% (b) 50%
 (c) 55% (d) 60%
- 321.** Tickets for all but 100 seats in a 10000 seat stadium were sold. Of the tickets sold 20% were sold at half price and the remaining tickets were sold at the full price of Rs. 20. The total revenue from the ticket sales, was:
 (a) 158400 (b) 178200
 (c) 180000 (d) 198000
- 322.** 31% of employees pay tax in the year 2008. Non-tax employees are 20700. The total number of employees is;
 (a) 31160 (b) 64750
 (c) 30000 (d) 66775
- 323.** The allowance of an employee constitutes 165% of his basic pay. If he receives Rs. 11925 as gross salary, then his basic pay is :
 (a) 4000 (b) 5000
 (c) 4500 (d) 5500
- 324.** A saves 20% of his monthly salary. If his monthly expenditure is Rs. 6000 then his monthly savings is:
 (a) 1500 (b) 1800
 (c) 1200 (d) 4800
- 325.** The population of a town is 311250. The ratio of women to men is 43 : 40. If there are 24% literate among women and 10% illiterate, among men, the total number of literate persons in the town is:
 (a) 170700 (b) 173700
 (c) 175700 (d) 173200
- 326.** 31% of employees pay tax in the year 2008. Non-tax paying employees are 27600. The total number of employees are:
 (a) 31160 (b) 64750
 (c) 40000 (d) 66775
- 327.** The population of a village is 25000. One-fifth are females and the rest are males, 5% of males and 40% of females are uneducated. What percentage on the whole is educated?
 (a) 75% (b) 88%
 (c) 55% (d) 85%
- 328.** A box has 100 blue, 50 red balls, 50 black balls, 25% of blue balls and 50% of red balls are taken away, percentage of black balls at present is;
 (a) 50% (b) 25%
 (c) 100/3% (d) 30%
- 329.** A dozens pairs of socks quoted at Rs. 180 are available at discount of 20%. How much pairs of socks can be caught for Rs. 48?
 (a) 3 pairs (b) 4 pairs
 (c) 2 pairs (d) 5 pairs
- 330.** The price of a school bag and a shoe are in the ratio 7 : 5. The price of the school bag is Rs. 200 more than the price of the shoe. Then the price of the shoe is:
 (a) 200 (b) 700
 (c) 500 (d) 1200
- 331.** Three sets of 40, 50, 60 students appeared for an examination and the pass percentage was 100, 90 and 80 respectively. The pass percentage of the whole set is?
 (a) 266/3% (b) 254/3 %


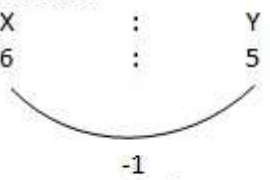
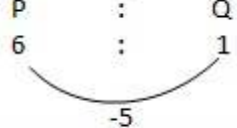
- (c) 265/3 % (d) 253/3%
- 332.** The sum of two numbers is 520. If the bigger number is decreased by 4% and the smaller number is increased by 12% then the numbers obtained are equal. The smaller number is:
(a) 280 (b) 240
(c) 210 (d) 300
- 333.** In two successive years 80 and 60 students of a school appeared at the final examination of which 60% and 80% passed respectively. The average rate of students passes is?
(a) 68 % (b) 480/7 %
(c) 32 % (d) 36 %
- 334.** A class has two sections, which contain 20 and 30 students. The pass percentage of these sections are 80% and 60% respectively. The pass percentage of whole class is:
(a) 60 % (b) 68 %
(c) 70% (d) 78%
- 335.** In a factory, the production of cycles rose to 48400 from 40000 in 2 years. The rate of growth per annum is?
(a) 10.5% (b) 9%
(c) 8% (d) 10%
- 336.** In an office 40% of the staff is female. 70% of the female staff and 50% of the male staff are married. The percentage of the unmarried staff in the office is:
(a) 65% (b) 42%
(c) 60% (d) 64%
- 337.** From 1980-1990 the population a country was increased by 20%. From 1999-2000, the population of the country was increased by 20%. From 2000-2010 the population of the country was increased by 20%. Population of the country form 1980-2010 was increase by.
(a) 72.2% (b) 72.8%
(c) 60% (d) 62.8%
- 338.** A number is increased by 15% and then decreased by 25% and the number becomes 22 less than the original number. The original number is
(a) 140 (b) 160
(c) 120 (d) 100
- 339.** If a person spends 40% of his income on food 20% on house rent and 70% of the remaining on children's education, then the percentage of his income left is:
(a) 6% (b) 8%
(c) 10% (d) 12%
- 43 a 44 b 45 a 46 c 47 a 48 a
49 d 50 d 51 d 52 c 53 b 54 b
55 a 56 b 57 b 58 d 59 c 60 a
61 c 62 d 63 d 64 d 65 a 66 c
67 d 68 c 69 a 70 c 71 b 72 c
73 c 74 a 75 c 76 d 77 c 78 a
79 b 80 b 81 d 82 c 83 a 84 a
85 d 86 c 87 b 88 b 89 a 90 a
91 a 92 b 93 d 94 d 95 a 96 b
97 a 98 c 99 c 100 c 101 c 102 d
103 d 104 b 105 a 106 b 107 c 108 c
109 a 110 a 111 a 112 d 113 a 114 b
115 d 116 b 117 b 118 c 119 b 120 a
121 d 122 a 123 a 124 c 125 c 126 b
127 a 128 d 129 b 130 b 131 a 132 d
133 d 134 d 135 b 136 c 137 c 138 b
139 b 140 b 141 c 142 c 143 b 144 c
145 b 146 d 147 b 148 b 149 b 150 c
151 c 152 d 153 b 154 a 155 a 156 b
157 a 158 b 159 b 160 a 161 d 162 b
163 b 164 a 165 b 166 b 167 d 168 d
169 b 170 c 171 c 172 d 173 c 174 d
175 b 176 d 177 b 178 a 179 d 180 c
181 c 182 c 183 c 184 c 185 d 186 c
187 c 188 d 189 d 190 c 191 b 192 a
193 c 194 b 195 b 196 d 197 b 198 a
199 d 200 a 201 a 202 c 203 d 204 a
205 b 206 b 207 a 208 a 209 b 210 b
211 c 212 c 213 a 214 a 215 d 216 a
217 d 218 d 219 d 220 b 221 b 222 d
223 d 224 a 225 c 226 a 227 b 228 d
229 d 230 c 231 a 232 c 233 b 234 c
235 d 236 b 237 b 238 c 239 d 240 d
241 c 242 a 243 a 244 a 245 c 246 c
247 b 248 a 249 a 250 d 251 a 252 b
253 b 254 d 255 a 256 c 257 d 258 a
259 a 260 a 261 a 262 b 263 d 264 b
265 b 266 d 267 b 268 b 269 d 270 c
271 b 272 a 273 b 274 b 275 d 276 a
277 d 278 b 279 c 280 b 281 b 282 b
283 c 284 c 285 d 286 b 287 a 288 c
289 b 290 b 291 d 292 c 293 c 294 b
295 d 296 a 297 d 298 b 299 d 300 c
301 b 302 d 303 c 304 b 305 c 306 d
307 d 308 c 309 c 310 c 311 d 312 c
313 b 314 b 315 a 316 d 317 a 318 d
319 a 320 a 321 b 322 c 323 c 324 a
325 b 326 c 327 b 328 c 329 b 330 c
331 a 332 b 333 b 334 b 335 d 336 b
337 b 338 b 339 d

Answers:

1 c	2 d	3 a	4 d	5 a	6 c
7 c	8 d	9 a	10 b	11 a	12 b
13 d	14 d	15 b	16 a	17 c	18 b
19 a	20 a	21 b	22 b	23 b	24 d
25 a	26 a	27 a	28 a	29 c	30 b
31 c	32 d	33 d	34 b	35 d	36 b
37 d	38 d	39 a	40 a	41 a	42 d

Detailed solutions:

1. (c) 80% of A = 50% of B
 $\rightarrow 80A/100 = 50B/100$
 $\rightarrow 8A = 5B$
 $\rightarrow 8A = 5B$
 $\rightarrow = 5B/8$
 Put the value of A in given equation,
 $B = x\%$ of A
 $\rightarrow B = x/100 \times 5B/8$
 $\rightarrow x = 100 \times 8/5$
 $\rightarrow x = 160$
2. (d) According to the question
 $\rightarrow x = 80y/100$
 $\rightarrow x = 4y/5$
 $\rightarrow x = 4y/5$
 $\text{Required} = y/(4y/5 \times 100) = 5 \times 100/4$
 $= 125\%$
3. (a) According to the question
 $\rightarrow 8x/100 = 4y/100$
 $\rightarrow 2x = y$
 $\rightarrow x = y/2$
 $\rightarrow 20\%$ of x = $20/100 \times y/2$
 $\text{Required \%} = y/10 \times 100$
 $\rightarrow 10\%$ of y
4. (d) Let the number = x
 According to the question,
 $X \times 20/100 = 120$
 $X = 600$
 Required answer
 $= 600 \times 120/100 = 720$
 Alternate:
 20% represents $\rightarrow 120$
 $1\% \rightarrow 120/20$
 So, $120\% = 120/20 \times 120 = 720$
5. (a) According to the question
 $\begin{array}{ccc} x & & y \\ 75 & & 125 \\ & \searrow & / \\ & +25 & \end{array}$
 $\text{Required \%} = 25/75 \times 100$
 $= 100/3\%$
6. (C) According to the question
 $P \times P/100 = 36$
 $\rightarrow P^2 = 3600$
 $\rightarrow P = 60$
7. (b) $\text{Required \%} = 2/50 \times 100 = 4\%$
8. (d) $\text{Required \%} = (2/3)/(1/3) \times 100 = 200\%$
9. (a) According to the question
 $10/100 \times m = 20/100 \times n$
 $m/n = 20/10 = 2/1$
 $M : N = 2 : 1$
10. (a) $\text{Required \%} = 5/4 \times 100 = 125\%$
 Always write a : b in % $\rightarrow a/b/100$
11. (a) $\text{Required answer} = 10000 \times 1/3 \times 15/100 = \text{Rs. } 5$
12. (b) $30/100 \times x = 72$
 $\rightarrow = 72 \times 100/30 = 240$
13. (d) $15/100(A + B) = 25/100(A - B)$
 $\rightarrow 15A + 15B = 25A - 25B$
 $\rightarrow 40A = 40B$
 $\rightarrow A = 4B$
 $\text{Required \%} = A/B \times 100 = 4B/B \times 100 = 400\%$
14. (d) $\text{Required answer} = 300 \times 1/4 \times 1/5 = 15$
15. (b) $25/2 \times x/100 = 150$
 $\rightarrow x = 150 \times 200/25 = 1200$
16. (a) $50(x - 4) = 30(x + y)$
 $\rightarrow 5x - 5y = 3x + 3y$
 $\rightarrow 2x = 8y$
 $X = 4y$
 $\text{Required \%} = y/x \times 100 = 1/4 \times 100 = 25\%$

17. (c) $50P = 25Q$
 $2P = Q$
 Then, $P = x / 100 \times 2P \rightarrow x = 50$
18. (b) $20A/100 = 50B/100$
 $2A = 5B \rightarrow A = 5B/2$
 Required %
 $= B / A \times 100 = 2B/5B \times 100 = 40\%$
19. Let the number = s
 According to the question
 $\rightarrow x \times 18/100 = 12/100 \times 75$
 $\rightarrow 18x = 12 \times 75$
 $\rightarrow x = 12 \times 75/18 = 50$
 Hence, required number = 50
20. (a) $25/2\% = 1/8$
 $= 9/8$ (9 \rightarrow Income of Ram, 8
 \rightarrow Income of Shyam)
 According to the question
 Ram : Shyam
 Ratio of Income $\rightarrow 9 : 8$
- 
- Required % = $1/9 \times 100 = 100/9\%$
21. (b) $20\% = 1/5$
 Required % = $1/6 \times 100 = 50/3\%$
 Alternate:
- 
- Required % = $20/(100 + 20) \times 100 = 50/3\%$
22. (b) 1 hour 45 min = $1 + 45/60 = 7/4$ hr.
 Required % = $7/4 \times 24 \times 100 = 7.291\%$
23. (b) Required answer
 $= 100 \times 90/100 \times (100 - 40)/100$
 $= 90 \times 60/100 = 54$
24. (d) According to the question,
 $30A/100 = 0.25B = 1C/5$
 $3/10 A = 1B/4 = 1C/5$
 $(A/10)/3 = B/4 = C/5$
 Required ratio of A : B : C = 10/3 : 4 : 5
 A : B : C = 10 : 12 : 15
25. (a) Required percentage
 $= 0.01/0.1 \times 100 = 10\%$
26. (a) Let the numbers are a and b where
 $a > b.$
 According to the question,
 $(a - b) = 15/100 (a + b)$
 $(a - b) = 3/20 (a + b)$
 $20a - 20b = 3a + 3b$
 $17a = 23b$
 $a/b = 23/17$
 Required ratio = 23 : 17
27. (a) According to the question,
- 
- Required % = $5/6 \times 100 = 250/3\%$
28. (a) Required percentage = $65/2000 \times 100 = 13/4\%$
29. (c) $1\%/2 = 1/100 \times 2 = 0.005$
30. (b) Required % = $(2 + 45/60)/24 \times 100$
 $= 165 \times 100/(24 \times 60)$
 $= 11.45\%$
31. (c) Required percentage = $0.001 \times 100 = 0.1\%$
32. (d) Required percentage = $0.001 \times 100 = 0.1\%$

33. (d) 60% of A $3B/4$
 $3/5A = 3/4 B$
 $3/5A = 3/4B$
 $A/B = 4/5 \rightarrow A:B = 5:4$
34. (b) $30/100 (B - A) = 18/100 (B + A)$
 $30B - 30A = 18B + 18A$
 $12B = 48A$
 $B = 4A$
 $A/B = 1/4$
 $\rightarrow A:B = 1:4$
Hence required ratio = 1 : 4
35. (d) Required percentage = $32/80 \times 100$
= 40%
36. (b) $90A/100 = 30B/100$
 $\rightarrow 3A = B$ (i)
 $B = X\%$ of A
 $B = x A/100$
 $\rightarrow 3A = Ax/100$
 $X = 300$
37. (d) 90% of A = 30% of B
 $90A = 30B$
 $\rightarrow 3A$ (i)
 $B = 2x/100 \times A$
 $\rightarrow x = 150$
38. (d) Required percentage
= $(1206)/3 \times 134 \times 100$
= $402/134 \times 100$
= 300%
39. (a) $120a/100 = 80b/100$
 $\rightarrow 3a/2b$
 $A = 2b/3$ put value of a in given equation
 $\rightarrow (b+a)/(b-a) = [b+(2b/3)]/[b-2b/3] =$
 $(5b/3)/(b/3) = 5$
 $\rightarrow (b+a)/(b-a) = 5$
40. (a) $20/100 (A+B) = 50/100 (B)$
 $2A + 2B = 5B$
 $2A = 3B$
 $A = 3b/2$ put value of A in given equation
= $(2A - B) / (2A + B) = (3B - B)/(3B + B) =$
 $2B/4B = 1/2$
41. (a) $2/5 (A + B) = 3/5 (A - B)$
 $2A + 2B = 3A - 3B$
 $A = 5B$
Put value of a in given equation
= $(2A - 3B)/(A + B) = 7B/6B = 7/6$
42. (d) Required percentage
= $72/3.6 \times 10000 \times 100 = 2\%$
43. (a) $X \times 125/100 = 100 \rightarrow x = 80$
44. (b) $50/100 (P - Q) = 30/100 (P + Q)$
 $5P - 5Q = 3P + 3Q$
 $2P = 8Q$
 $P = 4Q$
Put value of P in given equation
 $Q = P \times x/100$
 $Q = 4Q \times x/100$
 $= x = 25$
Hence required value of x = 25
45. (a) $120 \times 25/100 + 380 \times 40/100 = x \times 637$
 $\rightarrow 30 + 152 = x \times 637$
 $\rightarrow 182/637 = x$
 $\rightarrow x = 2/7$
 \rightarrow required answer = 2/7
46. (c) Required answer
= $27/100 \times 36/100 \times 5/9 \times 4500$
= 243
47. (a) $1000 \times 25/100 \times 1/100 \times 1/100$
Required answer = 0.025
48. (a) According to the question,
 $8x/100 = 4y/100$
 $8x = 4y$ (i)
 $2x = y$ (ii)
20% of x = $20/100 \times x$
From equation (i)
Required answer = $20/100 \times y/2 = 10\%$ of y
49. (d) According to the question
A : B : C
1 : 2 : 5 (60A = 30B)
(A/B = 1/2)
C = 5
A = 1
Required answer = $5/1 \times 100 = 500\%$

50. (d) According to the question,
 $20A/100 = 30B/100 = C/6$

$$\begin{array}{l} A : B = 3 : 2 \\ B : C = 5 : 9 \\ \hline A : B : C = 15 : 10 : 18 \end{array}$$

51. (d) 50% of $x = 30\%$ of y
 $x/y = 30\%/50\%$
 $x : y = 3 : 5$

52. (c) $80\% = 4/5$
 Note: In such type of questions to make your calculation easier assume number which is multiple of 5.

Let the number = $5x$

According to the question,

$$[5x \times 80/100 = 4x]$$

$$4x + 80 = 5x$$

$$x = 80$$

Required number

$$= 5x = 80 \times 5 = 400$$

53. (b) $200/3\% = 2/3$
 Let the income of the person = 3 units
 Expenditure = 2 units
 Savings = $(3 - 2) = 1$ units
 According to the question
 1 unit = Rs. 1200
 2 units = Rs. 2×1200
 = Rs. 2400

54. (b) $20\% = 1/5$, $25\% = 1/4$
 Case (i) B : C
 Ratio of Salaries

$$5 : 6$$

Case (ii) A : B

Ratio of Salaries

$$4 : 5$$

A : B : C

Ratio of salaries

$$4 : 5 : 6$$

Required answer
 $= 2/4 \times 100 = 50\%$

55. (a) $40\% = 2/5$, $20\% = 1/5$

Case (i) A : B

$$7 : 5$$

Case (ii) B : C

$$4 : 5$$

$$A : B = 7 : 5$$

$$B : C = 4 : 5$$

$$A : B : C = 28 : 20 : 25$$

Hence, Required ratio

$$A : C = 28 : 25$$

56. (b) Girls' % = 70%

Thus, Boys' = $(100 - 70)\%$
 $= 30\%$

According to the question,

30% of students = 510

Total number of students in school

$$= 510/30 \times 100 = 1700$$

57. (b) Required number of Boys

$$= 972/(100 - 60) \times 60$$

$$= 972/40 \times 60 = 1458$$

Required number of boys

$$= 1458$$

Alternate :

Ratio of No. boys and Girls

Boys : Girls $(100 - 60)\%$

60% : 40%

3 : 2

Girls $\rightarrow 2$ unit $\rightarrow 972$

1 unit $\rightarrow 972/2 = 486$

Boys $\rightarrow 3$ unit $\rightarrow 3 \times 486 = 1458$

58. (d) Note: In percentage always assume data.
 Which make your Calculation easier?

$$60\% = 3/5$$

Let the number = $5x$

According to the question,

$$\rightarrow 5x \times 3/5 - 60 = 60$$

$$\rightarrow x = 120/3 = 40$$

Hence, Required number

$$= 5x = 5 \times 40$$

$$= 200$$

59. (c) $75\% = 3/4$
 Let the number = $4x$
 According to the question,
 $\rightarrow 4x \times 3/4 + 75 = 4x$
 $\rightarrow 3x + 75 = 4x$
 $X = 75$
 Required number
 $= 4x = 4 \times 75 = 300$
60. (a) Let the larger number
 $= 5x$
 Smaller number = 20 [given]
 According to the question,
 $\rightarrow 5x - 20 = 20/1000 \times 5x$
 $\rightarrow 5x - 20 = x$
 $\rightarrow 4x = 20$
 $\rightarrow x = 5$
 Hence, Larger number
 $= 5 \times 5 = 25$
61. (c) Required answer
 $= 40/(100 - 40) \times 100 = 40/60 \times 100$
 $= 66.66\%$
 Note: For detailed solution follow the earlier given Important note.
 Alternate:
 $40\% = 2/5$
 A : B
 3 : 5
 $+2$
 Required % $= 2/3 \times 100 = 66.66\%$
62. (d) Let the 3rd. number is 100
 According to the equation
 1st. 2nd. 3rd.
 20 : 50 : 100
 Required % $= 20/50 \times 100 = 40\%$
63. (d) Let the third number is 100
 According to the question,
 1st. 2nd. 3rd.
 75 80 100
 Required % $= 75/80 \times 100 = 375/4\%$

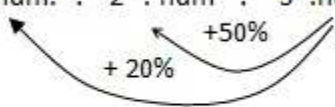
64. (d) According to the question
 $y = 125 + (125 \times 10)/100 = 137.5$
 $x = 137.5 - 137.5 \times 10/100$
 $x = 137.5 - 13.75$
 $x = 123.75$
65. (a) Percentage of girls in school
 $= (100 - 70) = 30\%$
 According to the question,
 30% of students,
 30% of students = 504
 Required number of boys
 $= 504/30 \times 70$
 $= 168 \times 7$
 $= 1176$
 Alternate:

Boys	:	Girls
70	:	30
7	:	3
$\downarrow \times 168$		$\downarrow \times 168$
[1176]		[504]

 Hence, required number of boys = 1176
66. (c) Let the third number = 100
 According to the question,

120	150	100
	$+50\%$	
$\uparrow +20\%$		
- Required answer $= 120/150 \times 100 = 80\%$
67. (d) Let the third number = 100
 According to the question,
 1st. 2nd. 3rd.
 112.5 : 125 : 100
 Required percentage
 $= 112.5/125 \times 100 = 90\%$
68. (c) According to the question,
 $60 \times A/100 = 75 \times B/100$
 $4A = 5B$
 $B = 4A/5$
 $A \times x/100 = B$ [given]
 $A \times x/100 = 4A/5 \rightarrow x = 80$

69. (a) Let the numbers are $2x$ and $3x$ respective
 According to the question,
 $(2x + 20/100 + 20) = (3x \times 10/100 + 25)$
 $2x/5 + 20 = 3x/10 + 25$
 $3x/10 - 2/5x = -5$
 $3x - 4x = -50$
 $\rightarrow x = 50$
 Hence, required smaller number
 $= 2x = 2 \times 50 = 100$

70. (c) Let the third number = 100 units
 1st. num. : 2nd. num. : 3rd. num


Required Ratio = 120 : 150
 $= 4 : 5$

71. (b) Let the number be x
 $\rightarrow x \times 15/100 \times 45/100 = 105.3$
 $\rightarrow x = 1560$
 \rightarrow Required number = $24/100 \times 1560$
 $= 374.4$

72. (c) Income of the person = Rs. 13500
 Expenditure of the person = Rs. 9000
 Savings of the person = Rs. (13500 - 9000)
 $=$ Rs. 4500
 Expenditure Savings



Ratio of expenditure 9000 and savings $\rightarrow 2$ 4500

73. $(7 \times 2 + x \times 1)/(2 + 1) = 14$
 $14 + x = 42$ $x = 28$
 Hence, required increase in savings
 $= 28\%$

Alternate:

First of all find the ratio of income, Expenditure and Savings

Income	:	Expenditure	:	Saving
13500	:	9000	:	4500
3	:	2	:	1

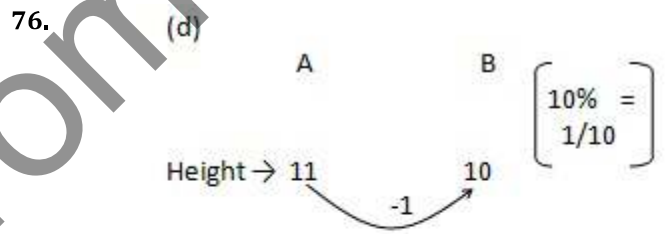
Let the income	:	Expenditure	:	Saving	
300	-	200	=	100	
$\downarrow +14\%$		$\downarrow +7\%$			$\downarrow +28\%$
New 342	-	214	=	128	

% change in savings = $28/100 \times 100 = 28\%$

74. (c) Let the large number is a and the smaller number is b .
 According to the question,
 $(a - b) = 45/100 (a + b)$
 $20a - 20b = 9a + 9b$
 $11a = 29b$
 $a/b = 29/11$

Required ratio of $a : B = 29 : 11$
 75. (c) Let the greater and smaller number is a and b respectively

According to the question,
 Case (i) $a \times 40/100 = b \times 60/100$
 $2a = 3b$
 $a = 3b/2$ (i)
 Case (ii) $a + b = 150$ (ii)
 $5b/2 + b = 150$
 $5b = 300 \rightarrow b = 60$
 Value of $b = 60$ put in equation (i)
 $A = 3/2 \times 60 = 90$
 Hence greater number = 90



Required percentage = $1/11 \times 100$
 $= 100/11\%$

Alternate:

By using formula.

Required percentage = $10/(100 + 10) \times 100$
 $= 1000/110$
 $= 100/11 = 100/11\%$

77. (c) According to the question,

$10A = 15B = 20C$
$A : B = 15 : 10$
$B : C = 20 : 15$
$A : B : C = 300 : 200 : 100$
$A : B : C = 6 : 4 : 3$

$(6 + 4 + 3)$ units	$=$ Rs. 7800
13 units	$=$ 7800
1 units	$=$ 600×4
	$=$ Rs. 2400

78. (a) Let the number be x ,
According to the question,
 $x \times 60/100 \times 8/5 = 36$
 $x = (36 \times 25)/9 \rightarrow x = 100$

79. (b) Required percentage
 $= 50/(100 + 50) \times 100$
 $= 50/150 \times 100 = 100/3\%$
Alternate :- $50\% = \frac{1}{2}$
A : B
3 : 2
-1

Required percentage $= 1/3 \times 100$
 $= 100/3\%$

80. (b) Required percentage
 $= 25/(100 + 25) \times 100$
 $= 25/(100 + 25) \times 100 = 20\%$
Alternate: $25\% = \frac{1}{4}$
Nita : Papiya
5 : 4
-1

Required percentage $= 1/5 \times 100 = 20\%$

81. (d) $50\% = \frac{1}{2}$
Let Z has 2 units of money
According to the question,
X : Y : Z
6 : 3 : 2
 $\rightarrow 11 \text{ units} = \text{Rs. } 330$
1 unit = Rs. 30
6 units = Rs. $30 \times 6 = \text{Rs. } 180$
Hence, X has Rs. 180.

82. (c) Required percentage $= 25/(100 + 25) \times 100$
 $= 20\%$

Alternate:

X : Y
5 : 4
-1

Required percentage $= 1/5 \times 100 = 20\%$

83. (a) Salary of Tulsiram = Rs. $720/4 \times 100$
 $= \text{Rs. } 18000$
Salary of Kashyap = $18000 \times 100/120$
 $= \text{Rs. } 15000$

84. (a) Let the third number = 100

Ist. 2nd. 3rd.
70 63 100
-1

Required percentage $= 7/10 \times 100 = 10\%$

85. (d) Required percentage
 $= 25/(100 + 25) \times 100$
 $= 25/125 \times 100 = 20\%$
Alternate: $25\% = \frac{1}{4}$
Mita : Sita
-1

Required percentage $= 1/5 \times 100$

86. (c) Required percentage
 $= 25/(100 - 25) \times 100 = 1/3 \times 100$
 $= 100/3\%$
Alternate:
 $25\% = 1/4$

A : B
3 : 4
+1

Required % $= 1/3 \times 100 = 100/3\%$

87. (b) $40\% = 2/5$, $25\% = 1/4$
A : B = 2 : 5
B : C = 5 : 4
A : B : C = 10 : 25 : 20

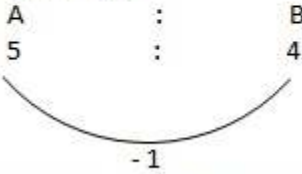
Required % $= 10/10 \times 100 = 100\%$

88. (b) Required percentage
 $= 50 / (100 - 50) \times 100$
 $= 400\%$
Alternate: $50\% = \frac{1}{2}$
A : B
1 : 2
+1
Required % $= 1/1 \times 100 = 100\%$

89. (a) Required percentage
 $= \frac{25}{(100 + 25)} \times 100$
 $= 20\%$

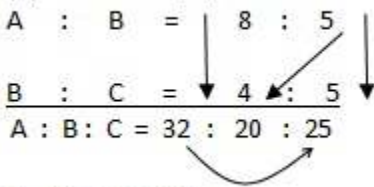
Alternate:

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



Required percentage $= \frac{1}{5} \times 100$
 $= 20\%$

90. (a) $60\% = \frac{3}{5}$, $20\% = \frac{1}{5}$



A : C = 32 : 25

91. (a) Percentage of failed students
 $= (100 - 93)\%$
 According to the question,
 $7\% \rightarrow 259$
 $1\% \rightarrow 37$
 $100\% \rightarrow 3700$
 Total students $\rightarrow 3700$
 Total students = 3700

92. (b) Required percentage $= \frac{22}{24} \times 100$
 $= 275/3 \%$

93. (d) According to the question,
 $\frac{30A}{100} + \frac{40B}{100} = \frac{80B}{100}$
 $30A = 40B \rightarrow 3A = 4B \rightarrow A = \frac{4B}{3}$
 Required % $= \frac{B}{A} \times 100 = \frac{(B \times 3)}{4B} \times 100$
 $= 75\%$

94. (d) Let the third number = 100

1 st .	2 nd .	3 rd .
80	60	100

-20

Required percentage $= \frac{20}{80} \times 100 = 25\%$

95. (a) Let the number = x
 $\rightarrow \frac{1}{3} \times x = 96$
 $\rightarrow x = 288$
 \rightarrow Required answer $= \frac{67}{100} \times 288$
 $= 192.96$

96. (b) According to the question,
 $x \times \frac{a}{100} = y \times \frac{b}{100}$
 $xa = yb \rightarrow b = \frac{xa}{y}$

Put value of b in given equation
 $z\%$ of b $= z\%$ of $\frac{xa}{y} = \frac{zx}{y} \%$ of a

97. (a) 1 hour = 60 min.
 1 min + 12 sec. $= 1 + \frac{12}{60} = \frac{6}{5}$ min
 According to the question,
 $60 \times \frac{yx}{100} = \frac{6y}{5} = 2$

98. (c) Matches won by team
 $= 24$
 Required percentage $= \frac{24}{40} \times 100$
 $= 60\%$

99. (c) Let the first and second part of a number is b respectively.

According to the question,
 Case: (i) $\frac{80}{100}a - \frac{60}{100}b = 3$

$8a - 6b = 30$ (i)

Case: (ii) $\frac{80b}{100} - \frac{90a}{100} = 6$

$8b - 9a = 60$

From equation =

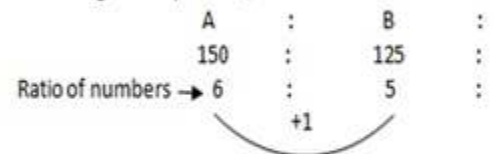
$(a + b) = (60 + 75) = 135$

100. (c) Let the numbers = x
 According to the questions
 $x - 15 = \frac{80x}{100}$
 $x - 15 = \frac{4x}{5}$
 $5x - 75 = 4x$
 $x = 75$

Required answer $= \frac{75 \times 40}{100} = 30$

101. (c) Let the number = x
 According to the question,
 $x - (\frac{117x}{100}) = 498$
 $100x - 117x = 49800$
 $83x = 49800$
 $x = \frac{49800}{83} = 600$

102. (d) Let C = 100 units
 According to the question,



Required percentage $= \frac{1}{5} \times 100 = 20\%$

103. (d) Let x to be added,
 According to the question,
 $160 \times \frac{15}{100} + x = 240 \times \frac{25}{100}$
 $x = 36$
 Hence required number = 36

104. (b) Let the number = x
 $x \times 90/100 = 30$
 $\rightarrow x = 100/3$
 Hence required number = $100/3$
105. (a) According to the question,
 $15/100x = 20/100y$
 $\rightarrow 15x = 20y$
 $x/y = 20/15 = 4/3$
 $x : y = 4 : 3$
106. (b) Marks obtained by D = 320
 Marks obtained by C = $320 \times 125/100 = 400$
 Marks obtained by B = $400 \times (100 - 10)/100 = 360$
 Marks obtained by A = $360 \times 125/100 = 450$
 Hence, required marks obtained by A = 450
107. (c) $45/2\% = 45/200 = 9/40$
- | | |
|---------|-------|
| Initial | Final |
| 40 | 49 |
| ↓ | ↓ |
| [80] | [98] |
- Hence required number = 80
108. (c) $75\% = \frac{3}{4}$
 Let the number = $4x$
 According to the question,
 $4x \times \frac{3}{4} + 75 = 4x$
 According to the question,
 $4x \times \frac{3}{4} + 75 = 4x$
 $x = 75$
 Number = $75 \times 4 = 300$
 Required answer = $300 \times 40/100 = 120$
- Alternate:** $75\% = \frac{3}{4}$
 $3 + 1 \rightarrow 4$

75%	100%
1 units	$\rightarrow 75$
4 units	$\rightarrow 300$

 40% of no. $300 \times 40/100 = 120$
109. (a) Let the number = x
 According to the question,
 $x + 320 \times 10/100 = 230 \times 30/100$
 $x + 32 = 69$
 $x = 37$
 Hence, required number = 37
110. (a) $20\% = 1/5 = 4/5$

X	:	Y
4	:	5

 Let $X = 4a$
 $Y = 5a$
 Hence, $(y-x)/y = (5a-4a)/5a = a/5a = 1/5$
 $x/(x-y) = 4a/(4a-5a) = 4a/-a = -4$
 Hence required answer = $(1/5, -4)$
111. (a) Required number of literate people
 $= 6600 \times 30/100$
 $= 1980$
112. (b) Required answer
 $= 50/(100 + 50) \times 100 = 100/3\%$
Alternate: $50\% = \frac{1}{2}$

A	B
3	2
⤵	
- 1	

 Required answer = $1/3 \times 100 = 100/3\%$
113. (a) According to the question,
 $5A/100 + 4B/100 = 2/3 [6A/100 + 8B/100]$
 $5A + 4B = 2/3 (6A + 8B)$
 $15A + 4B = 2/3 (6A + 8B)$
 $3A = 4B$
 $A/B = 4/3 \rightarrow A : B = 4 : 3$
114. (b) To get back to the original number it is to be reduced by,
 $= x/(100 + x) \times 100\%$
 $= 100x/(100 + x)\%$
115. (d) Let the number is = x
 According to the question,
 $1/5$ or $1/2$ of $x = 20$
 $1/5 \times 1x/2 = 20$
 $x = 200$
 Thus, 20% of $200 = 20/100 \times 200 = 40$
116. (b) According to the question,
 $\rightarrow 90 \times 250/3\% = x \times 60\%$
 $\rightarrow 90 \times 250/3\% = x \times 60\%$
 $\rightarrow x = \text{Rs. } 125$
117. (b) $x \times 51/100 = 714$
 $x = 1400$
 Thus, 25% of $x = 1400 \times 25/100 = 350$
118. $20\% \frac{1}{5}$ (1 = Increase in price, 5 = Initial Price)

Initial Price	Final Price
⤵	⤵
- 1	

 Hence, Required reduction = $(1/6 \times 100) = 50/3\%$

119. (b) Required answer
 $= 20 / (100 + 20) \times 100 = 50/3\%$

Alternate:

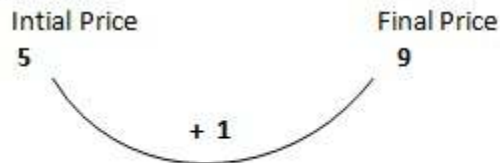


Required answer = $1/6 \times 10 = 50/3\%$

120. (a) Required answer
 $= 10 / (100 + 10) \times 100 = 100/11\%$

121. (d) Required %
 $= 10 / (100 - 10) \times 100$
 $= 10/90 \times 100$
 $= 100/9 \%$

Alternate:



Required % = $1/6 \times 100 = 100/9\%$

122. (a) Required %
 $= 25 / (100 + 25) \times 100 = 20\%$

123. (a) Note: If the value of a number is first increase $x\%$ and later decreased by $x\%$, then net change is always a decrease which is equal to $x^2/100\%$.
 Hence, Required change in salary = $(20)^2/100 = 4\%$ Decrease

124. (c) In such type of question to save your valuable time you can use below given formula.

$$\text{Net effect \%} = X + T + XY/100$$

Always use +ve sign for increment -ve sign for decremen

Required answer = $20 - 10 - (20 \times 10)/100$

$$= 10 - 2$$

$$= 8\%$$

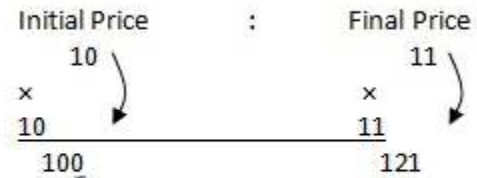
Hence, Net % increment = 8%

125. (125) (c) Net % effect on revenue
 $= -10 + 10 - (10 \times 10)/100$
 $= -1\%$

Hence % reduction in Revenue = 1%

$$\% \text{ Reduction} = x^2/100 = (10)^2/100 = 1\%$$

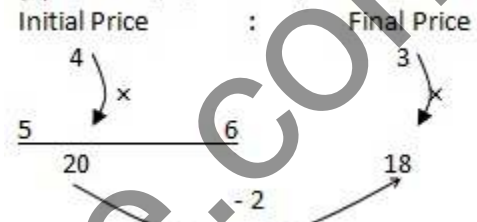
126. (b) $10\% = 1/10$



$$\% \text{ Reduction} = 21/121 \times 100$$

$$= 2100/121 = 17.36\%$$

127. (a) $25\% = 1/4$, $20\% = 1/5$



$$\% \text{ decrement} = 2/20 \times 100 = 10\%$$

Alternate: By using below given formula,

$$\% \text{ Net effect} = x + y + xy/100$$

$$\% \text{ Change} = -25 + 20 - (25 \times 20)/100$$

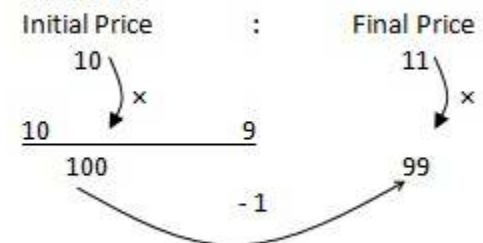
$$\% \text{ Change} = -10\%$$

Note: Negative sign shows decrement.

Hence, Required decrement = 10%

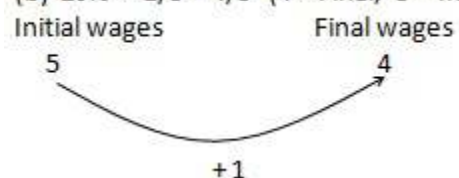
128. (d) % decrease = $x^2/100 = (10)^2/100 = 1\%$

Alternate:



$$\% \text{ Decrease} = 1/100 \times 100 = 1\%$$

129. (b) $20\% = 1/5 = 4/5$ (4 = Final, 5 = Initial)



Required percentage

$$= 1/4 \times 100 = 25\%$$

Alternate:

$$\text{Required answer} = 20 / (100 - 20) \times 100$$

$$= 20/80 \times 100 = 25\%$$

Note: By using formula, $[r / (100 - r) \times 100]$

130. (b) Required answer = $10 / (100 - 10) \times 100 = 100/9 \%$

131. (a) $20\% = 1/5$
 Initial Price : Final Price
 $\frac{5}{25} \quad \frac{6}{36}$
 -11

Required percentage of reduction = $1/36 \times 100 = 275/9\%$

132. (d) $25\% = 1/4 = 5/4$ (5 = Final Employees, 4 = Employees)
 $25\% = 1/4 = (3 = \text{Final wages}, 4 = \text{Initial wages})$

Initial : Final
 $\frac{4}{16} \quad \frac{5}{15}$
 -1

Required reduction = $1/16 \times 100 = 25/4\%$

133. (d) $r\% = r/100$
 Initial Price : Final
 $\frac{100}{10000} \quad \frac{(100+r)}{(100+r)(100+r)}$

According to the question,
 $(100+r)(100-r)$ units = Rs. 1
 $(10000 - r^2)$ units = Rs. 1
 $1 \text{ unit} = 1 / (10000 - r^2)$
 Original Price = $[10000 / (10000 - r^2)]$

134. (d) Required percentage of reduction = $25 / (100 + 25) \times 100 = 25/125 \times 100 = 20\%$
 Alternate: $25\% = 1/4$

Initial Price : Final Price
 $\frac{4}{16} \quad \frac{5}{20}$
 -1

Required percentage reduction = $1/5 \times 100 = 20\%$

135. (b) Let the original number
 According to the question
 $x \times 90/110 \times 110/100 = (x - 50)$
 $x \times 99/100 = x - 50$
 $99x = 100x - 5000$
 $x = 5000$
 Hence original number = 5000

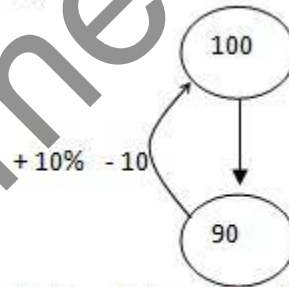
Alternate:

Original number = 5000

Original : New
 $\frac{10}{100} \quad \frac{9}{99}$
 -1

According to the question
 1 unit = 50
 100 unit = $50 \times 100 = 5000$

136. (c) Let the initial expenditure = 100 units



$10/90 = 1/9 = 10/9$ (10 = New Price, 9 = Original Price)
 Reduced Price = $837/10 \times 6.2 = 837/62$
 = Rs. 13.50 kg

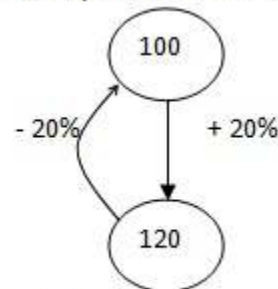
137. (c) $20\% = 1/5$

Initial : Final
 $\frac{5}{30} \quad \frac{6}{30}$

Consumption Expenditure : $\frac{5}{30} \quad \frac{6}{30}$
 Required Rate = 1 : 6

Alternate:

Let Initial expenditure = Rs. 1000



Required ratio = $20 : 120 = 1 : 6$

138. (b) By using formula,
 $\% \text{ decrease} = x^2 / 100$
 $x = 20\%$
 $\% \text{ decrease} = (20 \times 20) / 100 = 4\% \text{ Decrease}$

139. (b) Required reduction in consumption
 $= 15 / (100 + 15) \times 100 = 15 / 115 \times 100$
 $= 300 / 23\%$

Alternate:

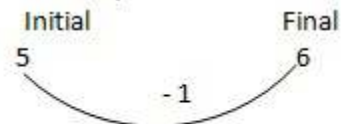


$$\% \text{ Reduction} = 3 / 23 \times 100 = 300 / 23\%$$

140. (b) Required reduction in price
 $= 20 / (100 + 20) \times 100 = 20 / 120 \times 100$
 $= 50 / 3 \%$

Alternate:

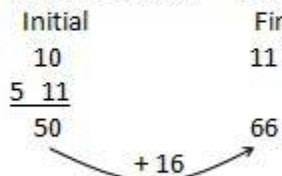
$$20\% = 1/5$$



$$\% \text{ Reduction} = 1/6 \times 100 = 50/3\%$$

141. (c) Required answer $= 10 + 20 + (10 \times 20) / 100$
 $= 10 + 20 + 2 = 32\%$

Alternate: $10\% = 1/10$, $20\% = 1/5$



$$\text{Required percentage increase} = 16 / 50 \times 100 = 32\%$$

142. (c) Decrease in area $= x^2 / 100\% = (10)^2 / 100 = 1\%$

Alternate:

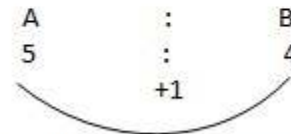


$$\% \text{ decrease in area} = 1 / 100 \times 100 = 1\%$$

143. (b) Required percentage
 $= 20 / (100 - 20) \times 100 = 25\%$

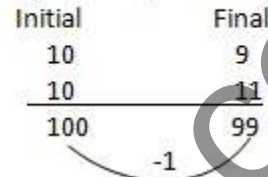
Alternate:

$$20\% = 1/5$$



$$\text{Required } \% = 1/4 \times 100 = 25\%$$

144. (c) $10\% = 1/10$



$$\text{Required } \% \text{ reduction} = 1 / 100 \times 100 = 1\%$$

$$\text{Alternate: Net Reduction} = x^2 / 100 = (10)^2 / 100 = 1\%$$

145. (b) $\% \text{ change} = R / (100 \pm R) \times 100\%$
 Required answer $= 50 / (50 + 100) = 1/3$

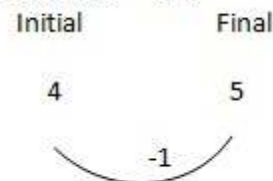
146. (d) $\% \text{ change} = R / (100 \pm R) \times 100\%$
 Required answer $= 40 / (100 - 40) \times 100 = 40 / 60 \times 100 = 200/3\%$

- 147.

$$(b) \% \text{ change} = R / (100 \pm R) \times 100\%$$

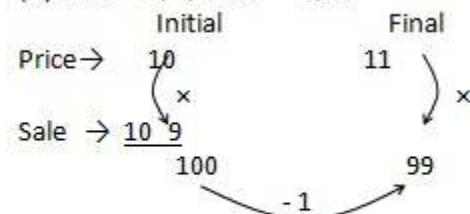
 Required percentage $= 25 / (100 + 25) \times 100$

Alternate: $25\% = 1/4$,



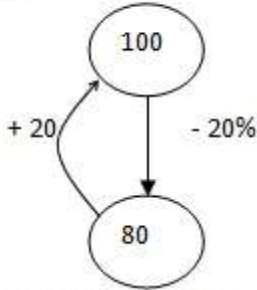
$$\% \text{ Reduction} = 1/5 \times 100 = 20\%$$

148. (b) $25\% = 1/4$, $30\% = 3/10$



$$\% \text{ decrease} = 1/40 \times 100 = 5/2\% \text{ decrease}$$

149. (b) Let the initial expenditure = 100 units



Increase in consumption = $20/80 = 1/4$
 $= 5/4$ (5 = New, 4 = Original)
 Original Price = $36 \times 1000 / (4 \times 500)$
 $= 500\text{gm} = 500/1000 \text{ kg}$
 Original Price = Rs. 18/kg.

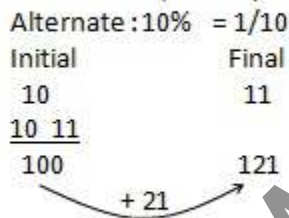
150. (c) By using formula

[Net decrease = $x^2/100\%$]
 $x = 25\%$
 Net decrease = $(25)^2/1000 = 625/100 = 6.25\%$
 Alternate: $25\% = 1/4$



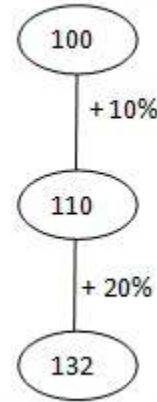
% decrease = $1/16 \times 100 = 100/16 = 6.25\%$

151. (c) Required % increase = $10 + 10 + (10 + 10)/100 = 21\%$



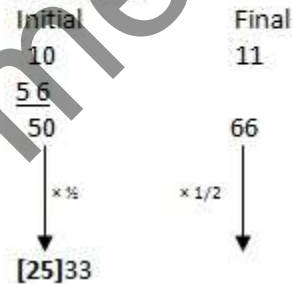
Required % increase = $21/100 \times 100 = 21\%$

152. (d) Let the original price = 100 units

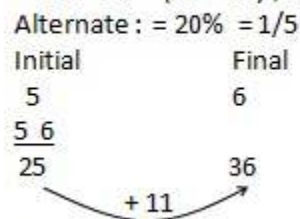


According to the question,
 132 units = Rs. 33
 1 unit = Rs. $33/132$
 100 units = Rs. $33/132 \times 100 = 25$
 Hence, Rs. $33/132 \times 100 = 25$

Alternate:

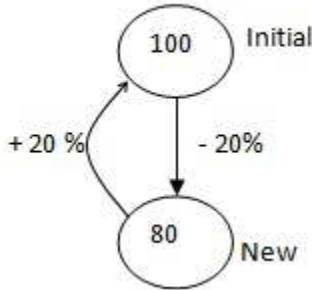


153. (b) Total % increase = $20 + 20 + (20 \times 20)/100 = 44\%$



Required % increase = $1/25 \times 100 = 44\%$

154. (a) Let the initial expenditure = 100 units



Increase in consumption = $20/80 = 1/4$
1 unit = 5 kg.

Original consumption = $5 \times 4 = 20$ kg.

New consumption = $5 \times 5 = 25$ kg

Original price = $320/20 =$ Rs. 16/kg.

Alternate:

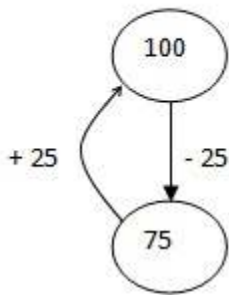
Saved money due to reduction in price

= $320 \times 20/100 =$ Rs. 64

New price/ kg. (80% = 64/3)

Old Price/kg (10%) = Rs. 16/kg.

155. (a) Let Intial expenditure = 100 units



Ratio of increase in original consumptions

= $25 : 75 = 1 : 3$

New consumption = $(3 + 1) \times 2 = 8$ kg

Reduced price per kg = $240/8 =$ Rs. 30

Alternate:

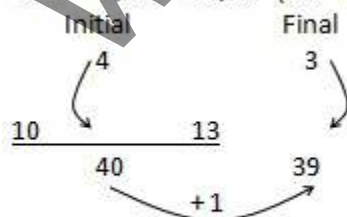
Due to reduction, he will save

= $240 \times 25 / 100 =$ Rs. 60

New price of rice/ kg. = $60/2 =$ Rs. 30

156. (b) $25\% = 1/4 = 3/4$ (3 = Final, 4 = Initial)

$30\% = 3/10 = 13/10$ (13 = Final, 10 = Initial)



Required % decrease = $1/40 \times 100$

= $5/2\%$

157. (a) Cost of the article = Rs. 75

Net decrease in price

= $20 - 20 - (20 \times 20)/100 = 4\%$ decrease

Hence present price = $75 \times (100 - 4)/100$

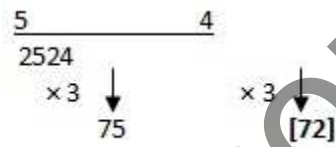
= 72 Rs.

Alternate:

$20\% = 1/5$

Initial
5

Final
6



Hence present price = Rs. 72

158. (b)

Initial
6

Final
7.5

- 1.5

Required % reduction

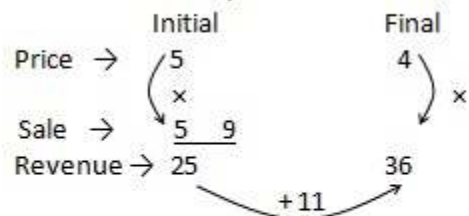
= $1.5/7.5 \times 100 = 20\%$

159. (b) Required % of reduction

= $60/160 \times 100 = 37.5\%$

160. (a) Price = $20\% = 1/5$

Sale = $80\% = 4/5$



Required increase in sale = $11/25 \times 100$

= 44 %

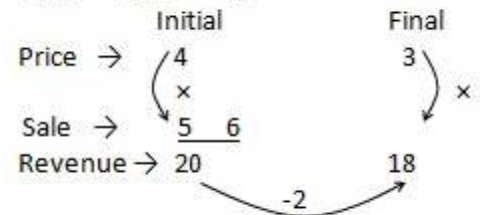
Alternate : Use successive method:

$\% \Delta = - 20 + 80 - (20 \times 80)/100 = 44\%$

161. (d) Price = $- 25\% = 1/4$

Sale = $20\% = 1/5$

Sale = $80\% = 4/5$



Required % decrease = $2/20 \times 100 = 10\%$

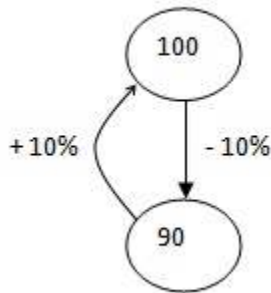
Alternate : Use successive Method:

$\% \Delta = - 25 + 20 - (25 \times 20)/100 = - 10\%$

162. (b) % Increase = $10 + 10 + (10 \times 10) / 100$
= 21%

Total increase = $100 \times 21 / 100 = \text{Rs. } 21$

163. (b) Let Initial expenditure = 100 Units



Required increment

= $10/90 = 1/9 = 10/9$ (10 = Final, 9 = Initial)

1 unit = 1 kg

Original consumption = $9 \times 1 = 9$ kg

Present consumption = $(9+1) \times 1 = 10$ kg

Required original price = $270/9 = \text{Rs. } 30/\text{kg}$

Alternate = Due to reduction, he will save

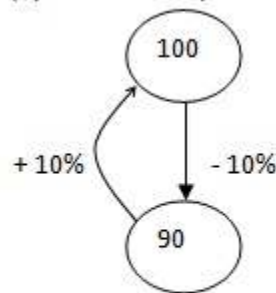
= $270 \times 10/100 = \text{Rs. } 27$

New price of rice/ kg. = $27/1 = \text{Rs. } 27$

New Price (90%) = 27

Old Price (100%) = Rs. 30/kg

164. (a) Let initial expenditure = 100 units



Required increment = $10/90 = 1/9$

1 unit = 10 apples

original consumption = 9 units

= $9 \times 10 = 90$ apples

New consumption = 10 units = 10×10

= 100 apples

New price = $54 / 100 \times 12$

= Rs. 6.48/ dozen

Alternate:

Due to reduction, he will save

= $54 \times 10 / 100 = \text{Rs. } 0.54$

New price / apple = $5.4/10 = \text{Rs. } 0.54$

New price / dozen = 12×0.54

= Rs. 6.48 dozen

165. (b) Increase in height = 15% = $3/20$
Decrease in base radius = 10% = $1/10$

	Initial	Final
Radius →	10	9

Height →	$\frac{20}{23}$	
Revenue →	20	18
		+ 7

Required % increase in area = $7/200 \times 100$
= 3.5%

166. (b) Net decrease = $x^2/100 = (10)^2/100 = 1\%$

167. (d) Required % = $25/(100 + 25) \times 100$
= 20%

Alternate := 25% = $\frac{1}{4}$

	Initial	Final
	10	9
		- 1

Required Reduction

= $1/5 \times 100 = 20\%$

168. (d) Required % reduction = $20 / (100 + 20) \times 100$

= 50 / 3%

Alternate:

20% = $1/5$

	Initial	Final
	5	6
		- 1

Required % reduction = $1/6 \times 100$
= 50/3 %

169. (b) Required % decrement

= $x^2/100\%$

= $(25)^2/100 = 25/4\%$

Alternate:

Initial	Final
5	6
4	3
16	15
	- 1

Required % decrease = $1/16 \times 100 = 25/4$
= 25/4%

170. (c) $20\% = 1/5$, $30\% = 3/10$
 Initial Final
 5 6

$$\frac{10}{5} \quad \frac{3}{6}$$

$$\downarrow \times 8 \quad \downarrow \times 8$$

$$[400] \quad 416$$

Hence required price = Rs. 400

171. (c) $10\% = 1/10 = (11 \rightarrow \text{Final}, 10 \rightarrow \text{Initial})$

Initial	Final
11	11
10	11
<u>10</u>	<u>11</u>
1000	1331

+ 331

Required % increment = $331/1000 \times 100$
 = 33.1%

172. (d) Let the number = x
 According to the question,
 $x \times 120/100 - x \times 75/100 = 336$
 $120x - 75x = 3600$
 $45x = 3600$
 $x = 3600/45 = 80$

Hence, required number = 80

173. (c) $20\% = 1/5$

Original	New
5	4
<u>5</u>	<u>6</u>
25	24

-1 unit

According to the question,

1 unit = 20

25 units = $20 \times 25 = 500$

Hence, original number = 500

174. (d) Let the initial expenditure = 100
 Increase in consumption
 = $21 / (100 - 21) = 21/79$
 Initial consumption = 79

New consumption = $(79 + 21) = 100$

According to the question,

21 units = 3kg

1 unit = $3/21 \text{ kg} = 1/7 \text{ kg}$

Required reduced price = $100 / (100 \times 1/7)$
 = Rs. 7/kg.

Alternate:

Due to reduction in price saved money

= $100 \times 21 / 100$

= 21

Quantity purchased from this money = 3 kg

New / Price / kg. = $21/3 = \text{Rs. } 7 \text{ kg.}$

175. (b) We know that
 → Total surface Area of a cube
 = $6a^2$
 → If each side is doubled
- | | | |
|-----------|---|---------------|
| 1 | → | 2 |
| <u>1</u> | → | <u>2</u> |
| T.S.A → 1 | → | 4 ← New T.S.A |
- 3 → Increase

Thus, Surface area of cube will increase $(3/1 \times 100\%)$
 → 300%

176. (d) The production of cycles rose to 48400 from 4 years

→ Present production = 40000

→ After two years = 48000

→ Time = 2 Years

→ Rate of increase = ?

According to the question,

Production after 2 years

→ Present Production $(1 + R/100)^t$

→ $48400 = 40000 (1 + R/100)^t$

→ $484/400 = (1 + R/100)^2$

→ $1 + R/100 = 22/20$

→ $R/100 = 1/10$

→ $R = 10\%$

→ Rate of increase = 10%

177. (b) Shortcut method

→ $20\% - 20\% - (20 \times 20)/100$

-4

→ 4%

178. (a) Quicker approach

Increase in A = $a + b + ab/100$

Here, $a = b = 5\%$

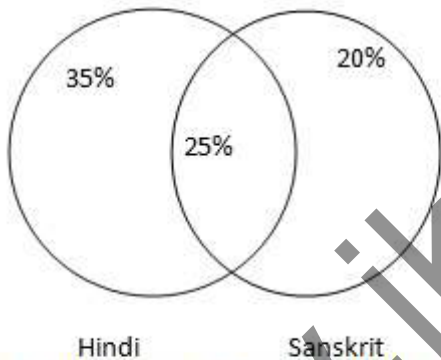
Increase in A = $(5 + 5 + 5 \times 5/100)\%$
 = 10.25%

179. (d) Here, Let $a = -20\%$
 $b = -10\%$
 Total reduction of the price $= (a + b + ab/100)\%$
 $= -20 - 10 + [(-20)(-10)/100]\% = -28\%$

180. (c) Passed boys $= 60\%$
 Failed boys $= (10 - 60)\% = 40\%$
 Failed girls $= (100 - 50)\% = 50\%$
 Failed boys $= 1000 \times 40/100 = 400$
 Failed girls $= 800 \times 50/100 = 400$
 Required % failed Candidates
 $= (400 + 400)/(1000 + 800) \times 100 = 800/1800 \times 100 = 44.4\%$

181. (c) According to the question
 Pass marks $= (220 + 20) = 240$
 $40\% \rightarrow 240$
 Thus, Maximum marks (100%)
 $= 240/40 \times 100 = 600$

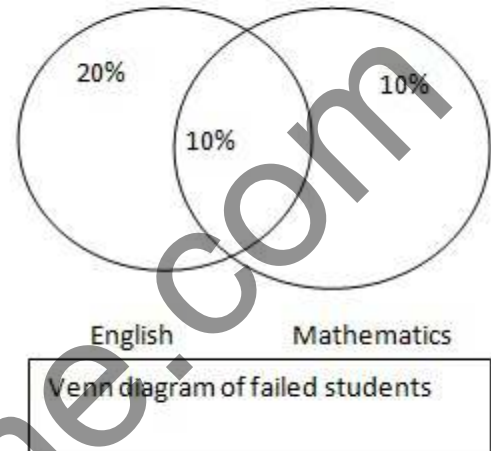
182. (c) Percentage of students passed in Hindi 60%
 Percentage of students passed in Sanskrit $= 45\%$
 Percentage of students passed in both subjects $=$



[Venna diagram of passed studnets]

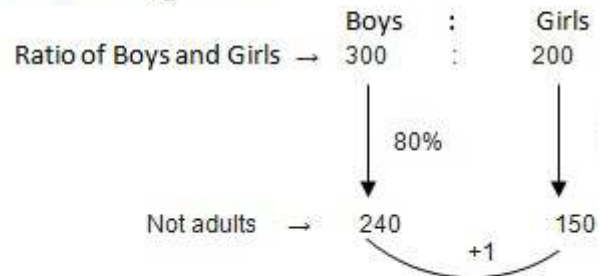
Percentage of failed students
 $= 100 - (35 + 25 + 20)$
 $= 100 - 80 = 20\%$

183. (c) failed condidates in English
 $= (100 - 70) = 30\%$
 $= (100 - 70) = 30\%$
 Failed candidates in Mathematics
 $= (100 - 80) = 20\%$
 $= (100 - 80) = 20\%$



Percentage of passed studnets in both subject.
 subject $= 100 - (20 + 10 + 10) = 60\%$
 According to the question,
 60% of studnets $= 144$
 Total of students $= 144/60 \times 100 = 240$

184. (c) Note : In such type of questions assume the va of ratio as per your need or which make your calculation easier, but the ratio of values shold not changed.
 Let number of boys $= 300$
 Number of girls $= 200$



Required % $= 390 / (300 + 200) \times 100$
 $= 78\%$

185. (d) Let the number of boys $= 400$
 Let the number of girls $= 100$
 Total number of student who do not get scholars
 $= 400 \times 25/100 + 100 \times 30/100$
 $= 100 + 30 = 130$
 Required percentage $= 130/500 \times 100 = 26\%$

186. (c) Let the total marks $x = x$

According to the question

$$x \times 33/100 = x \times 25/100 + 40$$

$$1/100 [33x - 25x] = 40$$

$$\rightarrow 8x = 40 \times 100$$

$$\rightarrow x = 500$$

Alternate :

Pass percentage = 33%

Marks obtained = 25%

$$\text{Required marks to be pass} = (33 - 25) \\ = 8\%$$

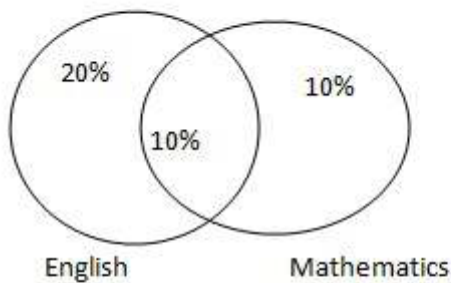
According to the question,

8% of total marks = 40

$$\text{Total marks (100\%)} = 40/8 \times 100 = 500$$

187. (c) The number of candidates failed in English = (170)% = 30%

The number of candidates failed in Mathematics = (100 - 80)% = 20%



Venn diagram of failed students

Percentage of passed students in both subjects =

$$[100 - (20 + 10 + 10)]\% = 60\%$$

According to the question

$$60\% \text{ of students} = 84$$

$$\text{Total students} = 84/60 \times 100 = 140$$

188. (d) Let the maximum marks = x

According to the question,

$$\text{Case (i) Pass marks} = 20x/100 + 30$$

$$\text{Case (ii) Pass marks} = 32x/100 - 42$$

Note: Pass marks would be same in both cases.

$$20x/100 + 30 = 32x/100 - 42$$

$$12x/100 = 72$$

$$x = 600$$

$$\text{Pass marks} = 600 \times 20/100 + 30 = 150$$

$$\text{Required percentage} = 150 / 600 \times 100 = 25\%$$

Alternate:

Note: In such type of questions to save your valuable time follow the given below method.

$$\begin{array}{rcl} \text{diff.} & 20\% & = -30 \\ & 32\% & = 42 \\ \hline & (32 - 20) = 12\% & (42 + 30) = 72 \end{array}$$

From above figure, 12% = 72 marks

$$1\% = 6 \text{ marks}$$

$$\text{Percentage of pass marks} = 20\% + 30/6\% \\ = 25\%$$

Hence, required percentage of pass marks = 25%

189. (d) The number of failure boys

$$= 640 \times 40/100 = 256$$

The number of failure girls

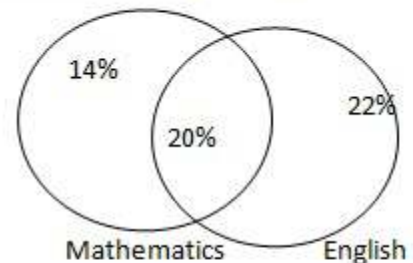
$$= 360 \times 20/100 = 72$$

percentage of failure students

$$= (72 + 256)/(640 + 360) \times 100 = 32.8\%$$

190. (c) Failed students in mathematics = 34%

failed students in English = 42%



Venn diagram of failed students

Percentage of passed students in both subjects = $[100 - (14 + 20 + 22)] = 44\%$

191. (b) Let the maximum marks = x
According to the question,
Case (i) Pass marks = $36x/100 + 6$
Case (ii) Pass marks = $40x/100 - 6$
Note: Pass marks would be equal in both cases.
 $30x/100 + 6 = 40x/100 - 6$
 $40x/100 + 6 = 30x/100 - 12$
 $10x = 1200 \rightarrow x = 120$
Note: To save your valuable time try follow the given below approach.

Percentage	=	Marks
30%	=	- 6
40%	=	+ 6
10%	=	12

- According to the question,
10% of total marks = 12 marks
Total marks = $12/10 \times 100 = 120$
192. (a) Let the marks obtained by first student = a
then marks obtained by second student = $(a + 9)$
According to the question,
 $a + 9 = 56/100 (a + a + 9)$

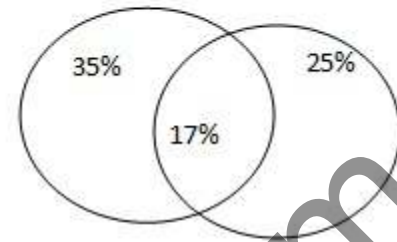
$$100a + 900 = 112a + 504$$

$$12a = 396$$

$$a = 33$$

- Marks of first student = 33
Marks of second student = $33 + 9 = 42$
Alternate: In such type of questions to save your valuable time take help from options.
Options (a) Marks of students be 42, 33
Case (i): Difference = $44 + 33 = 9$
Case (ii): $42 = (33 + 42) \times 56/100$
 $442 = 75 \times 56/100$
 $42 = 42$
Option (a) satisfies both the conditions of the equation.
Hence option (a) is correct.

193. (c) Students failed in Hindi = 52%
Students failed in English = 42%
Students failed in both subjects = 17%

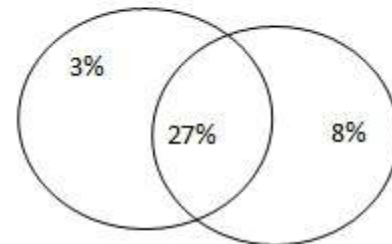


Venn diagram of failed students

- Total % of passed students in both subjects
= $100 - (35 + 17 + 25)$
= $100 - 77 = 23\%$
Hence, required percentage = 23%

194. (b) Students who cannot speak English = $(100 - 70) = 30\%$
Students who cannot speak Hindi = $(100 - 65) = 35\%$

English Hindi



Venn diagram of failed students

- Percentage of students who can speak both the languages
= $[100 - (3 + 27 + 8)]\%$
= $(100 - 38)\%$
= 62%

195. (b) Percentage of failed students = 25%
Thus, Percentage of passed students = $(100 - 25) = 75\%$

According to the question,
total students = $450/75 \times 100 = 600$

196. (d) Percentage of students playing both = $(50 + 40 + 18) - 100 = 8\%$

197. (b) $20\% = 1/5 = 6/5$ (6 = Girls, 5 = Boys)

Boys : Girls
5 : 6

According to the question,

$$(5 + 6) \text{ units} = 66$$

$$11 \text{ units} = 66$$

$$1 \text{ units} = 6 \times 5 = 30$$

$$\text{Girls} = 6 \times 6 = 36$$

The number of girls when 4 is admitted

$$= (36 + 4) = 40$$

$$\text{Required ratio} = 30 : 40 = 3 : 4$$

198. (a) Passed students in first year

$$= 100 \times 75/100 = 75$$

$$\text{Passed students in second year} = 75 \times 60/100 = 45$$

Total passed students

$$= 75 + 45 = 120$$

Required percentage

$$= 120/(100 + 75) \times 100 = 120/175 \times 100$$

$$= 68.57\%$$

199. (d) Pass marks

$$= 200 + 10 = 210$$

Required maximum marks

$$= 210/35 \times 100 = 600$$

200. (a) Let the maximum marks = x

According to the question,

Case (i) Minimum pass marks

$$= x \times 30/100 + 5 = 30x/100 + 5$$

(ii) Minimum pass marks

$$= x \times 40/100 - 10$$

$$= 40x/100 - 10$$

Note: Pass marks will be equal in both cases

$$30x/100 + 5 = 40x/100 - 10$$

$$= 40x/100 - 30x/100 = 15$$

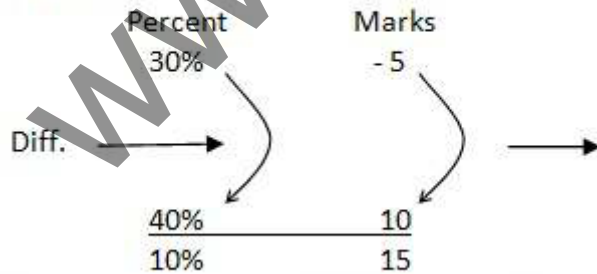
$$10x/100 = 15$$

$$\rightarrow x = 150$$

Hence maximum marks = 150

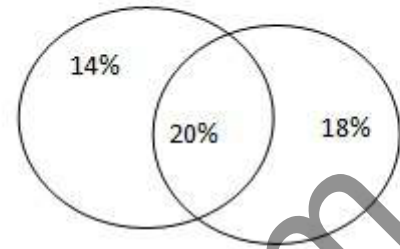
$$\text{Pass marks} = 150 \times 30/100 + 5 = 50$$

Alternate:



$$\text{Minimum pass marks} = 15/10 \times 30 + 5 = 50$$

201. (a) Students passed in mathematics = 65%
Students passed in physics = 48%
Students passed in both subjects = 30%



Venn diagram of failed students

$$\text{Percentage of failed students in both subjects} = 100 - (65 + 48 - 30)$$

$$= 100 - 83$$

$$= 17\%$$

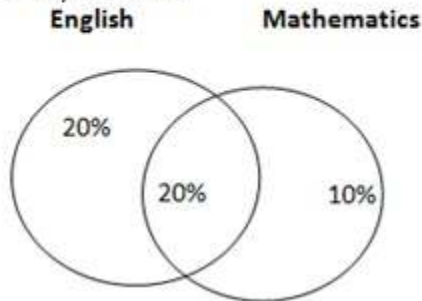
202. (c) Percentage of students took Biology = 72%
Percentage of students took Mathematics = 44%
Percentage of students took both subjects = (72 + 44 - 100) = 16%

According to the question,

$$\text{Total number of students} = 40/16 \times 100$$

$$= 250$$

203. (d) Candidates failed in English
 $= (100 - 60)\% = 40\%$
 Candidates failed in Mathematics
 $= (100 - 70)\% = 30\%$



Venn diagram of failed students

Students passed in both subjects
 $= 100 - (20 + 20 + 10) = 50\%$
 50% of students = 2500
 Total students = $2500 / 50 \times 100 = 5000$

204. (a) Let the maximum marks = x
 According to the question,
 Case (i) Pass marks = $3x/100 + 25$ (i)
 Case (ii) Pass marks

$= 40x/100 - 25/100 (30x/100 + 25)$ (ii)

Note: Pass marks will be equal in each case.

$$30x/100 + 25 = 40x/100 - 3x/400 - 25/4$$

$$25 = 10x/100 - 30x/400 - 25/4$$

$$25x + 25/4 = 40x/400 - 30x/400$$

$$125/4 = 10x/400 \rightarrow x = 1250$$

Maximum pass marks

$$= 1250 \times 30/100 + 25$$

$$= 375 + 25 = 400$$

Alternate:

Note In such type of question to save your valuable help from options.

Option: Maximum pass marks = 400

$$\text{Maximum marks} = (400 - 25)/30 \times 100$$

$$= 1250$$

According to the question,

Required maximum pass marks

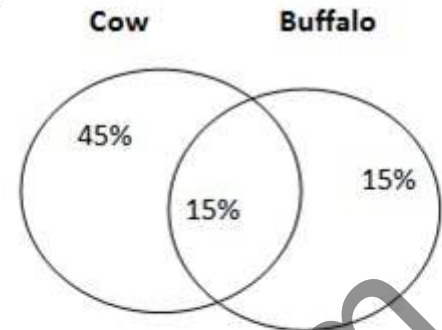
$$= 1250 \times 40/100 - 400 \times 25/100$$

$$= 500 - 100 = 400$$

Hence, the required answer is same as in option (

Hence Option (a) is correct.

205. (b)



Venn diagram of failed students

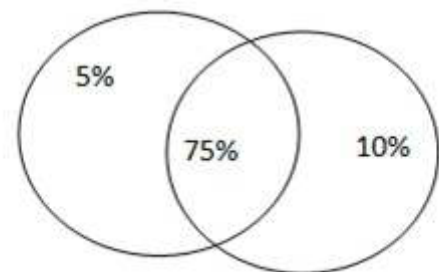
Required families which do not have a cow or a buffalo
 $= 100 - (45 + 15 + 15) = 25\%$

According to the question

$$\text{Required number} = 96/100 \times 25 = 24$$

206. (b) Percentage of students passed in English = 80%
 Percentage of students passed in Mathematics = 80%

English Mathematics



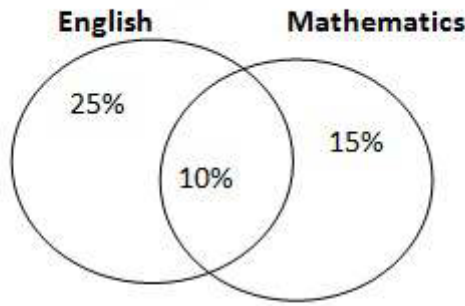
Venn diagram of failed students

Percentage of failed students in both subjects

$$= 100 - (5 + 75 + 10) = 10\%$$

$$\text{Total number of students} = 45/10 \times 100 = 450$$

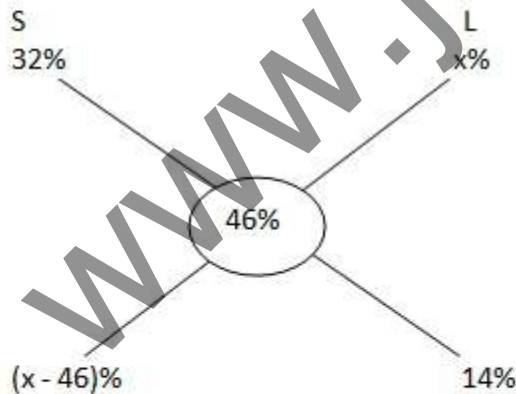
207. (a) Candidates failed in Mathematics = 35%
Candidates failed in English = 25%



Venn diagram of failed students

Hence, percentage of passed candidates in both subjects = $100 - (25 + 10 + 15) = 50\%$

208. (a) Maximum marks = $(125 + 40)/33 \times 100 = 165/33 \times 100 = 500$
209. (b) Maximum marks = $(113 + 85)/36 \times 100 = 198/36 \times 100 = 550$
210. (b) Total marks = $(300 + 200) \times (46/100) = 230$
Marks obtained by the students in science = $300 \times 32/100 = 96$
Required marks in Language Papers = $(230 - 96) = 134$
Required % = $134/200 \times 100 = 67\%$
Alternate: Use alligation method

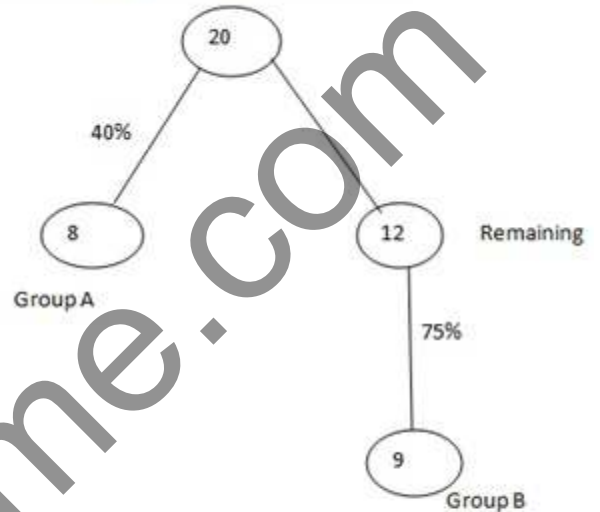


$$\begin{aligned} 3 \times 7 & : \\ x - 46 & = 21 \\ x & = 67\% \end{aligned}$$

211. (c) Percentage of passed students in both subjects = $(90 + 85) - 100 = 75\%$

According to the question,
Total number of students = $150 / 75 \times 100 = 200$

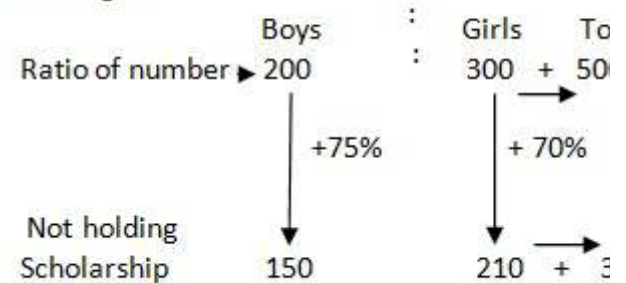
212. (c) $405 = 2/5$, $75\% = 3/4$
Let total number of students = 20



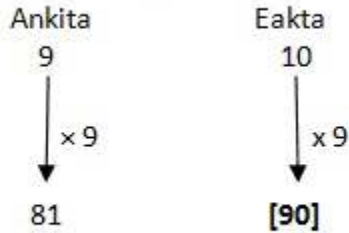
Now remaining students = $20 - (9 + 8) = 3$

According to the question,
3 units = 12
1 unit = $12/3 = 4$
20 units = $4 \times 20 = 80$
Hence total number of students = 80

213. (a) Note: In such type of questions assume data as per your need but remember the ratio mentioned in the question should not change.

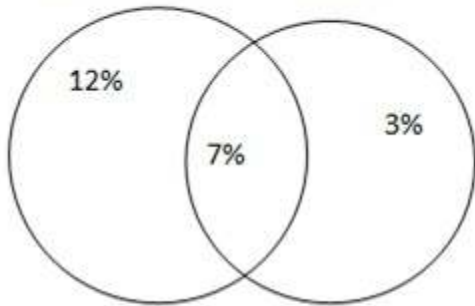


214. (a) $10\% = 1/10$



Hence, Marks obtained by Eakta = 90

215. (d) Students failed in mathematics = 19%
Students failed in English = 10%



Venn diagram of failed students

Students passed in both subjects
= $100 - (12 + 7 + 3) = 78\%$

216. (a) Students gets 190 marks and fails by 35 marks
total marks need to pass = $190 + 35 = 78\%$
Thus, 36 % Marks are pass marks
→ $36\% = 225$
→ $100\% = 225/36 \times 100$
→ $100\% = 625$
→ Total marks = 625

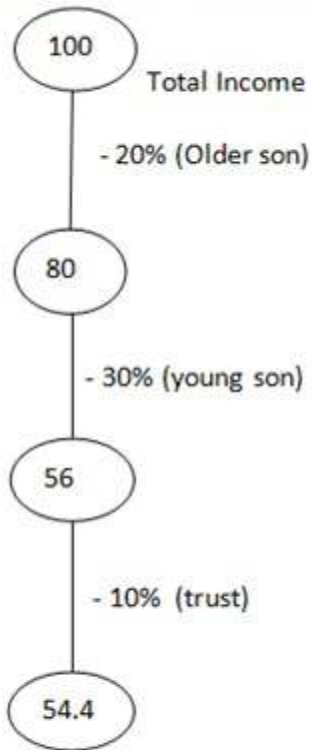
217. (d) According to the question,
Let the total number of students = 100
Ratio of Boy/Girls = 3/2
5 units 100
1 units 20
3 units $20 \times 3 = 60$
2 units $20 \times 2 = 40$



Students not appeared in exam
= $100 - 46 = 54$
Thus, Ratio of students appeared in exam/ Not appeared in exam
= $46/54 = 23/27$

218. (d) According to the question,
First subject = 60%
Second subject = 20%
Aggregate in all subject = 70%
Sum of all those subject = $3 \times 70 = 210$
Thus, First + Second + Third = 210
 $60 + 80 + \text{Third} = 210$
Third = $210 - 140 = 70$

219. (d) $20\% = 1/5$, $30\% = 3/10$
 $10\% = 1/10$
 Let total income = 100 units



According to the question,
 50.4 units = Rs. 10080
 1 units = $1080/50.4 = \text{Rs. } 200$
 100 units = $200 \times 100 = \text{Rs. } 20000$
 Hence, Required income = Rs. 20000

Alternate:

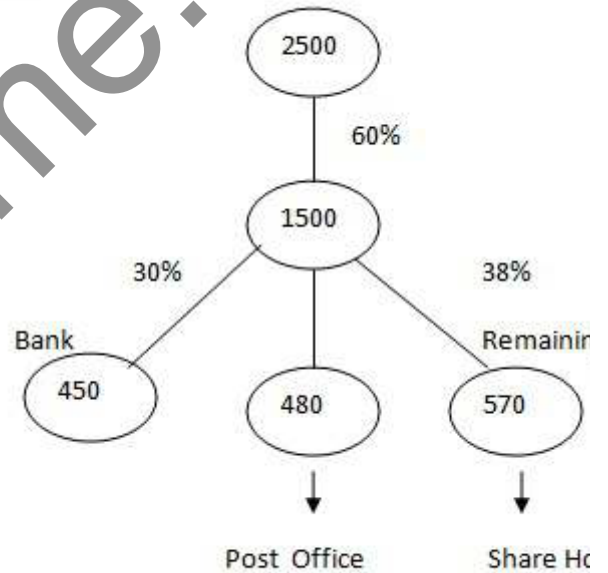
Initial	:	Final
5		4
10		7
10		9
<hr/>		
500		252
↓ × 40		↓ × 40
[20000]		[10080]

Hence, require income = Rs. 20000

220. (b)
- | | |
|---------------|-------|
| Expenses | |
| Food | → 40% |
| House Rent | → 20% |
| Entertainment | → 10% |
| Conveyance | → 10% |

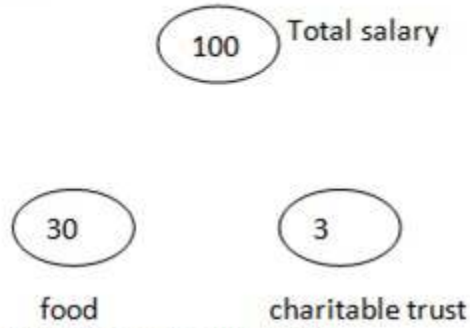
Total expenditure = 80%
 Saving = $100\% - 80\% = 20\%$
 $20\% \rightarrow 1500$
 $1\% \rightarrow 1500/20 \times 100$
 = Rs. 7500

221. (b) According to the question,



Hence, required number of share holders = 570

222. (d) Let initial salary = 100 units



According to the question,
 (30 + 3) units = Rs. 2310
 33 units = Rs. 2310

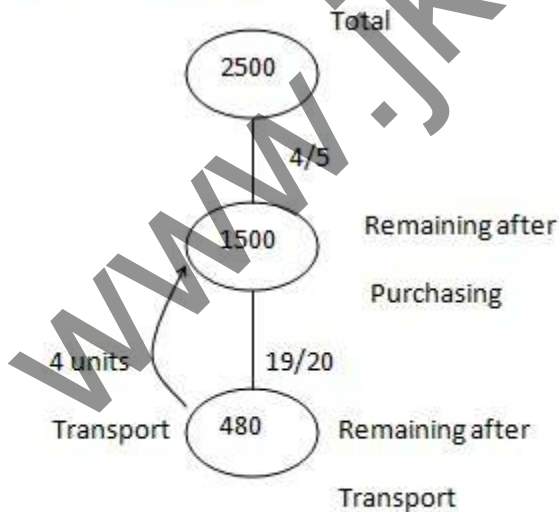
1 unit = Rs. 2310/33
 100 units = 2310/33 × 100
 Total salary = Rs. 7000

223. (d) Let the total amount = x

According to the questions,
 $x \times 80/100 \times 95/100 = (120 + 1400)$
 $x \times 4/5 \times 19/20 = 1520$
 $x = 1520 \times 100/76 = 2000$
 Total amount = 2000
 Amount spent on transport
 $= 2000 \times 80/100 \times 5/100 = \text{Rs. } 80$

Alternate :

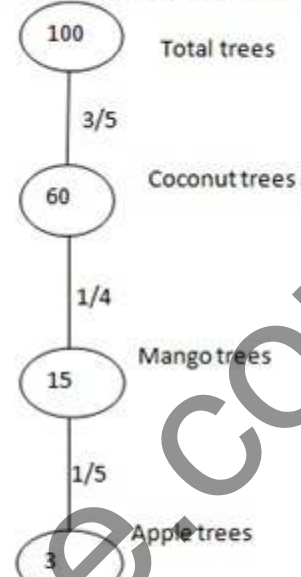
Note : In such type of questions try to follow the given below method to save your valuable time.
 20% = 1/5, 5% = 1/20 (19 = Final, 20 Initial)
 Total amount = 100 units



According to the question,
 76 units = (1400 + 120) = Rs. 1520
 1 units = 20 × 4 = Rs. 80

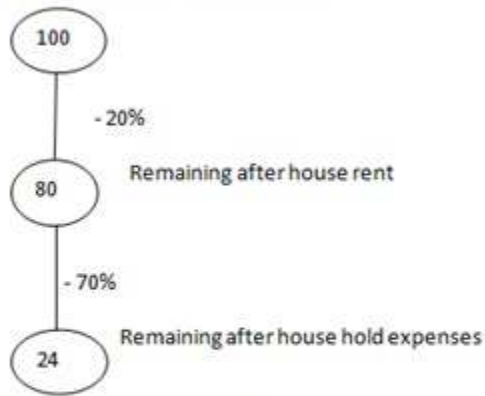
224. (a) 60% = 3/5, 25% = 1/4
 20% = 1/5

Let the total trees in the garden = 100



According to the question,
 3 units = 1440
 1 units = 1440/3 = 480
 Total trees = 100 units = 480 × 100 = 48000

225. (d) $20\% = 1/5$, $70\% = 7/10$
Let total income = 100 units



According to the question,
24 units = Rs. $1800/24 \times 100$
= Rs. 7500
Alternate: $20\% = 1/5$

$70\% = (7 \rightarrow \text{Expenditure}) / (10 \rightarrow \text{Income})$

Income	Saving
5	4
<u>10</u>	<u>3</u>
50	12
↓ 30%	↓ 70%

$[7500] + 1800$

Hence total income = Rs. 7500

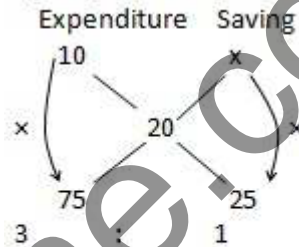
226. (a) Let the income of Bhuvnesh = Rs. 100
According to the question,

	Income	Expenditure	Saving	
Initial →	100	75	25	} 12.
	↓ +20%	↓ +10%	↓	
Final →	120	82.5	37.5	

Required % Increased in Saving
= $12.5/25 \times 100 = 50\%$

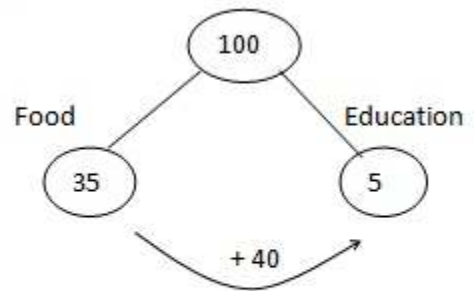
Alternate:

By Alligation rule



$= 10 \times 3 + x \times 1 / (3 + 1) = 20$
 $= (30 + x) / 4 = 20 \rightarrow 30 + x = 80$
 $\Rightarrow x = 50\%$

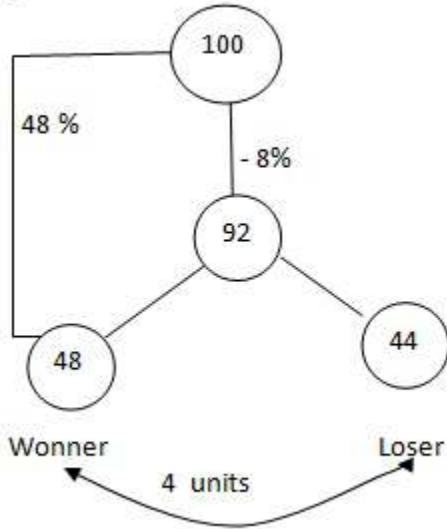
227. (b) Let total salary of Mr. x = 100 units



According to the question,
1 unit = Rs. $17600/40 = \text{Rs. } 440$
100 units = Rs. $440 \times 100 = \text{Rs. } 44000$
Hence, required salary = Rs. 44000

228. (a) $x \times 20/100 \times 20/100 = 16000$
 $x = 400000$

229. (d) Let the total number of voters = 100 units



voters get by Loswer = $(92 - 48) = 44$ units

According to the question,

$$(48 - 44) = 1100$$

$$4 \text{ units} = 1100$$

$$1 \text{ units} = 1100/4 = 275$$

Total votes = 100 units

$$= 100 \times 275 = 27500$$

Alternate: Let total votes = x

$$\text{Votes polled} = x \times 92/100$$

$$\text{Votes polled for winner} = 48\% / 100$$

$$\text{Votes polled for loser}$$

$$= (92x/100 - 48x/100)$$

According to the question

$$48x/100 - (92x/100 - 48x/100) = 1100$$

$$48x/100 - 44x/100 = 1100$$

$$4x = 1100 \times 100$$

$$x = 1100 \times 25 = 27500$$

Hence, total number of voter = 27500

230. (c) Total valid votes got candidates = $9261/75 \times 10 = 12348$

Let total number of votes = x

$$\text{Total votes polled} = x \times 75/100$$

$$= 75x/100$$

$$\text{Valid votes} = 75x/100 \times 98/100$$

$$\text{According to the question, } 75x/100 \times 98/100 = 12348$$

Hence, total votes = 16800

Alternate:

Note: In such type of questions try to write the sta in one line.

Let total votes = x

$$x \times 75/100 \times 98/100 = 9261/75 \times 100$$

$$x = 16800$$

Hence, required number of total votes = 16800

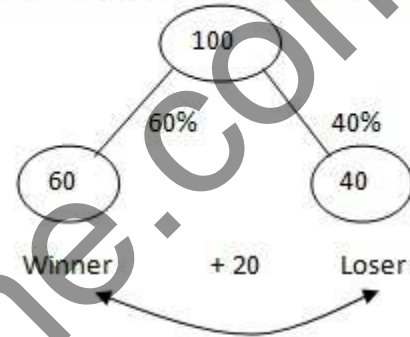
231. (a) $25/2\% = 1/8, 30 = 3/10$

Initial	Final
8	7
10	7
80	49

$$[4800]2940$$

Required salary = Rs. 2940

232. (c) let total number of votes polled = 100 units



According to the question,

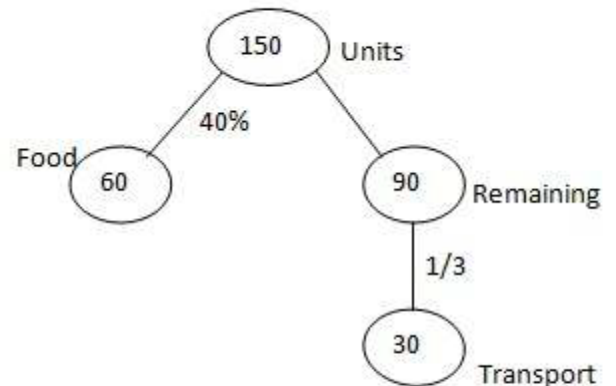
$$20 \text{ units} = 14000$$

$$1 \text{ units} = 14000/20 = 700$$

$$60 \text{ units} = 700 \times 60 = 42000$$

Hence, votes polled for winning candidates = 42000

233. (b) Let total salary = 150 units



Remaining salary after expenditure

$$= 150 - (60 + 30) = 60 \text{ units}$$

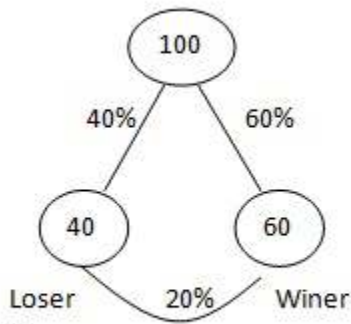
According to the question,

$$60/2 \text{ units} = \text{Rs. } 4500$$

$$1 \text{ units} = \text{Rs. } 4500/30 = \text{Rs. } 150$$

$$\text{Monthly Salary} = 150 \text{ units} = 150 \times 150 = \text{Rs. } 22500$$

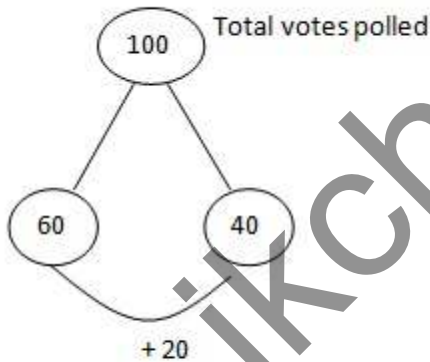
234. (c) Let the total number of votes = 100



20 units = 298
 1 units = 298/20
 100 units = 298/20 × 100
 1490

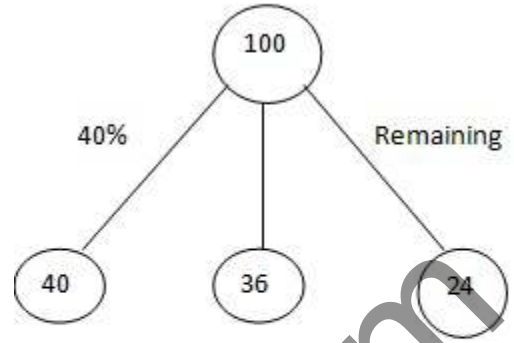
235. (d) Total votes = 1044000
 Total valid votes = 104000 × (100 - 2)/100
 = 104000 × 98/100 = 101920
 Votes polled in favour fo the the candidates.
 = 101920 × 55/100
 = 56056

236. (b) Let the total number of votes polled = 100



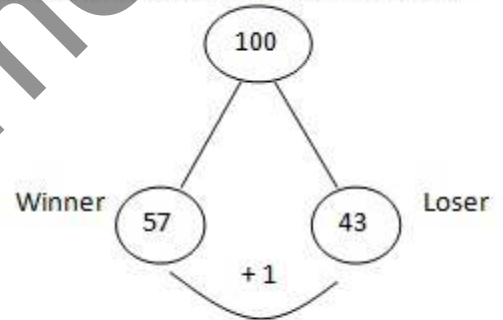
According to the question,
 20 units = 1600
 1 units = 80
 10 units = 80 × 100 = 8000

237. (b) Let the total number of votes = 100 units



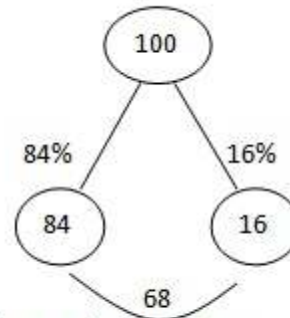
According to the question,
 100 units = 36000
 1 unit = 360
 24 units = 360 × 24 = 8640
 Hence, Required number of votes got by 3rd.
 candidates = 8640

238. (c) Let the total number of votes = 100 units



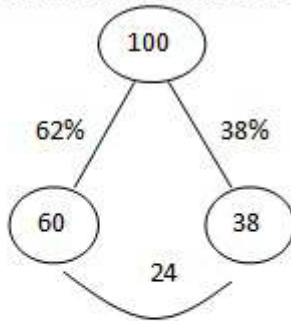
According to the question,
 14 units = 42000
 1 units = 3000
 Total votes = 100 units = 100 × 3000 = 300000

239. Let the total votes polled = 100 units



According to the question,
 68 units = 476
 1 units = 476/68 × 100 = 700

240. (d) Let the total number of valid votes = 100 unit



According to the question,

$$14 \text{ units} = 7200$$

$$1 \text{ unit} = 300$$

$$100 \text{ units} = 300 \times 100$$

$$= 30000$$

241. (c) $5/2\% = 1/40 = 41/40$ ($40 \rightarrow$ Final, $40 \rightarrow$ int)

Initial Population	Final Population
40	41
40	41
40	41
64000	68921

Hence, required population = 68921

242. (a) $10\% = 1/10$

Initial	Final
10	9
10	9
100	81

$$\rightarrow 81 \text{ units} = \text{Rs. } 8100$$

$$\rightarrow 1 \text{ unit} = \text{Rs. } 100$$

$$\rightarrow 100 \text{ units} = \text{Rs. } 10000$$

$$\rightarrow \text{Value of property 2 years ago} \\ = \text{Rs. } 10000$$

243. (a) $25\% = \frac{1}{4}$

Initial	Final
4	5
4	5
4	5
64	125

$$\rightarrow 125 \text{ units} = 10000$$

$$\rightarrow 1 \text{ unit} = 80$$

$$\rightarrow 64 \text{ Units} = 5120$$

$$\rightarrow \text{Population at the beginning of 1}^{\text{st}} \text{ year} = 5120$$

244. (a) $4\% = 1/25$

Initial Population	Final Population
25	24
25	24

$$625$$

$$\downarrow \times 100$$

$$62500$$

$$576$$

$$\downarrow \times 100$$

$$576010$$

Hence percent population of the town = 57600

245. (c) $4\% = 1/25$

Initial	Final
25	26
25	26
625	676

According to the question,

$$625 \text{ units} = 50000$$

$$1 \text{ unit} = 50000/625 = 80$$

$$676 \text{ units} = 80 \times 676 = 54080$$

$$\text{Hence, population after two years} = 54080$$

Alternate:

$$\text{Population after two years}$$

$$= 50000 \times 104/100 \times 104/100$$

$$= 54080$$

246. (c) $10\% = 1/10 = 9/10$ ($9 \rightarrow$ Final, $10 \rightarrow$ Initial)

Initial	Final
10	9
10	9
10	9
1000	729

$$\downarrow \times 8$$

$$[8000]$$

$$\downarrow \times 8$$

$$5832$$

Alternate:

$$P = P (1 \pm R/100)^n$$

Note: Rate decreasing so use - ve of R.

3 years ago so use - ve sign of n.

$$\text{Present value} = 5832 \quad (\text{Given})$$

$$= 5832 \times 10/9 \times 10/9 \times 10/9 = 8000$$

247. (b) Salary in 2006 = $880000/110 \times 100 = \text{Rs. } 8000$

248. (b) $20\% = 1/5$

Initial	Final
5	4
5	4
5	4
125	64

$$\downarrow - 61$$

$$\text{Required percentage} = 61/125 \times 100 = 48.8\%$$

249. (a) $4\% = 1/25$

Initial 625	Final 676
↓ × 100	↓ × 100
[62500]	67600

Population after of 2 years = 62500

Alternate :

Let the initial population = x

According to the question,

$$x \times 104/100 \times 104/100 = 67600$$

$$x = (67600 \times 100 \times 100) / (104 \times 104)$$

$$= 62500$$

Hence, Required population = 62500

250. (d) $5\% = 1/20$

Initial 20	Final 19
20	19
20	19
8000	6859
↓ × 60	↓ × 60
[480000]	411540

Hence, value before 3 years = 480000

Alternate : $P = P (1 \pm R/100)^n$

After n years use +ve sign of n.

For decreasing rate use -ve sign of R.

$$411540 = P [1 - 5/100]$$

$$= \text{Rs. } 480000$$

251. (a) $5\% = 1/20 = 19/20$ (19 → Final, 20 → Initial)

Initial 20	Final 19
20	19
400	361
↓ × 500	↓ × 500
200000	180500

Hence, value of machine after 2 years = Rs. 180500

Alternate:

Use sign of R and n according to rate and before or after n years.

Value of machine after two years

$$= 200000 \times (100 - 5)/100 \times (100 - 5)/100$$

$$= \text{Rs. } 180500$$

252. (b) $10\% = 1/10$ (11 → Final, 10 → Initial)

Initial 10	Final 11
10	11
10	11
1000	1331
↓ × 64	↓ × 64
64000	85184

Hence, population after 3 years

= 85184

Alternate:

Population after n years

$$P^n P = (1 \pm R/100)^n$$

$$P' = 64000 (1 \pm 10/100)^3 = 85184$$

Alternate :

Present population = 64000

1st. year 64000

2nd. Year 6400 6403rd. year 6400 2 × 640 64

Total population after 3 years

$$= 64000 + 3 \times 6400 + 3 \times 640 + 64$$

$$= 85184$$

253. (B) $20\% = 1/5 = 4/5$ (4 → Final, 5 → Initial)

5	4
5	4
25	16
↓ × 400	↓ × 400
64000	85184

Hence, population after 2 years = 6400

254. (d) $20\% = 1/5$

Years 1974	: Year 1975
Salary → 5	6
↓ × 610	↓ × 610
[3050]	3660

Hence, Required salary = Rs. 3050

Alternate :

Note: To save your valuable time in such type of questions try to write the statement in one line.

Salary in 1974 year = $3660 / 120 \times 100$

$$= \text{Rs. } 3050$$

255. (a) Required previous salary

$$= 24000 / (100 + 20) \times 100 = 24000 / 120 \times 100$$

$$= 20000$$

256. (c) $10\% = 1/10$, $20\% = 1/5$
 $30\% = 1/10$

Initial	Final
10	9
5	4
<u>10</u>	<u>7</u>
500	252
↓ × 12.5	↓ × 12.5
6250	[3150]

Hence, value after 3 years = Rs. 3150

Alternate:

$$\begin{aligned} \text{Current value of machine} &= 6250 \times 90 \times 100 \times 80/100 \times 70/100 \\ &= \text{Rs. } 3150 \end{aligned}$$

257. (d) $10\% = 1/10$

Initial	Final
10	9
<u>10</u>	<u>9</u>
100	81
↓ × 500	↓ × 500
50000	40500

Hence, value of machine after two years = Rs. 40500

258. (a) $10\% = 1/10$

Initial	Final
10	9
10	9
<u>10</u>	<u>9</u>
1000	729
↓ × 1	↓ × 1
[1000]	729

Hence, worth before 3 years = Rs. 1000

Alternate:

$$\begin{aligned} P &= P (1 \pm R/100)^n \\ &= 729 (1 - 10/100)^3 \\ &= \text{Rs. } 1000 \end{aligned}$$

259. (a) Required last year salary = $1806 / (100 + 5) \times 1$
 = Rs. 1720

260. (a) $10\% = 1/10$

According to the question,

(2000)	(2003)
Initial	Final
10	11
10	9
<u>10</u>	<u>11</u>
1000	1089
↘ +89 ↗	

$$\text{Required \% increment} = 89/1000 \times 100 = 8.9\%$$

Hence, strength after 3 years will increase by 8.9%

261. (a) $4\% = 1/25 = 26/25$ (26 → Final, 25 → Init)

Initial	Final
25	26
25	26
<u>25</u>	<u>26</u>
15625	17576
↓ + 32	↓ + 32
500000	[562432]

Hence, population on 1st. January 2004 was 562432

Alternate:

$$\begin{aligned} \text{Required population} &= 500000 \times (100 + 4)/100 \times (100 + 4)/100 \times (100 + 4) \\ &= 562432 \end{aligned}$$

262. (b) $5\% = 1/20$

Initial	Final
20	21
20	21
<u>400</u>	<u>441</u>
↓ × 10	↓ × 10

[4000] 4410

263. (b) Present Population = 9261

Increasing Rate = 5%

Time = 3 Years

Present population Population

$$3 \text{ year } (1 + R/100)^T$$

$$9261 = P (1 + 5/100)^3$$

$$9261 = 21/20 \times 21/20 \times 21/20$$

$$P = 8000$$

264. Let the income in 20010 be P
 $\rightarrow R = 20\%$
 \rightarrow Income of year 2012 = 2664000
 \rightarrow Income of 2012 = $P [1 + 20/100]^2$
 $\rightarrow 2664000 = P [1 + 20/100]^2$
 $\rightarrow 2664000 = P \times 6/5 \times 6/5$
 \rightarrow Income in 2010 = 185000

265. (b) $12\% = 3/25$
- | | |
|-------------|---------------|
| Copper | Totally Alloy |
| 3 | 25 |
| ↓ | ↓ |
| $\times 23$ | $\times 23$ |
| ↓ | ↓ |
| 69 kg | [575] kg |

Hence, required quantity of alloy = 575 kg

266. (d) $10\% = 1/10$ (1 \rightarrow Water, 10 \rightarrow Mixture)
 $1/5$ (1 \rightarrow Water, 5 \rightarrow Mixture)

	Milk	:	Water
Initial \rightarrow	36	:	4
Final \rightarrow	36	:	9

(36 + 4) Units = 40 liters

1 unit = 1 litre

Required Quantity of water
= 5 litres

267. $20\% = 1/5$ (1 \rightarrow Impurity, 5 \rightarrow Mixture),
 $5\% = 1/20$

Impurity	:	Pure glycerine
1	:	4
1	:	19

According to the question,

(1 + 4) units = 50 litres

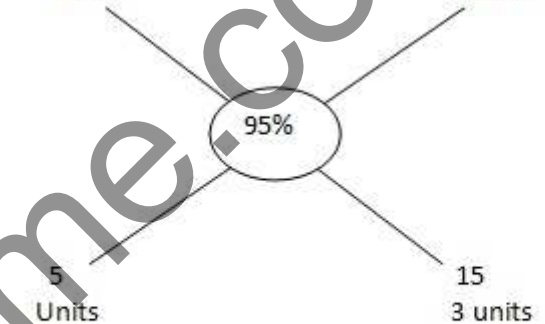
1 unit = 10 litres

15 units = 10 \times 15 = 150 litres

Required quality of glycerine = 150 litres

Alternate:

Initial Mixture (Glycerine	:	Amount of glycerine added (% content)
80%	:	100%



Initial mixture 1 unit \rightarrow 50 ltr.

Amount of glycerine added 3 units $\rightarrow 3 \times 50 = 150$

268. (b) $68\% = 17/25$, $20\% = 1/5$

Water : Pulp

Fresh fruit $\rightarrow 17 : 8$

Dry Fruit $\rightarrow 1 \times 2 : 4 \times 2$

Note : the quantity of pulp would be same

Water : Pulp

Fresh fruit $\rightarrow 17 : 8 \rightarrow 25$

Dry fruit $\rightarrow 2 : 8 \rightarrow 10$

According to the question,

25 unit = 110 kg

1 units = $100/25 = 4$ kg

10 units = $4 \times 10 = 40$ kg

269. (d) $40\% = 2/5$ (2 \rightarrow Alcohol, 5 \rightarrow Mixture)

Water : Alcohol

3 : 2

Required percentage = $2/(5 + 1) \times 100$

= $2/6 \times 100$

= $1/3 \times 100 = 100/3\%$

270. (c) $15\% = 3/10$ (3 → Water, 10 → Mixture)
 $87.5\% = 7/5$ (7 → Milk, 8 → Mixture)

	Milk	:	Water
Initial →	17	:	3
Fial →	7×3	:	1×3

Note: Milk is added in the mixture hence quantity of water will be same.

	Milk	:	Water
Initial →	17	:	3 → 20 unit
Fial →	21	:	3

According to the question,

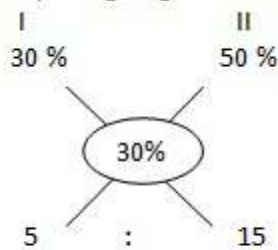
$$20 \text{ units} = 200 \text{ litres}$$

$$1 \text{ units} = 200/20 \text{ litres} = 10 \text{ litres}$$

$$4 \text{ units} = 10 \times 4 = 40 \text{ units}$$

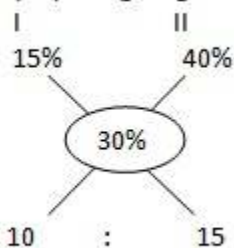
Hence, Required quantity of milk
 = 40 litres

271. (b) By using Alligation Rule,



$$\text{Ratio of Quantity} \rightarrow 1 : 3$$

272. (b) By using Alligation Rule,



$$\text{Ratio of quantity} \rightarrow 2 : 3$$

273. (b) $80\% = 4/5$, $60\% = 3/5$

Acid : Water

$$4 \times 3 : 1 \times 5$$

$$3 \times 4 : 2 \times 4$$

Note: Now we are adding water hence quantity of acid will be same

According to the question,

$$(12 + 3) \text{ units} = 60 \text{ litres}$$

$$15 \text{ units} = 60 \text{ litres}$$

$$1 \text{ unit} = 60/15$$

$$5 \text{ units} = 60/15 \times 5 = 20 \text{ litres}$$

274. (b) $30\% = 3/10$, $70\% = 7/10$

Sugar : Other

$$3 \times 3 : 7 \times 3$$

$$7 \times 7 : 3 \times 7$$

Note: We are adding sugar so other part will be sa

Sugar : Other

$$9 : 21$$

$$49 : 21$$

According to the question,

$$(9 + 21) \text{ units} = 75 \text{ gm}$$

$$1 \text{ unit} = 75/60 \text{ gm}$$

$$40 \text{ units} = 75 / 30 \times 40 = 100 \text{ gm}$$

275. (d) $80\% = 4/5$, $50\% = 1/2$

Boric acid : Water

$$4 : 1$$

$$1 \times 4 : 1 \times 4$$

Note: Water is added hence quantity of boric acid will be same.

Boric acid : Water

$$4 : 1 \rightarrow +3$$

$$4 : 4$$

According to the question,

$$(4 + 1) \text{ units} = 100 \text{ ml}$$

$$5 \text{ units} = 100 \text{ ml}$$

$$1 \text{ unit} = 20 \text{ ml}$$

$$3 \text{ units} = 20 \times 3 = 60 \text{ ml}$$

276. (a) $30\% = 3/10$, $15\% = 3/20$

Alcohol : Water

$$7 : 3$$

Note: Alcohol is added in the mixture so quantity of water be same.

Alcohol : Water

$$7 : 3$$

$$+10 \left(\begin{array}{l} 7 \\ 17 \end{array} : 3 \right)$$

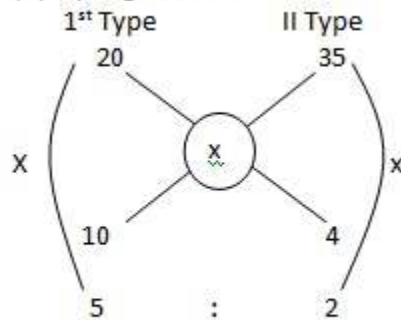
According to the question,

$$(7 + 3) \text{ units} = 1 \text{ litre} = 1000 \text{ ml}$$

$$10 \text{ units} = 1000 \text{ ml}$$

Hence, Required quantity of alcohol
 = 1000 ml.

277. (d) By Alligation rule



$$(20 \times 5 + 35 \times 2) / (5 + 2) = x \rightarrow 100 + 70 = 7x$$

$$7x = 170 \rightarrow x = 170/7\%$$

278. (b) Alcohol : Water
Ratio of Quantity 1 : 4

According to the question,

$$(1 + 4) \text{ units} = 15 \text{ litres}$$

$$5 \text{ units} = 15 \text{ litres}$$

$$1 \text{ unit} = 3 \text{ litres}$$

$$\text{Quantity of alcohol} = 1 \times 3 = 3 \text{ litres}$$

$$\text{Quantity of water} = 4 \times 3 = 12 \text{ litres}$$

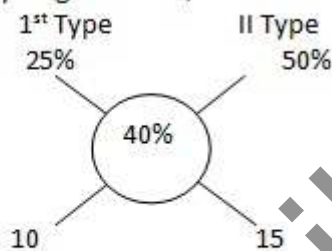
$$\text{New quantity of water} = (12 + 3) = 15 \text{ litres}$$

$$\text{Required \%} = 3 / (15 + 3) \times 100$$

$$= 3/18 \times 100$$

$$= 50/3\%$$

279. (c) By Alligation rule,



2 : 3 ← Ratio of Quantit

Hence, Required ratio = 2 : 3

280. (b) 20% = 1/5 (5 = Mixture)

Alcohol : Water

1 : 4

According to the question,

$$5 \text{ units} = 20 \text{ litres}$$

$$1 \text{ unit} = 4 \text{ litres}$$

$$\text{Alcohol} = 1 \times 4 = 4 \text{ litres}$$

$$\text{Water} = 4 \times 4 = 16 \text{ litres}$$

$$\text{New quantity of water}$$

$$= (16 + 4) = 20 \text{ litres}$$

$$\text{Required \%} = 4 / (20 + 4) \times 100 = 50/3\%$$

281. (b) Mass of lead ore = 8000 kg

$$\rightarrow \text{Mass of metal in lead ore}$$

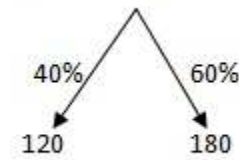
$$= 60\% \text{ of } 8000 = 4800 \text{ kg}$$

$$\rightarrow \text{Mass of silver in metal}$$

$$= 3/4\% \text{ of } 4800 = 36 \text{ kg}$$

$$\rightarrow \text{Mass of lead in ore} = 4800 - 36 = 4764 \text{ kg}$$

282. (b) 300 gm



Sugar + other solution = Mixture

$$120 + 180 = 300$$

$$+ 60 \quad + 60$$

$$180 + 180 = 360 \text{ (Check with option to save time)}$$

Sugar should be added 50 grams

because $120 + x = 180$ grams

$$x = 60 \text{ grams}$$

283.

(c) According to the question,

$$\text{Mixture of copper and aluminium} = 2000 \text{ gm}$$

$$30\% \text{ Copper} = 30/100 \times 2000 = 600 \text{ gm}$$

Copper

$$600 \text{ gm}$$

Aluminium

$$14 \text{ gm}$$

+

$$20\% = 600$$

$$1 \text{ unit} = 30$$

$$30 \quad \quad \quad x/80\%$$

$$20\%$$

$$x \ 30$$

$$2400 \text{ gm}$$

Let the additional aluminium

Power = x

$$1400 + x = 2400 \text{ gm}$$

$$x = 1000 \text{ gm}$$

Alternate: = Copper : Aluminium

$$30 : 70$$

$$20 : 80$$

Copper : Aluminium

$$3 : 7 \rightarrow 10 \text{ units} = 2000 \text{ g}$$

$$1 \text{ units} = 200 \text{ gm}$$

$$1 : 4 \rightarrow \times 3$$

We have to equal Copper amount because only Aluminium is added

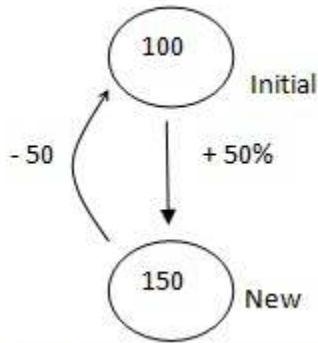
Copper : Aluminium

$$3 : 7$$

$$3 : 12 \quad + 5$$

We have to added 5 units = $5 \times 200 = 1000 \text{ gm}$

284. (c) Let the initial expenditure = 100 units



Decrease in consumption = $50/150 = 1/3$

1 unit = 4 Eggs less

Original consumptions = $4 \times 3 = 12$ eggs

New consumption = $(3 - 1) \times 4$
= 8 eggs

Present price per dozen = $24/8 \times 12 = \text{Rs. } 36$

Alternate:

Note: Required more money when the price is

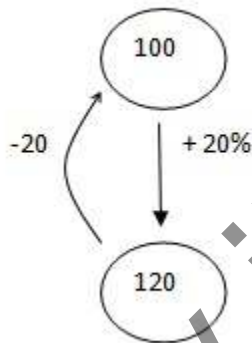
increase 50% = $24 \times 50/100 = \text{Rs. } 12$

= $24 \times 50/100 = \text{Rs. } 12$

Present Price = $\text{Rs. } 12/4 = 3 \text{ Rs. /eggs}$

Present price of 1 dozen eggs = $3 \times 12 = 36 \text{ Rs.}$

285. Let the initial expenditure = 100



Decrease in consumption = $20/120 = 1/6$

1 unit = 2 eggs

Original consumption

= $6 \times 2 = 12$ eggs

New consumption = $5 \times 2 = 10$ eggs

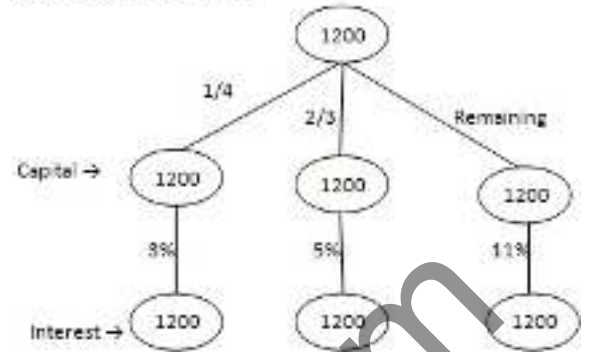
Present rate of eggs per dozen = $24/10 \times 12$
= $\text{Rs. } 28.80$

Alternate: Increasing in cost = $24 \times 20/100$
= 4.8

New Price/ egg = $4.8/2 = 2.4$

New Price/ dozen = $2.4 \times 12 = \text{Rs. } 28.80$

286. (b) Let the total capital = 1200
According to the question,

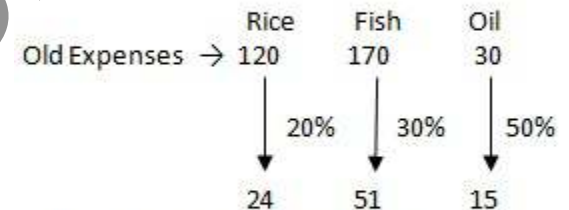


Total interest = $(9 + 40 + 11) = 60$

Required percentage = $60/1200 \times 100 = 5\%$

287. (a) Quantity Price
Initial $\rightarrow 3 \quad 1.25$
Final $\rightarrow 3 \quad 1$
Required % reduction = $0.25/1.25 \times 100$
= 20%

288. (c) Note: In such type of question you can take values as per your need put remember ratio must be same as mentioned in question.



Required percentage increment

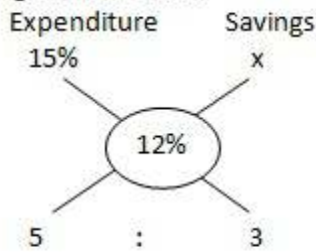
= $(24 + 51 + 15)/(120 + 170 + 30) \times 100$

= $90/320 \times 100$

= 225/8%

289. (b) Bus Fare : Train Fare
Initial $\rightarrow 20 \quad 30$
Final $\rightarrow 22 \quad 36$
Required ratio = $36 : 22 = 18 : 11$

290. (b) Note: In such type of questions to save your valuable time follow the Alligation method.



$$(12 - x)/(15 - 12) = 5/3$$

$$\text{OR } (15 \times 5 + 3x)/(5 + 3) = 12$$

$$\rightarrow 75 + 3x = 96$$

$$3x = 21$$

$$\rightarrow x = 7\%$$

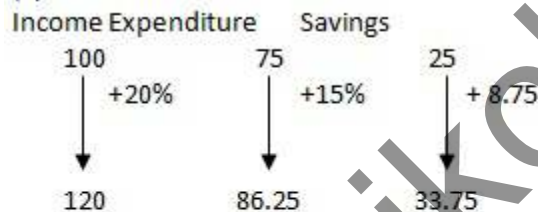
Hence required increase in savings = 7%

291. (d) Let the numbers are 40 and 50 respectively



Required ratio = 48 : 40 = 6 : 5

292. (c) Let the income of the man = Rs. 100



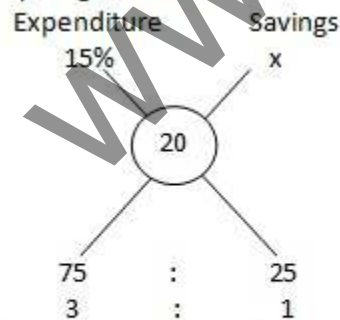
Required percentage increase
= $(33.75 - 25)/25 \times 100 = 35\%$

Alternate :

Expenditure = 75%

Savings = $(100 - 75)\% = 25\%$

By allegation rule,

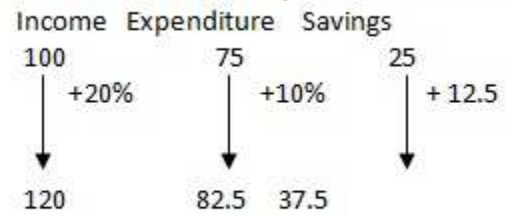


$$(3 \times 15 + x \times 1)/(3 + 1) = 20$$

$$\rightarrow 45 + x = 80$$

$$\rightarrow x = 35\%$$

293. (c) Let the income of the person = 100 units



Required percentage increase

$$= 12.5/25 \times 100 = 50\%$$

294. (b) Population before 3 years ago = x
ATQ

$$X = 104/100 \times 104/100 \times 104/100 = 17576$$

$$X - 15625$$

295. (d) Let the required number = 15

According to the question,

Wrong answer,

Wrong answer

$$= 3/5 \times 15 = 9$$

Correct answer

$$5/3 \times 15 = 25$$

Required % Error

$$= (25 - 9)/25 \times 100$$

$$= 16/25 \times 100 = 64\%$$

Alternate :

Let the number = x

According to the question,

Wrong answer = $3x/5$

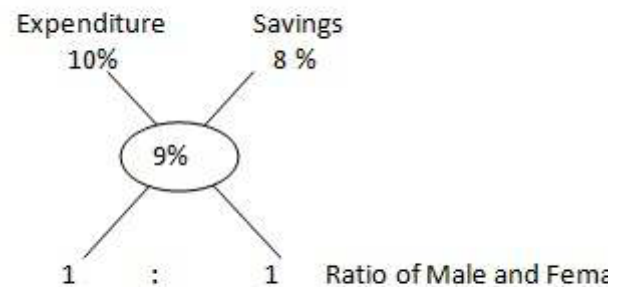
Correct answer = $5x/3$

Required % error

$$(5x/3 - 3x/5)/(5x/3) \times 100 = 16x/5 \times 3/5x \times 100$$

Required % error = 64%

296. (a) Note: In such type of questions use alligation method to save your valuable time.



Required number of Males

$$= 8000 / (1 + 1) \times 1 = 4000$$

297. (d) Number of boys = x
 Number of girls = $(150 - x)$
 According to the question,
 $\rightarrow 150 \times x/100 = (150 - x)$
 $\rightarrow 3x = 300 - 2x$
 $\rightarrow 5x = 300$
 $\rightarrow x = 60$
 Hence, the required number of boys = 60

298. (b) Required price
 $= 19000 \times (8 - 7.5)\%$
 $= 19000 \times 0.5 / 100 = \text{Rs. } 95$

299. (d) Required apples
 $= + 20 / (100 - 40) \times 100$
 $= 420 / 60 \times 100 = 700$
 Hence, Required apples = 700

300. (c) Let the monthly salary = x
 According to Question
 $x \times 8 / (3 \times 100) = 72 \rightarrow x = 2700$
 [8/3%]

301. (b) Average Income
 $= \text{Rs. } 80800 / 16 = \text{Rs. } 5050$
 Hence, required income
 $= \text{Rs. } 5050 \times 120 / 100 = \text{Rs. } 6060$

302. (d) $125/2\% = 5/8$, $25/2\% = 1/8$
 Let the total height of the pole = 64 bits
 According to the question,



Hence, Distance climbed in second hour.

Alternate:

Total height = 192 m

Distance climbed in second hr.

$= 1/8$

$= 192 \times (8-5)/8 \times 1/8$

$= 192 \times 3/8 \times 1/8 = 9\text{m}$

303. (c) Net Tax rate
 $= 30 + (30 \times 10) / 100 = 33\%$

304. (b) Total space = 110
 Score made by the batsman by boundaries and sixes
 $= 8 \times 6 + 3 \times 4 = 60$
 Runs made by running between the wickets
 $= 110 - 60 = 50$

Required % = $50/110 \times 100 = 500/11\%$

305. (c) Let the fraction = x/y
 According to the question,
 $= (x \times 120) / (y \times 95) = 5/2$
 $x/y = (5 \times 95) / (2 \times 120) = 95/48$

306. (c) Let the fraction = x/y
 According to the question,
 $= (x \times 120) / (y \times 95) = 5/2$
 $x/y = (5 \times 95) / (2 \times 120) = 95/48$

307. (d) Let the total number of boys = 300
 Total number of girls = 200
 Number of boys who do not get scholarship
 $= 300 \times (100 - 20) / 100 = 240$
 Number of girls who do not get scholarship
 $= 200 \times (100 - 30) / 100 = 140$
 Required percentage = $(240 + 140) / (300 + 200) \times 100$

308. (c) Let the income = 100
 Let tax rate % = $x\%$

Income	Tax Rate	Net Income
100	$x\%$	$(100 - x)$
100	$1.19x$	$(100 - 1.19)x$

According to the question,
 $(100 - x) \times 99/100 = (100 - 1.19x)$
 $9900 - 99x = 10000 - 119x$

$20x = 100$

$x = 5\%$

Alternate:

Note: To Save your valuable time you can take help from options.

Option (a) tax rate = 5%

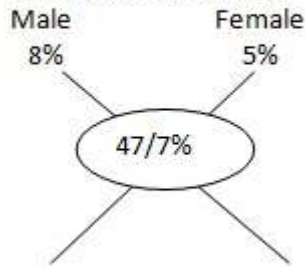
Income	Tax Rate	Net Income
100	5%	95

$100 \quad 5 + (5 \times 19) / 100 = 3.95\% \quad 94.05$
 Required reduction in net income
 $= 0.95/95 \times 100 = 1\%$

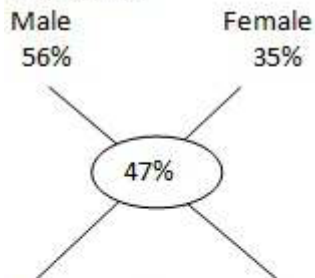
Hence, reduction in net income is 1% same as mentioned in question. Hence Option (c) is correct

309. (c) Increase in population = $(10458 - 9800) = 658$
 % increment = $658/9800 \times 100 = 658/98 = 47\%$

Use alligation method:



Note: To make your calculation easier multiple by to all data.



12 : 9 ← Ratio of male and fe
 4 : 3

Hence, required population of male
 = $9800 / (4 + 3) \times 4 = 5600$

310. (c) $20\% = 1/5$
 $xy^2 \rightarrow x \times y \times y$

Initial Value	Final Value
$x \rightarrow 5$	4
$y \rightarrow 5$	4
$y \rightarrow 5$	4
$xy \rightarrow 125$	64

-61

Required % = $61/125 \times 100 = 61 \times 4/5 = 244/5$
 Required % = $244/5 = 48.8\%$

311. (d)



After increment of 6% new length of AC
 = $3 + (3 \times 6)/100 = 3.18$ cm

Required % decrease = $0.18/2 \times 100 = 9\%$

312. (c) Let the part invested on 5% = Rs. x
 Remaining part = Rs. $(10000 - x)$
 According to the question,
 $x \times 5/100 - [(10000 - x) \times 6]/100 = 76.50$
 $5x/100 - 600 + 6x/100 = 76.50$

$$11x/100 = 76.50 + 600$$

$$11x/100 = 676.50$$

$$\rightarrow x = 67650/11$$

Amount invested on 8% = $(10000 - 6150) = \text{Rs. } 38$

Alternate:

In such type of questions to save your valuable time go through options

Option (c) amount spend on 6% = 3850

Interest = $3840 \times 6/100 = \text{Rs. } 231$

Amount spend on 5% = $(10000 - 3850) = 6150$

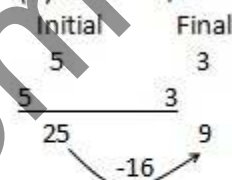
Interest = $6150 \times 5/100 = 307.50$

Difference in interest = $(307.50 - 231) = 76.50$

Now option (c) satisfy both the conditions.

Hence option (c) is correct.

313. (b) $40\% = 2/5 = 3/5$ (3 → Final, 5 → Initial)



Required decrease in area = $16/25 \times 100 = 64\%$

Alternate: By using successive formula,
 Net decrease in area

= $40 + 40 - (40 \times 40)/100 = 64\%$

314. (b) Salary of shyam = $1540/22 \times 100 = \text{Rs. } 7000$

According to the question,

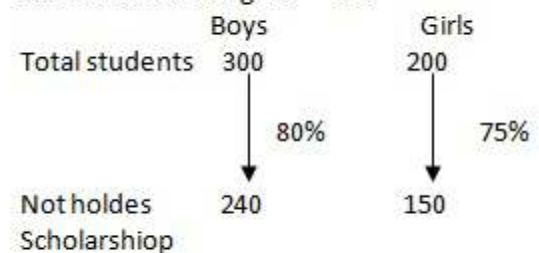
Salary of Ram = Salary of Shyam

Hence, Salary of Ram = Rs. 7000

Savings of Ram = $7000 \times 14/100 = \text{Rs. } 980$

315. (a) Let the number of boys = 300

Let the number of girls = 200



Total students who do not get scholarship
 = $(240 + 150) \times 100 = 78\%$

316. (d) Let the first and second number is a and b resp

$$b - 60a/100 = 52b/100$$

$$b - 52b/100 = 60a/100$$

$$48b/100 = 60a/100$$

$$4b = 5a$$

$$a/b = 4/5$$

$$\rightarrow a : b = 4 : 5$$

317. (a) Marks obtained by A

= 360 marks

marks obtained by C = $360 / 125 \times 100$

= 28 marks

Marks obtained by D = $288/80 \times 100$

Required % marks obtained by D

$$= 360/500 \times 100 = 72\%$$

318. Boys

1100

Girls

900

↓ 50%

↓ 60%

550

540

→ Failed Candidates

Total failed candidates = $(550 + 540) = 1090$

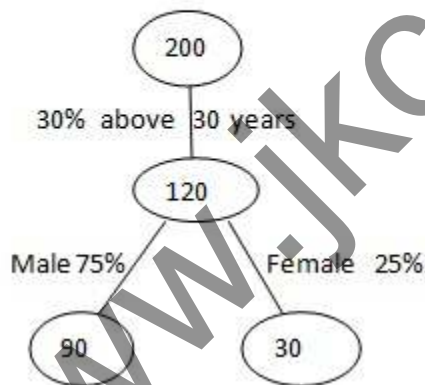
Required percentage of failed candidates

$$= 1090 / (1100 + 900) \times 100$$

$$= (1080 \times 100) / 2000 = 54.5\%$$

319. $60\% = 3/5$, $75\% = 3/4$

Let the total numbers of workers = 200



According to the question,

$$90 \text{ units} = 1350$$

$$1 \text{ unit} = 1350/90$$

$$200 \text{ units} = 1350/90 \times 200 = 3000$$

Alternate: $75\% \rightarrow 1350$

$$1\% \rightarrow 18$$

Workers above 30 years (100%)

$$\rightarrow 1800$$

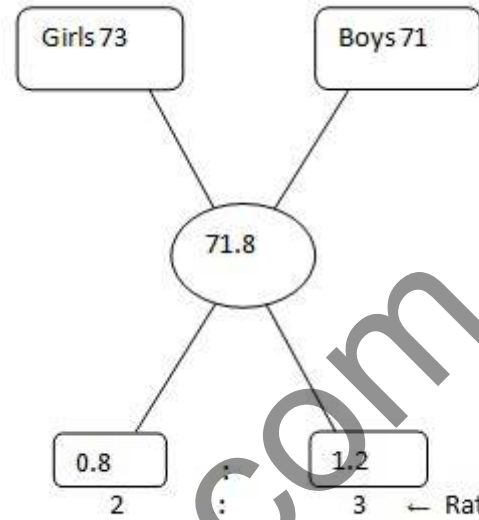
Given,

Workers above 30 years ($60\% \rightarrow 1800$)

$$1\% \rightarrow 30\%$$

$$100\% \rightarrow 3000$$

320. (a) By alligation Rule,



Required Percentage of girls

$$= 2 / (3 + 2) \times 100 = 40\%$$

321. (b) Total seats = 10000

$$\text{Ticket Sold} = (10000 - 100) = 9900$$

According to the question,

Total revenue

$$= 9900 \times 20/100 \times 10 + 9900 \times 80/100 \times 20$$

$$= 9900 \times 2 + 9900 \times 16$$

$$= 9900 (2 + 16)$$

$$= 178200$$

322. (c) Percentage of Non-tax paying employing

$$= (100 - 31)\% = 69\%$$

69% of total employees = 20,700

$$\text{Total employees} = 20700/69 \times 100 = 30000$$

323. (c) Basic pay = $1925 / (100 + 165) \times 100$

$$= 11925/265 \times 100$$

$$= \text{Rs. } 4500$$

324. (a) Let the salary = 100 units

savings = 20%

$$\text{Savings} = 100 \times 20/100 = 20 \text{ units}$$

$$\text{Expenditure} = (100 - 20) = 80 \text{ units}$$

According to the question,

$$80 \text{ units} = \text{Rs. } 6000$$

$$1 \text{ units} = \text{Rs. } 75$$

$$\text{Savings} = 75 \times 20$$

$$= \text{Rs. } 1500$$

325. (b) Population of town = 311250×43

$$= 311250$$

$$\text{Number of women in town} = 311250 / (43 + 40) \times 43$$

$$= 161250$$

$$\text{Number of literate women} = 161250 \times 24/100 = 38700$$

$$\text{Number of men in the town} = 311250 / (43 + 40) \times 40 =$$

$$\text{Number of literate men in town} = 150000 \times (100 - 10) / 100$$

$$= 150000 \times 90/100 = 135000$$

$$\text{Total literate person in town} = (38700 + 135000) = 173700$$

326. (c) Total number of employees
 $= 27600 / (100 - 31) \times 100 = 27600 / 69 \times 100$
 $= 40000$

327. (b) No. of females = $25000 \times 1/5$
 $= 5000$
 No. of Males = $25000 - 5000$
 $= 20000$
 No. of educated females = $5000 \times 60/100$
 $= 3000$
 No. of educated males = $20000 \times 95/100$
 $= 19000$
 Total educated population = 22000
 Percentage of educated population
 $= 22000 / 25000 \times 100 = 88\%$

328. (c)

Total balls →	Blue 100	Red 50	Black 50
	↓ 25%	↓ 50%	
Taken out →	25	25	

Remaining balls = $(100 + 50 + 50) - 50$
 $= 150$

Required percentage of black balls
 $= 50 / 150 \times 100 = 100/3\%$

329. (b) Price after discount = $(180 \times 80) / 100$
 $= \text{Rs. } 144$
 Price of 1 pair of socks
 $= \text{Rs. } 144 / 12 = \text{Rs. } 12$
 Required number of pairs
 $= 48 / 12 = 4$ pairs

330. (b) Bag : Shoe
 7 : 5
 + 2 units

According to the question,
 2 units = Rs. 200
 1 unit = Rs. 100
 5 units = Rs. 100 \times 5 = Rs. 500
 Required price of shoes = Rs. 500

331. (a)

1 ^{st.}	2 ^{nd.}	3 ^{rd.}
Appeared Students 40	50	60
↓ 100%	↓ 90%	↓ 80%
Pass students 40	45	48

Required pass % = $(40 + 45 + 48) / (40 + 50 + 60) \times 100$
 $= 133 / 150 \times 100 = 266/4\% =$

332. (b) Let the biggest number is a and the smaller number is (520 - a)

$$a(100 - 4) / 100 = (520 - a) \times (100 + 12) / 100$$

$$= 96a / 100 = (520 - a) \times 112 / 100$$

$$96a = (520 - a) 112 / 100$$

$$13a = 3640$$

$$a = 280$$

Hence, bigger number = 280

Smaller number = $(20 + 280) = 240$

Alternate:

Note: In such type of question stake help from options to save your valuable time and then satisfy the question condition.

Option:

Smaller number = 240

Hence, Bigger number = $520 - 240 = 280$

According to the question,

$$280 \times 96 / 100 = 240 \times 112 / 100$$

$$268.8 = 268.8$$

Both sides are equal hence option (c) is correct.

333. (b)

1 ^{st.} year	2 ^{nd.} year
Appeared students → 80	60
↓	↓
Passed students → 48	48

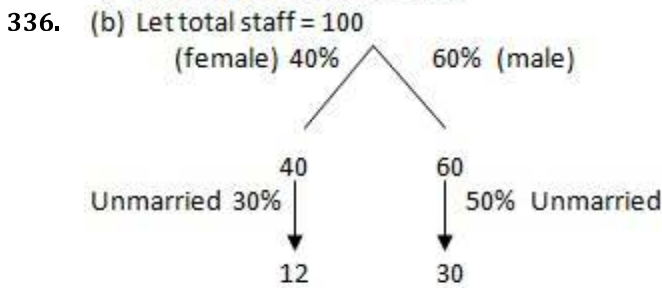
Required % average rate
 $= (48 + 48) / (80 + 60) \times 100$
 $= 96 / 140 \times 100 = 960 / 14$
 $= 480 / 7\%$

334.

1 ^{st.} Section	2 ^{nd.} section	Total
Number of student → 20	30	→
↓ 80%	↓ 60%	
Passed students → 16	18	→

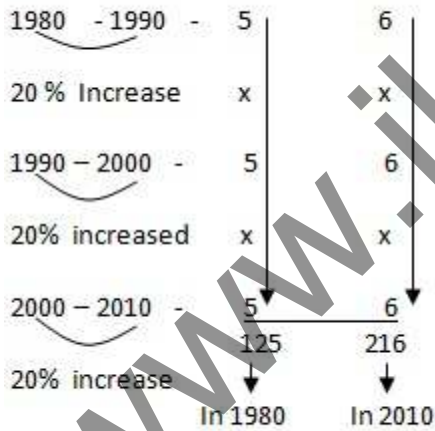
Required % of passed students
 $= 34 / 50 \times 100 = 68\%$

335. (d) The production of cycles rose to 48400 from 40000 in 2 years
 → Present production = 40000
 → After two years = 48400
 → Time = 2 years
 → Rate of increase = ?
 According to the question,
 Production after 2 years
 = Present production $(1 + R/100)^2$
 → $48400 = 40000 (1 + R/100)^2$
 → $484/400 (1 + R/100)^2$
 → $1 + R/100 = 22/20$
 → $R/100 = 1/10$
 → $R = 10\%$
 → Rate of increase = 10%



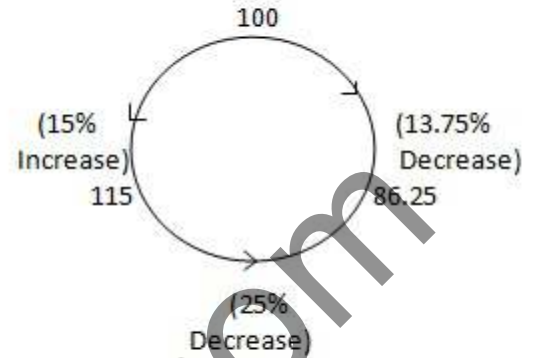
→ 42 is unmarried staff out of 100
 Percentage = $42/100 \times 100 = 42\%$ Ans.

337. (b) According to the question



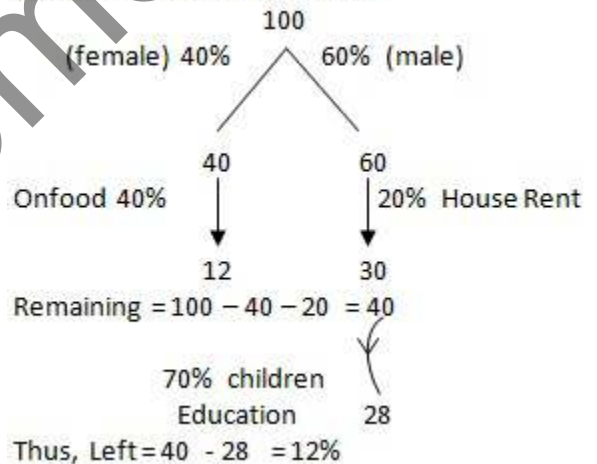
Population increase in % = $91/125 \times 100$

338. (b) Let the number is = 100
 According to the question.



13.75 unit → 22
 1 unit → $22/13.75$
 100 units → $22/13.75 \times 100 = 160$
 Thus, Original number = 160

339. (d) According to the question





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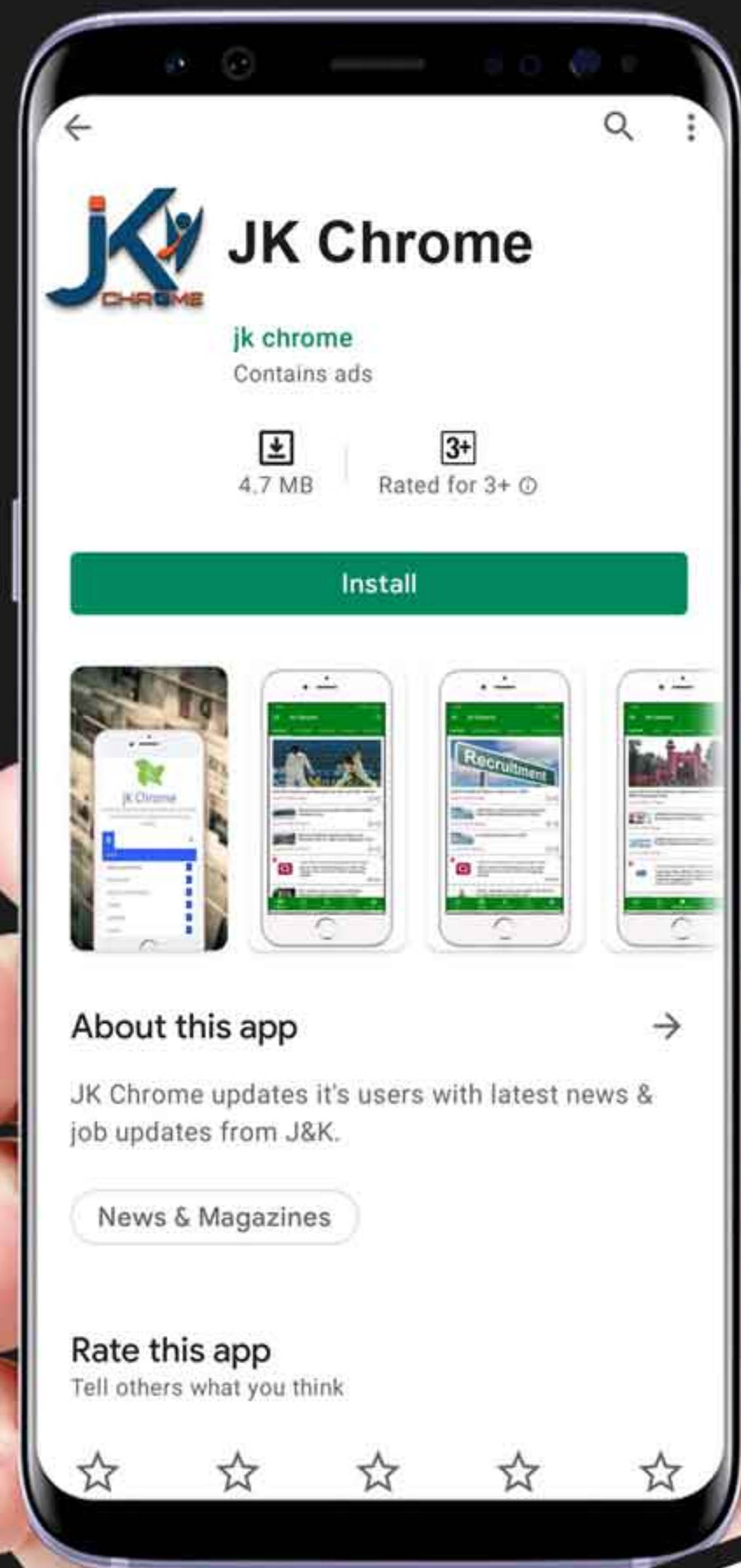
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