Percentage :—

$10\% = \frac{10}{100} = \frac{1}{10}$

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

$2.5\% = \frac{2.5}{100} = \frac{1}{40}$

10 g, 50 का कितना % है

$\frac{10}{50} \times 100 = 20\%$ है

more/less

(*) 1) A, B से कितने % अधिक है $= \frac{A-B}{B} \times 100$ difference

2) A, B से कितने % कम है $= \frac{B-A}{B} \times 100$

3) B, A से कितने % अधिक है $\frac{B-A}{A} \times 100$

4) B, A से कितने % कम है $\frac{A-B}{A} \times 100$

(*) % को भाग में बदलो

$8.125 = 8\frac{1}{8}$

$7.375 = 7\frac{3}{8}$

8.125×32

$\frac{8 \times 1}{8} \times 32 = 65 \times 4 = 260$

(*) Increment & decrement :—

$14\frac{2}{7}\% \uparrow = 1\frac{1}{7}$ 7 → 8

$158\frac{1}{3}\% \uparrow = 1\frac{2}{7} = \frac{9}{7} \Rightarrow 18$

$8\frac{1}{3}\% \downarrow = \frac{1}{12}$ 12 → 11

$6.25\% \downarrow = \frac{1}{16}$ 16 → 15

$225\% \uparrow = 200\% + 25$

$= 2 + \frac{1}{4} = \frac{9}{4}$

4 → 13

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(*) यदि किसी number में $66\frac{2}{3}$ % की वृद्धि करने पर पुनः वही प्राप्त करना चाहते हैं तो % की कमी करनी होगी।

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

$\frac{2}{3}$

3 — 5

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

(*) $12\frac{1}{2}$ % की कमी कर दि जाय वही प्राप्त करने के लिए

$\frac{1}{8}$

8 — 7

$\frac{1}{7} \times 100 = 14\frac{2}{7}$ % Ans

(2) (*) Successive Case :— (आधा)

(i) लगातार दो कमी हो रही हो (किसी भी एक data पर)

(ii) Remaining पर % (successive case)

(iii) decimal ($8\frac{1}{3}$, $58\frac{1}{3}$, $57\frac{1}{7}$ ---)

4 | M

$\frac{100}{7}$ $\quad$ $3 \times \frac{100}{7}$

(iv) एक ही वस्तु पर आदान-प्रदान आगे हो रहा है जैसे (A - B - C - D) (price)

(v) price × consume = expenture

(vi) Area / volume / area = a^2

Q:- 20% ↑ $14\frac{2}{7}$% ↓ $16\frac{2}{3}$% ↑ find net effect

1/5 1/7 1/6

5 6

7 6

6 7

5 6

1

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

Q:- x% $14\frac{2}{7}$% ↓ $16\frac{2}{3}$% ↑ net = 20% हानि

= 5 6

x y

7 6

6 7

x = 20% Ans

5 6

$x = \frac{1}{5} \times 100$

$x = 20\%$

3 +15 100 20 | 88 108 1/5 | 100 115 | 20 23 | 18/29 × 105

5 6

200 118 8

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$$\% = \left[x + y + \frac{xy}{100} \right]$$

increment = +
decrement = −

Q 15% ↑, 20% ↑

$$\% = 15 + 20 + \frac{15 \times 20}{100}$$

$$\% = 38\%$$

Q 20% ↑ 15% ↓

$$20 - 15 + \left(\frac{20 \times (-15)}{100}\right)$$

$$= 20 - 15 - 3$$

$$\% = 2\%$$

Q:- A number is increased by 20% and then increased by 20%. by that percent should the increased number be reduced so as to get back the original number?

20% ↑ 20% ↑

5 6

5 6

25 36

$$\frac{11}{36} \times 100 = 30\frac{5}{9}\%$$

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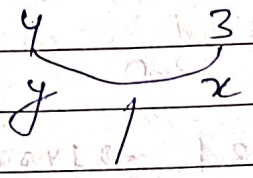
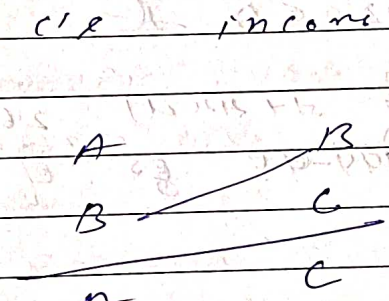
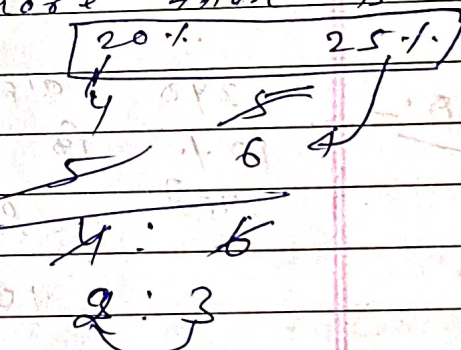
(1) if the value of x is 25% less than y. then the value of y is how much more than the value of x.



$\frac{1}{3} \times 100 = 33\frac{1}{3}\%$

(2) The income of C is 20% more than B and the income of B is 20% more than A find by how much percent is C's income is more than B.

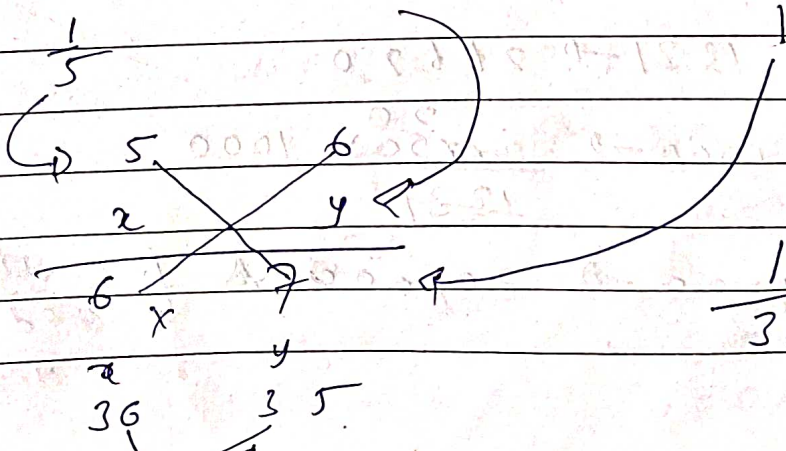




$\frac{1}{2} \times 100 = 50\%$

(3)

Q:- 20% ₹ x% ₹ Net $16\frac{2}{3}$% ₹



$\frac{1}{36} \times 100 = \frac{25}{9} = 2\frac{7}{9}\%$

population

Q:- 2015 ↓ 20,000 — प्रतिवर्ष 5% की वृद्धि 2 साल बाद कि population.

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

20 21 → 1 yr
20 21 → 2 yr
400 441

400 → 20,000
441 → $\frac{20,000}{400} \times 441$

$= 22050$ Ans

Q:- 3 yr बाद गाँव कि जनसंख्या 26620 हो यदि 10% कि वृद्धि प्रतिवर्ष हुई हो तो 3 साल पहले population.

$10\% = \frac{1}{10}$

10 11 → 1 yr
10 11 → 2 yr
10 11 → 3 yr
1000 1331

1331 → 26620
1000 → $\frac{26620}{1331} \times 1000$

1000 → 20,000 Ans (3 साल पहले जनसंख्या)

Remeany, total
प्रश्न कि भाषा मे नहीं हो तो "successive" case नहीं लगेगा।

® INCOME / Expenditure :–

Q:- राम अपने वेतन का 20% खाने पर, 30% Transport, 15% Donation करता है और ~~Remaining~~ 70,000 बचता है। राम कि Income बताये।

$100\% - 20\% + 30\% + 15\% = 35\%$

$35\% = 70{,}000$

$100\% = \frac{\cancel{70{,}000}^{2} \times 10}{\cancel{35}}$

$= 2{,}00000$ Ans

Q-2: Transport = 10%
food = 15%
Rent = 30%
Remaing मे LIC : PPf 5 : 4 है तो PPf मे जमा राशि 2,000 तो Income बताये।

$10\% + 15\% + 30\% = 55\%$

$100\% - 55\% = 45\%$

~~PP~~ LIC : PPf

$5 : 4 = 9 \rightarrow 45$

$1 \rightarrow \frac{45}{9} = 5$

25%   20%

$20\% \rightarrow 2000$

$100\% \rightarrow \frac{2000 \times 100}{20}$

$\rightarrow 10{,}000$

(5) 30% Income की wife को
और $\frac{1}{6}$ भाग daughter (total)
व $\frac{1}{4}$ भाग son (total)

व्यक्ति के
3 - daughter
2 - son

Remaing = 240 Rs
Income - ज्ञात करें

(6) Successive किसे कहते हैं

व्यक्ति अपने आय का 40% wife को ~~दिया जाता है~~ LIC में जमा करता है

Remaing का 20% → wife की beauty parlour
Rem का 10% → wife को makeup kit
दान करता है Intial: final Ratio
ज्ञात करें

40% = $\frac{2}{5}$, 20% = $\frac{1}{5}$, 10% = $\frac{1}{10}$

5 3
5 4
10 9

250 : 108
125 54

Husband : final
125 : 54

Concept :-

(*) **P × Con = Exp**

P = price, Con = Consumption, Exp = expenditure

initial	final
10	5
5	10

P	C	= E
10 Rs/kg	× 5	= 50
5 Rs/kg	× 10	= 50

∘ if Expenditure is constant $\{ \text{price} \propto \frac{1}{\text{con}} \}$

Q:- A किसी वस्तु के मूल्य में $12\frac{1}{2}\%$ की कमी होती है if exp unchange रहे तो con में क्या effect होगा।

$12\frac{1}{2}\% = \frac{1}{8}$ P → 8 → 7, C → 7 → 8

$\frac{1}{7} \times 100 = 14\frac{2}{7}\%$ Ins

Q! Con में $16\frac{2}{3}\%$ की वृद्धि (Inc) तो exp = constant. पर price पर effect.

$16\frac{2}{3} = \frac{50}{3} \times \frac{1}{100} = \frac{1}{6}$

C = 6 → 7

P = 7 → 6

$\frac{1}{7} \times 100 = 14.28\%$ ↓

(2) price $66\frac{2}{3}\%\uparrow$ Exp = constant
intial con = 250kg तो final con = ?

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

P 3 5
con 5 3

5 → 250kg
3 → $\frac{250 \times 3}{5}$
$= 150$ kg Ans

Q:- price $57\frac{1}{7}\%\downarrow$ (dec) Exp = constant
(i) intial con व final का Ratio
(ii) if final con 343g है तो intial
(iii) यदि दूसरी constant है 2401 रु है
तो intial price final price ज्ञात.

$$57\frac{1}{7}\% = \frac{4}{7}$$

price = 7 3
con = 3 7

(i) intial : final = 3 : 7
(ii) 7 → 343
1 → 49
3 → 49 × 3 = 147 Ans

(iii) intial price = $\frac{2401}{147} = \frac{49}{3}$

final price = $\frac{2401}{343} = 7$

(*) price $14\frac{2}{7}\%$ ↑

loss $12\frac{1}{2}\%$ ↓

exp का intial : final Ratio

P × C = E

7 8

8 9

7 : 9

Intial : final ⇐ then final ?

7 → 126

9 → $\frac{126}{7} \times 9 = 162$

(*) movie theatre :-

price 25% ↓ = $\frac{1}{4}$

Audiance 40% ↑ = $\frac{40^2}{100} = \frac{2}{5}$

Revenue में % वृद्धि (कमाई)

P ↑ 3

A ↓ 7

20 21

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

(IX) lockdown की वजह से employee 7 : 5 में कमी होगी 1 : 9 P वेतन वृद्धि 2 वर्ष effect.

emp	7	5
salary	1	2
वर्ष	7	10

$\frac{3}{7} \times 100 = 42.85\%$

(X) price 20% ↑ $= \frac{1}{5}$

exp 40% ↓ $= \frac{2}{5}$

Con पर effect 50% ↓ Ans

P	5	6
C	x	y
Ex	5	3

x y

30 45

2 : 3

$\frac{1}{2} \times 100 = 50\%$ Ans

100% → 350×
60% → 350 × 60/100

⊛ pass/fail !—

Q:- A के 60% marks आए वह passing marks से 50 marks ज्यादा लाया है।

A. 60% − 50

B के 40% marks आए हैं वह passing marks से 20 marks कम है।

B. 40% + 20

Now

$$60\% - 50 = 40\% + 20$$

$$20\% = 70$$

$$100\% = \frac{70}{20} \times 100$$

$$100\% = 350$$

Total marks = 350.

$$\text{passing mark} = 60\% - 50$$

$$= \frac{60}{350} \times 100 - 50$$

$$= \frac{350 \times 60}{100} - 50$$

$$= 210 - 50$$

$$= 160 \text{ Ans}$$

$$\text{passing }\% = \frac{160}{350} \times 100 = \frac{320}{7}\% \text{ Ans.}$$

45 9
100 20

25/2 × 100/4

Income = Exp + Saving

Exp = CP

Income = SP

In = Exp + Save

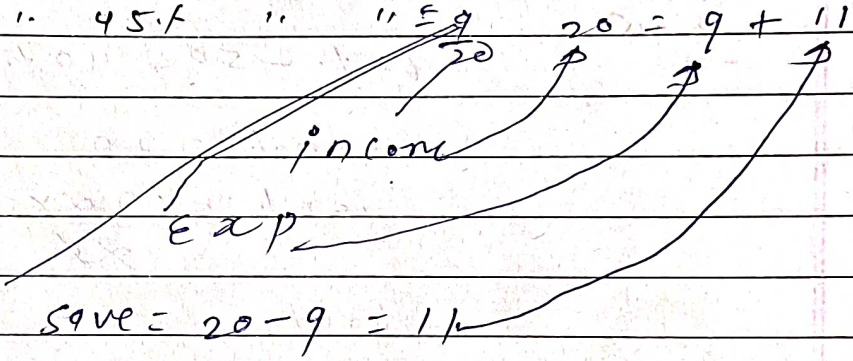
Q:- Rock Income का $12\frac{1}{2}$% खर्च करता है = $\frac{1}{8}$ In = Exp + Save

8 = 1 + 7

" " " $8\frac{1}{3}$% " " = $\frac{1}{12}$ 12 = 1 + 11

" " " 20% " " = $\frac{1}{5}$ 5 = 1 + 4

" " " 45% " " = $\frac{9}{20}$ 20 = 9 + 11



income का 40% exp = 60% saving

income " 80% exp = 20% "

income " 90% exp = 10% "

Q:- A B C

5 : 6 : 8 → exp

80% 40% 80% — saving

100−80 → 20 : 10 : 40 ← income ?

20% 60% 20% → exp in %

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

= 25

B = 80% = $\frac{5 \times 2}{5}$ = 6 × 2

= 10

C = 20% = $\frac{1}{5}$ × 8

C = 40

A : B : C = income

25 : 10 : 40

399+1 $\frac{400}{100}$ 1 → 7

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\# $57\frac{1}{7}\%$ exp करता है Income = Ex + saving

7 = 4 + 3

$57\frac{1}{7}\% = \frac{4}{7}$ Exp, 3 saving, income or

Now $\frac{7}{\times 8} = \frac{4}{\times 8} + \frac{3}{\times 8}$

Income $12\frac{1}{2}\%$ ↑

$= \frac{1}{8}$ 56 = 32 + 24

8 — 9 63 = 24 + 39) 15

Exp 25% ↓ $= \frac{1}{4}$ $\frac{15}{24} \times 100 = 62.5\%$ ↑

4 — 3

In = Ex + Sa

Q1 $62\frac{2}{3}\%$ exp $= \frac{2}{3}$ → $\frac{3}{\times 12} = \frac{2}{\times 12} + \frac{1}{\times 12}$

income $58\frac{1}{3}\%$ ↑ $= \frac{7}{12}$ $\frac{36}{12}$ ×19 = 24 + 12

= 12 19

Exp में $16\frac{2}{3}$ ↓ $= \frac{1}{6}$ 57 = 20 + 37) 25

6 5

$\frac{25}{12} \times 100$

Ex वा $= \frac{24}{6} \times 5$ $= 208\frac{1}{3}$ ↑

$\frac{125}{2} \times 100$,

यही बात घुमा फिरा के यही करता हो तो ऐसा होता।

Q:- $12\frac{1}{2}\%$ exp = $\frac{1}{8}$

7m = exp + save

M-1

$8 = 1 + 7$

×100 ×100 ×100

income = 20% ↑

$800 = 100 + 700$ 1st for maint

Ex = 10% ↓

$\frac{800 \times 120}{100} = \frac{100 \times 90}{100} +$

170

save पर effect%

$960 = 90 + 870$

$\frac{170}{700} \times 100$

$= 170/7$

$= 24\frac{2}{7}\%$ ↑

(saving) Ans

M-2 direct:-

incom = Ex + save

$8 = 1 + 7$

×20 (−10) ×x

$160 = -10 + 7x$

$\frac{170}{7} = x$ Ans

$\frac{40\%}{100}$

Q:- 40% ↓ exp

incom = ex + save

$5 = 2 + 3$

×(20) = ×(x) ×(10)

20% ↑ = incom

10% ↑ = saving

$-100 = 2x + 30$

Exp पर effect

$-130 = 2x$

$x = -65\%$ Ans

(X) Junior satisfactory method (JSM) :-

Class A : B
Ratio 1 : 1 = 2
% 30% : 50%
20

let
30% + 20% × 1
10
2

overall avg ?

avg = 40% ✓

Q:- will → A : B : C total Ratio
Ratio → 1 : 3 : 6 = 10
आवश्यक % 20% : 50% : 60%
(LR)

overall LR = ?

let minimum % = 50%

Ratio
A = 20% पाए 50% मिले × 1
B = 0% पाए " × 3
C = 10% पाए " × 6

OV LR = 50 + $\frac{20\times1 + 0\times3 + 10\times6}{10}$

= 50 + $\frac{20+60}{10}$ = 50 + $\frac{80}{10}$

= 58% ✓

Q:- male female male : female
6400 17800 1 : 2
married 65% 30% 65% 30%

find unmarried %

avg married = $30 + \frac{35 \times 1}{3}$

$= 30 + 11\frac{2}{3} = 41\frac{2}{3}\%$

unmarried = $100\% - 41\frac{2}{3}\% = 58\frac{1}{3}\%$

Q:- Clerk - A : B C
1 : 3 : 4 = 8
% mar = 64% 70% 80%

overall marks = $64 + \frac{6 \times 3 + 16 \times 4}{8}$

$= 64 + \frac{18 + 64}{8} = 64 + \frac{82}{8}$

$= 64 + 10.25$

$= 74.25\%$

Q:- A : B
3 : 1 = 4
40% : x
overall = 50%

$50\% = \frac{40 \times 3 + x}{4}$

$200 - 120 = x$

$80\% = x$

135
55
190

2217 (20.5

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Q:-

A	B	C	
1	: 2	: 3	= 6
55%	x	45	overall = 60%

$$60 = \frac{55 \times 1 + 2x + 45 \times 3}{6}$$

$$360 - 190 = 2x$$

$$170 = 2x$$

$$\frac{170}{2} = x$$

$$85 = x$$

Q:-

A	B	C	
60%	30%	10%	
67.5%	x	95%	overall

Same process

(mixture in %)

Ex.

milk	water	water add	find M : W
60%	40%		50% : 50%
initial			final

Ratio - Initial : final

I	f
5	6

$$I \times \frac{60}{100} = f \times \frac{50}{100}$$

$$\frac{I}{f} = \frac{50}{60} = \frac{5}{6}$$

Q :- 'A' : water
40% ~~60%~~
A :
~~30%~~

कितना water add किया जाये कि 70% हो जाये
find Intral : final ?

$$I \times \frac{40}{100} = f \times \frac{30}{100}$$

$$\frac{I}{f} = \frac{3}{4} = 3 : 4$$

L-10 ~~X~~

"Election" :-

Total voter (100%)

- cast (डाले गये)
  - valid vote
  - Invalid vote
- not cast (नही डाले गये)

:- let

Total vote: 80% cast, 20% not cast

$\frac{80 \times 60}{100} = 48\%$ valid (60%) | Invalid (40%) $\frac{80 \times 40}{100} = 32\%$

$\frac{100 \times 60}{100}$

$\frac{80 \times 60}{100}$

Type-1

Q:- election में winner को 60% vote मिले रहे वह 1200 vote से जित गया। total vote बताये।

(total) 100% − 60 = 40% (loser)

winner 60% | loser 40%

20% = 1200

100% = $\frac{1200}{20} \times 100$

100% = 6000

Note:- जित गया या हार गया तो उसका मतलब जित हार का difference.

Type-2:-

Q:- election में 20% vote invalid है और winner को valide vote का 70% मिला है तो जित हार का diff = 9600 है तो कुल vote निकालो।

(i) valid (ii) winner (iii) loser vote

Sol/n if invalid = 20%

valid = 80%

valid का

winner = $\frac{80 \times 70}{100}$ = 56%

loser = $\frac{80 \times 30}{100}$ = 24%

32% = 9600

100% = 30,000

(i) valid vote = $\frac{30,000 \times 80}{100} = 24,000$

(ii) winner vote = $\frac{24000 \times 70}{100}$ 16800

(iii) looser vote = $\frac{24000 \times 30}{100} = 7200$

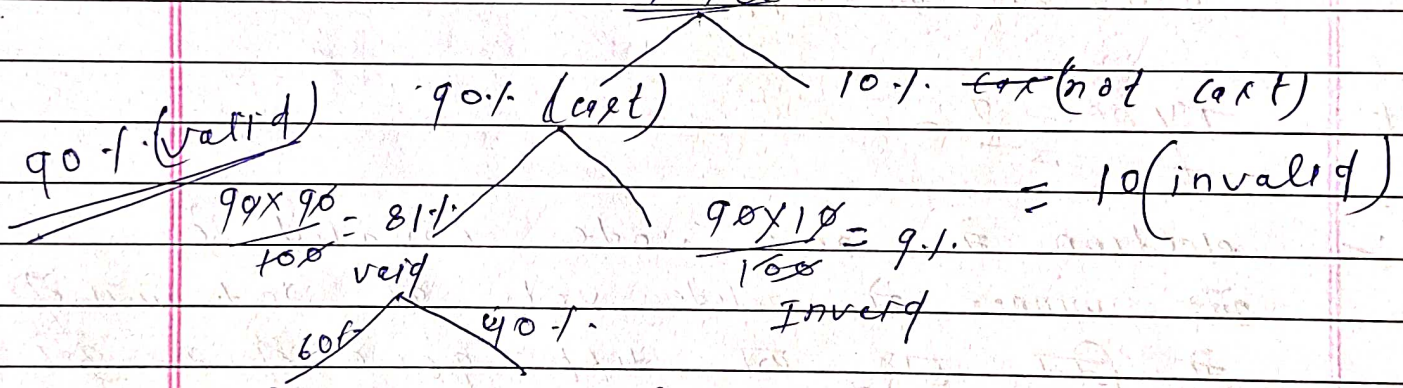
Q:- election में 10% vote Not cast

10% vote Invalid

winner :- valid vote पर 60%.

जीत हार पर diff = 16,200 vote है

(i) total vote (ii) cast vote (iii) valid vot (iv) winner vote (v) losser vote.



$$\text{diff} = \frac{243}{5} - \frac{162}{5} = \frac{81}{5}\%$$

$$\frac{81}{5}\% = 16200$$

$$100\% = \frac{16200 \times 5 \times 100}{81}$$

$$= 1,00000 \text{ (vote)}$$

(i) total vote vote = 1,00000

(ii) cast vote
$\frac{1,00000 \times 90}{100} = 90,000$

(iii) valid vote = $\frac{90,000 \times 90}{100}$
= 72900 81,000

(iv) winner vote: $\frac{72900 \times 243}{5 \times 100}$

$= \frac{81,000 \times 60}{100}$

= 48,600

loser vote:
$\frac{81000 \times 40}{100} = 32400$

(X) Type-4

election
winner
total vote 1st
70%.

diff = 8000
winner vote = ?
loser vote ?.

winner 70
loser 30

40% = 8000

100% = $\frac{8000 \times 100}{40} = 20,000$

winner: $\frac{20,000 \times 70}{100} = 14000$

loser: $\frac{20000 \times 30}{100} = 6,000$ Ans

पिछले questions में valid vote or invalid vote दिया था।

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election में 20% invalid है winner को total vote का 60% है loser को कितने % वोट?

invalid = 20%

valid = 80%

~~80 winner = 80 × 60 / 100 = 48%~~

~~loser =~~

loser = valid vote − winner

= 80% − 60% = 20%

यहां total vote दिया हुआ है इसलिए हम 80−60 कर रहे हैं

Q:- election में 20% invalid

winner = total vote का 50%

diff = 1800 vote

(i) total vote (ii) valid (iii) winner (iv) loser

valid = 80%

winner = 50%

loser = 30

20% = 1800

100% = 1800 × 100 / 20

100% = 9,000

(i) total vote = 9,000

(10) valid vote = $9,000 \times \frac{80}{100}$

$= 72,00$

(11) winner = $9,000 \times \frac{50}{100} = 4,500$

(12) loser = $9000 \times \frac{30}{100} = 27,00$

type:

A 60% B 30% C 10%

diff = 900 vote

top - 2 me difference liya jata hai three or four me

30% = 900

100% = $\frac{900 \times 100}{30}$

100% = 3,000

C = $3000 \times \frac{10}{100} = 300$ vote

(13)

Commission :—

Ex. 10,000 की बिक्री पर 10% की commission

$$\frac{10,000 \times 10}{100} = 1,000 \text{ Ans}$$

(Q) 10,000 Rs की बिक्री पर 5% commission & 10,000 से अधिक की बिक्री पर 7% bonus मिलता है यदि 15,000 की बिक्री हुई तो commission बताइये।

total commission = $\frac{10000 \times 5}{100} + \frac{5000 \times 7}{100}$ (5+2 = 7%)

$= 500 + 350 = 850$ Rs

(X) Tax :— Income पर लगता है।

total Income − Tax = Net Income

after tax deduction.

$\% \text{ tax} = \frac{\text{tax}}{\text{total Income}} \times 100$

Tax ∝ $\frac{1}{\text{Income}}$

A % tax = % Net tax

Q:- यदि आयकर मे 18% की वृद्धि हो, तो शुद्ध आय में 2% कि कमी हो जाती है आयकर की दर बताये।

Net Income

$tax \times 18\% = NI \times 2\%$

$\frac{tax}{NI} = \frac{2}{18} = \frac{1}{9}$

$\% \text{ tax} = \frac{tax}{Income} \times 100$

$\frac{1}{10} \times 100 =$

$\% \text{ tax} = \frac{1}{10} \times 100$

$= 10\% = A$