

Q1. Solution =  $\frac{25}{100} \times 200 = 0.25 \times 200 = 50$  a) 50

Q2.  $40\% = \frac{40}{100} \times x = 80$   
 $x = \frac{80 \times 100}{40}$   
c)  $x = 200$

Q3.  $75\% = \frac{75}{100} \times x = 150$

$$x = \frac{150 \times 100}{75}$$

$$x = \frac{150}{1\phi}$$

b)  $x = 200$

Q4.  $15\% = \frac{15}{100} \times 120 = 18$  c) 18

Q5.  $30\% = \frac{30}{100} \times x = 90$

$$x = \frac{90 \times 100}{30}$$

$x = 300$

c) 300

Q6. initial val - 200  
Final val - 250

$$\% \text{ increase} = \frac{\text{Final} - \text{Initial}}{\text{Initial}} \times 100$$

b) 25%

$$\therefore \frac{250 - 200}{200} \times 100 \\ \frac{50}{2} = 25$$

Q7. initial - 40,000  
Final - 50,000

$$\frac{50000 - 40000}{40000} \times 100$$

% increase  $\frac{10000}{40000} \times 100 = 25\%$   
but still to find % decrease so

Q8. initial - 10000  
Final - 8000

$$\% \text{ decrease} = \frac{\text{Initial} - \text{Final}}{\text{Initial}} \times 100$$

$$\frac{10000 - 8000}{10000} \times 100$$

C = 20%

$$\frac{2000}{100} = 20\%$$

Q9. initial - 500

Final - 400

$$\% = \frac{500 - 400}{500} \times 100$$

$$= \frac{100}{500} \times 100$$

C = 20%

10)

% cost price - 600  
selling price - 450

$$\% \text{ loss} = \frac{\text{cost} - \text{selling}}{\text{cost}} \times 100$$

$$\begin{array}{r} 600 - 450 \\ \hline 150 \\ \hline 6 \\ \hline 25 \end{array} \quad \times 100$$

11)

$$30 \% 400 = \frac{30}{100} \times 400 = 120$$

$$40 \% 300 = \frac{40}{100} \times 300 = 120$$

c) Both are equal

12)

$$60 \% : \frac{60}{100} \times x = 8000$$

$$x = \frac{8000 \times 100}{60}$$

$$x = \underline{140000}$$

$$c) \underline{x} = 20000$$

Q13 ~~20% of B = A~~  $\% \text{ less} = \frac{A - B}{A} \times 100$

$$\frac{20}{100} \times B = A$$

$$A = 1.2B$$

$$= \frac{1.2B - B}{1.2B} \times 100$$

$$= \frac{0.2B}{1.2B} \times 100$$

$$= \frac{20}{120} \times 100 = \frac{5}{3} = 16.67\%$$

Q14 Expense =  $P \times Q$   $\frac{25}{100} = 25\%$   $\frac{25}{100} \times P = E$

New price =  $100 + 100 \times \frac{25}{100} = 125$

New price - 25 expense

$$= 125 - 25 = 100 \quad \frac{25}{125} \times 100 = 20\%$$

Q15  $40\% \text{ of } B = A$

~~A =  $\frac{40}{100} \times B = A$~~

$A = 1.4B$

$\% \text{ less} = \frac{A - B}{A} \times 100$

$$= \frac{1.4B - B}{1.4B} \times 100$$

$$= \frac{0.4B}{1.4B} \times 100$$

$$= \frac{40}{140} \times 100 = 28.57\%$$

a)  $= \underline{\underline{28.57\%}}$

Q16 increase  $30\%$   $= \frac{30}{100} \times 100 + 100 = 130$  - New value

decrease  $20\%$   $= \frac{20}{100} \times 100 = \cancel{100} = \text{Final}$

a) 4%  $\frac{\text{Final} - \text{Initial}}{\text{Initial}} \times 100 = \frac{104 - 100}{100} \times 100 = \frac{4}{100} \times 100 = \underline{\underline{4\%}}$

16) increase by 20%

new price : first price = 100 : initial price  
 $20\% \text{ increase} = ?$

$$\text{New price} = 100 + \frac{20}{100} \times 100 = 100 + 20 = 120$$

$$10\% \text{ decrease} = 120 - \frac{10}{100} \times 120 = 120 - 12 = 108$$

$$\text{net \%} = \frac{\text{final} - \text{initial}}{\text{initial}} \times 100 \\ a) = \frac{108 - 100}{100} \times 100$$

17) initial = 100

25% increase

$$\text{New} = 100 + \frac{25}{100} \times 100 = 125$$

20% decrease

$$\text{Final} = 125 - \frac{20}{100} \times 125 = 105$$

$$= \frac{500 - 100}{4} = \frac{400}{4} = 100$$

$$\text{net \%} = \frac{\text{final} - \text{initial}}{\text{initial}} \times 100$$

a) 0%

$$= \frac{100 - 100}{100} \times 100 = 0\%$$

18) initial = 100

Q19 initial = 100

$$\text{increasing 40\%} \rightarrow 100 + \frac{40}{100} \times 100 = 140$$

decrease 30\%  $\rightarrow$

$$\text{final} = 140 - \frac{30}{100} \times 140 = 140 - \frac{42}{5} = \frac{570}{5} = 114 = \frac{490}{5} = 98$$

$$\text{Net \%} = \frac{\text{final} - \text{initial}}{\text{initial}} \times 100 = \frac{98 - 100}{100} \times 100 = -2\% \downarrow$$

Q20 initial = 100

$$\text{increase 20\%} \rightarrow 100 + \frac{20}{100} \times 100 = 120$$

$$\text{decrease 10\%} \rightarrow 120 - \frac{10}{100} \times 120 = 120 - \frac{120}{10} = \frac{108}{5} = 21.6$$

$$\text{Net \%} = \frac{108 - 100}{100} \times 100 = \frac{8}{100} = 8\% \uparrow$$

a)

SP = 25\% CP

$$SP = CP + \frac{25}{100} \times CP$$

$$= \frac{100CP + 25CP}{100}$$

b) 105\%

$$SP = \frac{105}{100} CP$$

$$SP = \frac{125}{100} CP$$

$$\therefore SP = 125\% CP$$

Q22

$$\text{discount 10\%} \rightarrow SP = 90\% = 100 - 10 = 90$$

$$\text{profit } 8\% = 100 + \frac{8}{100} \times 100 = 108$$

$$SP = 90\% \text{ of } 500 = \frac{90}{100} \times 500 = 450$$

cost price?

$$SP = 108\% CP$$

$$450 = \frac{108}{100} \times CP$$

$$CP = \frac{450 \times 100}{108} = \underline{416.67} \approx 420$$

b)

Q23 CP = 100

$$20\% \text{ profit} = @ 100 + \frac{20}{100} \times 100 = 120$$

Profit \% SP

$$\frac{20}{100} \times 100 = \frac{50}{31} = 16.67\%$$

16.67

a) 16.67\%

24)

$$\begin{aligned} \text{M.P.} &= 1200 \\ \text{S.P.} &= 960 \\ \text{discount} &= 240 \end{aligned}$$

$$\text{discount \%} = \frac{240}{1200} \times 100\% = \underline{\underline{20\%}}$$

$$\text{b) } \underline{\underline{20\%}}$$

25)

$$\text{C.P.} = 500$$

$$\text{S.P.} = 650$$

$$\text{Profit} = 150$$

$$\text{Profit \%} = \frac{150}{500} \times 100\% = \underline{\underline{30\%}}$$

$$\text{c) } \underline{\underline{30\%}}$$

26)

$$\text{B's income} = 10000$$

$20\%$  more B's income

$$\text{A's income} \rightarrow \frac{120}{100} \times 10000 = \underline{\underline{12000}}$$

$$\text{less \% of B's income} = \frac{2000}{12000} \times 100\% = \underline{\underline{16.67\%}}$$

$$\text{d) } \underline{\underline{16.67\%}}$$

27)

$$\text{Ratio } \frac{\text{boys}}{\text{girls}} = \frac{3}{2}$$

$$\text{boys} : 300$$

$$\text{girls} : 200$$

$$\frac{500}{500}$$

$$\% \text{ of total boys} = \frac{300}{500} \times 100\% = \underline{\underline{60\%}} \text{ (b)}$$

28)

$$\text{previous popul} = 200000$$

$$\text{New popul} = 250000$$

$$\frac{25}{250000}$$

$$\text{increase \%} = \frac{50000}{200000} \times 100\% = \underline{\underline{25\%}}$$

$$\text{op b) } \underline{\underline{25\%}}$$

c) Total value =  $\alpha$

$$\frac{65}{100} \times \alpha - \frac{35}{100} \times \alpha = 3000$$

$$\frac{12}{20} \alpha - \frac{7}{20} \alpha = 3000$$

$$\frac{5}{20} \alpha = 3000$$

$$\alpha = \frac{3000 \times 20}{5}$$

$$\alpha = 12000$$

$$\alpha = 8000 \times 20$$

$$\alpha = 160000$$

correct answer not given to this options

20) Previous price = 100  
 $30\% \text{ reduced} = \frac{70}{100} \times 100 = 70$

Increase  $\alpha\%$  to match original value

$$70 + \frac{\alpha}{100} \times 70 = 100$$

$$70 + 7\alpha = 100$$

$$7\alpha = 30$$

$$\alpha = \frac{300}{7}$$

$$\alpha = 42.85\%$$

b)  $42.85\%$

31) No - 100  
increased  $50\% = 150$        $100 + \frac{50}{100} \times 100 = 150$   
decrease  $50\% = \cancel{(100 + \frac{50}{100} \times 100)} = \cancel{150} - \cancel{100} =$   
 $= 150 - \frac{50}{100} \times 150 = 150 - 75 = 75$

change  $\% = \frac{75 - 100}{100} \times 100 = -25\%$

b)  $-25\%$

32) B = 100 cm Fall

20% more B =  $100 + \frac{20}{100} \times 100 = 120$

% of B short than A =  $\frac{120 - 100}{100} \times \frac{20}{120} \times 100 = 16.67\%$

33) No is  $\alpha$  = 30% of no

to  $\frac{20}{100} \times \alpha = 90$

$\alpha = \frac{900}{3}$

$\alpha = 300$

$\frac{60}{100} \times 300 = 180$  op B d 180

34)

income is  $x$ 

75% of income &amp; save 5000

$$\frac{75}{100} \times x = 5000$$

$$\frac{25}{100} \times x = 5000$$

∴  $x = 20000$

35)

previous price = 100

previous consumption = 100 L

$$\text{Total Expense} = 100 \times 100 = 10000$$

$$\text{price increase} = 20\% = 100 + \frac{20}{100} \times 100 = 120 \text{ /L}$$

New consumption is  $x$ 

$$120 \times x = 10000$$

$$x = 83.33 \text{ L}$$

$$\cdot \text{reduction \%} = \frac{16.67}{100} \times 100 = 16.67\%$$

36

1st price = 1000 Rs.

$$20\% \text{ increase} = 100 + \frac{20}{100} \times 1000 = 1200$$

$$10\% \text{ decrease} = 1200 - \frac{10}{100} \times 1200 = \frac{1200 - 10 \times 1200}{100} = 1200 - 120 = 1080$$

$$\text{change \%} = \frac{1080 - 1000}{1000} \times 100\% = 8\%$$

$$\frac{80}{1000} \times 100\% = 8\% \text{ increase}$$

$$37) CP = 100$$

$$MP = \frac{125}{100} \times 100\% = 125 \\ \text{discount of } 20\% \rightarrow \frac{80}{100} \times 125 = 100$$

$$SP = 100$$

$$CP = 100$$

No profit No loss (a)

$$38) CP = 500 \\ \text{loss} = 20\%$$

$$SP = \frac{80}{100} \times 500 = 400 \text{ Rs} \quad (c)$$

$$39) \text{Salary} = 1000 \text{ Rs}$$

$$10\% \text{ increase} = 1000 + \frac{10}{100} \times 1000 = 1100 \text{ Rs}$$

$$10\% \text{ decrease} = \frac{90}{100} \times 1100 = 990 \text{ Rs}$$

$$\text{change \%} = \frac{10}{100} \times 100 = 10\% \text{ decreased (b)}$$

$$40) \text{got marks} = 200 \\ \text{failed} = 20 \text{ marks} \\ 220 \text{ is passing}$$

$$\text{total marks} = x$$

$$40\% \text{ of } x = 220$$

$$\frac{40}{100} \times x = 220$$

$$x = 550$$

b)

$$41) \text{Salary} x \text{ Rs}$$

$$20\% \rightarrow \text{rent}$$

$$30\% \rightarrow \text{food}$$

$$10\% \rightarrow \text{transport}$$

$$\underline{60\% \rightarrow \text{Total}}$$

$$\text{remaining } 40\% \rightarrow 18000$$

$$\frac{40}{100} \times x = 18000$$

$$x = 45000 \text{ Rs}$$

b)

$$42) \text{price} = 100$$

$$30\% \text{ increased} = \frac{130}{100} \times 100 = 130 \text{ Rs}$$

$$30\% \text{ decreased} = \frac{70}{100} \times 130 = 91 \text{ Rs}$$

$$\text{change \%} = \frac{9}{100} \times 100 = 9\% \text{ decreased (b)}$$

$$43) \text{current pop} = 10000$$

$$\text{1st year} = \frac{110}{100} \times 10000 = 11000$$

$$\text{2nd year} = \frac{110}{100} \times 11000 = 12100$$

$$\text{3rd year} = \frac{110}{100} \times 12100 = 13310$$

$$\text{population} = \underline{13310} \quad (d)$$

44)  $15\% \text{ of } A = 20\% \text{ of } B$

$$\frac{15}{100} \times A = \frac{20}{100} \times B$$

$$\frac{A}{B} = \frac{4}{3}$$

ratio  $\rightarrow A:B$

b)  $\underline{\underline{4:3}}$

45)  $CP = 800$

$Profit = 25\%$

$$SP = \frac{100 + 25}{100} \times 800 = 125 \quad \frac{125 \times 800}{100} = 1000 \text{ Rs}$$

b) 1000 Rs

46)  $CP = 200$

$SP = 250$

$Profit = 50$

$$Profit = \frac{50}{200} \times 100 = 25\% \quad b)$$

47)  $SP = 720 \text{ Rs}$

$Profit = 20\%$

To find  $CP \rightarrow \frac{120}{5} \times CP = 720$

$$120$$

$$CP = \frac{720 \times 5}{120}$$

$$CP = 600 \text{ Rs}$$

a) 600

48) CP = 50<sup>o</sup>  
Loss = 15%  
SP =  $\frac{55}{100} \times 50P = 42.5P$  b)

49) CP = 15<sup>o</sup>  
Loss = 10%  
SP =  $\frac{90}{100} \times 15P = 13.5P$   
c) 135<sup>o</sup>

50) CP = 100₹  
MP = 30% above  
MP =  $\frac{130}{100} \times 100 = 130₹$

Discount 10%  
SP =  $\frac{90}{100} \times 130 = 117₹$   
Profit = 17₹

Profit %  $\rightarrow \frac{17}{100} \times 100 = 17\%$

a) 17%