Q.1) What is 25% of 200%?

a) 25 b) 50 c) 75% d) 100

→ $\frac{25}{100} \times 200 = 50\%$

Q.2) If 40% of a number is 80, what is no.?

a) 100 b) 150 c) 200 d) 250

→ $\frac{40}{100} \times x = 80$

$x = \frac{80^{2} \times 100}{40_{1}}$

$\therefore \boxed{x = 200}$

Q.3) 75% of a number is 150, what is the no.?

a) 175 b) 200 c) 225 d) 250

→ $\frac{75}{100}^{3} \times x = 150$

$\frac{3}{4} x = 150$

$x = \frac{50}{150} \times \frac{4}{3_{1}}$

$x = 200$

Q.4) What is 15% of 120?

→ $\frac{15^{3}}{100} \times \frac{6}{120} = \boxed{18\%}$

Q.5) If 30% of a number is 90, then the number is

a) 200 b) 250 c) 300 d) 350

→ $\frac{30}{100} \times x = 90$

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

$x = 200$

Q.6) The price of a product increases from ₹200 to ₹250

a) 20% b) 25% c) 30% d) 35%

→ IMP

$$\% \text{ increase} = \left(\frac{\text{New price} - \text{old price}}{\text{old price}}\right) \times 100$$

$$\% \text{ increase} = \left(\frac{250 - 200}{200}\right) \times 100$$

$$= \frac{50}{2} = 25\%$$

Q.7) A Salary increase from ~~₹200~~ 40000 to ~~250~~ 50,000. What is the percentage increase?

a) 20% b) 25% c) 30% d) 35%

→

$$\% \text{ increase} = \left(\frac{50000 - 40000}{50000}\right) \times 100$$

$$= \frac{10,000}{50,000} \times 100$$

$$= 20\%$$

Q.8) The population of a town decreased from ~~40,000 to 50,000~~. 10,000 to 8,000 what is the percentage decrease

a) 10% b) 15% c) 20% d) 25%

→ $\boxed{\%\ \text{increase/decrease} = \frac{\text{old value} - \text{new value}}{\text{old value}} \times 100}$

imp

$= \frac{10,000 - 8000}{8000} \times 100$

$= \frac{2000}{8000} \times 100$

$= \frac{1}{4} \times 100$

$= 25\%$

Q.9) A book price drops from ₹500 to ₹400. what is the % decrease?

a) 10% b) 15% c) 20% d) 25%

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

$= \frac{100}{4}$

$= \boxed{25\%}$

Q.10) If the cost price of an item is ₹600 & the selling price is ₹450, what is % loss?

a) 20% b) 22.5% c) 25% d) 30%

→ Disb. / C.P (original value) = $\frac{600-450}{600} \times 100$

$= \frac{150}{600} \times 100$

$= 25\%$

Q.11) which is greater 30% of 400 or 40% of 300?

a) 30% of 400 b) 40% of 300

c) Both are equal d) Can't be determined

→ $\frac{30}{100} \times 400 = 120$ Both are equal

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

Q.12) A person spends 60% of his income & saves 8000. What is his income?

a) ₹ 15000 b) ₹ 18,000

c) ₹ 20,000 d) ₹ 25,000

→ Method I) He spends 60% his income

saving will be 40%

$\therefore \frac{40}{100} \times x = 8000$

$x = \frac{8000 \times 100}{40}$

$x = 20,000$

Method II →

→ He saves 40% of income which equal ₹8000

→ find 1% of his income $= \frac{8000}{40} = 200$ (find 100%)

→ total income $= 200 \times 100 = ₹20,000$

Q.13) If A is 20% more than B, then B is how much less than A.

a) 20% b) 16.67% c) 25% d) 10%

→ Method - I

$A = B + 20\%$ of B

$A = 1.2B$

% decrease $= \frac{A-B}{A} = \frac{1.2B - B}{1.2B} \times 100 = \frac{0.2B}{1.2B} \times 100$

$= \frac{1}{6} \times 100$

$= 16.67\%$

Method - II

(i) $A = 1.2B$

(ii) Now to find how much B is less than A, we take the reverse %

$B = \frac{100}{120} \times A$

% decrease is

$\left(\frac{A-B}{A}\right) \times 100 = \left(\frac{120-100}{120}\right) 100 = 16.67\%$

14) If the price of sugar is increased by 25% by how much should the consumption be reduced to maintain to same expence?

a) 20% b) 25% c) 30% d) 15%

→ Method-I

→ The price of sugar increases by 25% which means 1.25 times the original price.

→ To keep the expense the same, the consumption must decrease by the inverse proportion. The reduction can be calculated as:-

$$\text{Reduction in consumption} = \frac{\%\text{ incr. in price}}{100 + \%\text{ incr. in price}} \times 100$$

$$= \frac{25}{100+25} = 20\%$$

Method-II

① price increase = 25%, so the new price is 1.25 times the original price

② reduction in consumption $= \frac{1}{1.25} = 0.8$

③ % reduction in consumption = 100 − 80%

= 20%

Q.15) If A's income is 40% more than B's income, then B's income is what % less than A

a) 28.57% b) 30% c) 33.33 d) 40%

→ ~~A = B ± d / 100~~

~~A ± B A = B 1.4~~

∴ A's income 40% more than B's means

A's income = 100% + 40% = 140% = 1.4

∴ A = 1.4B

∴ B's income less than A (% decrease) $= \frac{A-B}{A} \times 100$

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

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

$= \frac{4}{14} \times \overset{50}{\cancel{100}}$

$= 28.57\%$

Q.16) The price of an item is increased by 20% & then decreased by 10% what is the net percentage change

a) 8% ↑ b) 8% ↓ c) 10% ↑ d) 10% ↓

→ consider original ~~metto~~ price = ₹100

(I) Increase by 20% = $100 + \frac{20}{\cancel{100}}$

$= 100 + 20$

$= 120$

120

II Decreased by 10%

$= 120 - 10 = 110$

$120 \times \frac{10}{100} = 12$

$\therefore 120 - 12 = \boxed{108}$

III Net % change $= \left(\frac{108-100}{100}\right) \times 100$

$= \boxed{8\%}$

Q.17) A number is increased by 30% & then decreased by 20%. What is the final % change

a) 4% incre. b) 8% increase ⇒

c) 10% incre. d) 12% increase

Method I

Suppose value = 100

(I) $\therefore$ 30% of 100 $= \frac{30}{100} \times 100 = 30$

$\therefore$ value $= 100 + 30 = 130$

(II) 20% of 130 $= \frac{20}{100} \times 130$

$= 26$

$\therefore$ value $= 130 - 26 = 104$

$\therefore$ final % change $= \frac{130-104}{} = 4$

% increase $= \frac{4}{100} \times 100 = 4\%$

Method II

Net change $= a + b + \frac{ab}{100}$

$a = 30, b = -20$

$= 30 - 20 - \frac{600}{100}$

$= 10 - 6 = 4\%$

Q.18) If the population of a city increases by 25% & decrease by 20% what is net % change?

→ Method A)

Net change $= 25 + (-20) + \frac{(25)(-20)}{100}$

$= 5 + \frac{(-500)}{100}$

$= 5 - 5 = \boxed{0\%}$

Method B)

Increase by 25%

$100 + 25\%$ of $100 = 100 + 25 = 125$

Decrease by 20%

$125 - 20\%$ of $125 = 100$

Final population = 100, which is the same as the initial population

Net % change = 0%

Q.19) If a price increases by 40% & then decreased by 30% what is the overall % change?

→ Method I)

$= 40 - 30 + \frac{(40)(-30)}{100}$

$= 10 - 12$

$= -2$

∴ decrease by 2%

Method II)

increase by 40%

$\frac{40x}{100}$ $100 + 40 = 140$

Decreased by 30%

30% of 140 $= \frac{30}{100} \times 140$

$= 42$

∴ $140 - 42 = 98$

∴ Net worth % change $= 98 - 100$

$= -2\%$

Q.20) The salary of a person is increased by 20% & then decreased by 10% what is the overall percentage change

→ method I

Change % $= 20 + (-10) + \frac{(20)(-10)}{100}$

$= 10 - 2$

$= 8\%$ increased

Method 2

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

$\therefore 100 + 20 = 120$

decreased by 10% means

$\frac{10}{100} \times 120 = 12$

$120 - 12 = 108$

$\therefore 120 - 108 = 8\%$ increase

Q) If an article is sold at 25%, the S.P is what % of C.P.

a) 100 b) 125 c) 150 d) 175

→ Method I

Let C.P = 100

Profit is 25% C.P

Profit = 25

S.P = C.P + Profit

S.P = 100 + 25 = 125

S.P. as a % of C.P

$\frac{S.P}{C.P} \times 100 = \frac{125}{100} \times 100 = 125\%$

Method II

SP = (100 + Profit) % of C.P

= (100 + 25) % of CP

= 125 % of CP

Q.22) A shopkeeper allows a discount of 10% on the Marked price & still makes a profit of 8%. If the marked price is ₹500. What is cost price?

a) 400 b) ₹420 c) ₹450 d) ₹460

→ M.P = ₹500

Discount = 10%

profit = 8%

Step 1) Calculate the Selling price (SP).

Discounted price = 10% of 500 = $\frac{10}{100} \times 500 = 5$

S.P = 500 - 50 = 450

Step 2) Shopkeeper makes a profit of 8%

S.P = 108%

S.P = 108% of C.P

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

$CP = \frac{450}{1.08} = 416.67 \approx 420$

Q.23) If the profit = 20% of C.P. what is the % on the S.P

→ (i) Let CP = 100

(ii) profit = 20% of CP = $\frac{20}{100} \times 100 = 20$

(iii) S.P = C.P + Profit

= 100 + 20

= 120

Profit % of SP = $\left(\frac{\text{Profit}}{\text{selling price}}\right) \times 100$

$= \left(\frac{20}{120}\right) \times 100 = 16.67$

Q.24) A product is marked at ₹1,200 & sold for ₹960. What is the percentage discount given?

a) 15% b) 20% c) 25% d) 30%

→ Discount % = $\frac{M.P - S.P}{MP} \times 100$

$= \frac{1200 - 960}{1200} \times 100$

$= \frac{240}{1200} \times 100$

$= 20$

Q.25) If an article is bought for ₹500 & sold for ₹650, what % profit?

a) 20% b) 25% c) 30% d) 35%

→ C.P = 500

S.P = 650

% profit = $\frac{150}{500} \times 100 = 30\%$

Q.26) If A's income is 20% more than B's then B's income is what % less than A's
a) 16.67% b) 18% c) 20% d) 25%

→ let B's income = 100

cond I) A's income is 20% more than B
= 100 + 20 = 120 B

II) % decrease = $\frac{A-B}{A} = \left(\frac{120-100}{120}\right)$

$= \frac{1}{6} = 16.67\%$

Q.27) If the ratio of boys in a school is 3:2, what % of total students are boy
a) 30% b) 40% c) 50% d) 60%

→ let no. of boys = 3x

no. of girls = 2x

Total no. of students = 3x + 2x = 5x

% of boys = $\frac{\text{no. of boys}}{\text{total no of boys}} \times 100$

$= \frac{3x}{5x} \times 100$

$= \boxed{60\%}$

Q.28) A city's population increased from 2,00,000 to 2,50,000 in 2 years. What is % increase?
a) 20% b) 25% c) 30% d) 35%

100
65
35

→ % increase = $\frac{\text{New value} - \text{old value}}{\text{old value}} \times 100$

$= \frac{2,50,000 - 2,00,000}{2,00,000} \times 100$

$= \frac{50,000}{2,00,000} \times 100$

$= 25\%$

Q.29) In an election, a candidate gets 65% of the total votes & wins by 3000 votes. How many total votes were cast?
a) 5000 b) 6000 c) 8000 d) 9000

→ (i) winning candidate gets is 0.65V
(ii) losing candidate the remaining vote = 0.35
(iii) winning candidate wins by 3000 votes

$0.65V - 0.35V = 3000$

$0.30V = 3000$

$V = 10,000$

Q.30) The price of an article reduced by 30%, By what % must the new price be increased to restore the O.P.
a) 30% b) 42.85 c) 50% d) 60%

→ let original price = 100
New Price = 100 - 30% = 70
→ To restore the O.P (₹100) we need to increase N.P (₹70) by certain %.
∴ % increase should be

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

$0.7x = 30$
$x = 42.85$

Q.) If a no. is increased by 50% & then decreased by 50%, what is the net percentage change?

→ Suppose no = 100

increased by 50%

means value = 150

decreased by 50% = $\frac{50}{100} \times 150$

$= 75$

$150 - 75 = 75$

∴ net % change $= 150 - 75$

$= 75$

net % change $= \frac{75 - 100}{100}$

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

decrease by 25%

Q.32) If A is 20% taller than B, then B is shorter than A by:

a) 16.67% b) 18% c) 20% d) 25%

→ A's height $= x + 20\%$ of x

$= x + 0.20x = 1.20x$

Diff $= 1.20x - x = 0.20x$

% diff $= \frac{0.20x}{1.20x} =$ 16.67%

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Q.) If 30% of a number is 90. What is 60% of the same number

→ $\frac{30}{100} \times x = 90$

$x = \frac{\cancel{90}^{3} \times 100}{\cancel{30}_{1}}$

$\boxed{x = 300}$

60% of the same no $= \frac{60}{100} \times 300$

$= \boxed{180}$

Q.34) A person spends 75% of his income & save ₹5000. What is his total income.

→ (i) spend amount $= \frac{75}{100} \times x = 0.75x$

(ii) remaining 25% of his income which is 5000

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

$x = \frac{\cancel{5000}^{200} \times 100}{\cancel{25}_{1}}$

$\boxed{x = 20000}$

Q.35) The price of petrol increases by 20%. By what percentage should consumption be reduced to maintain the same expense?

→ (i) price of petrol increases by 20%

(ii) let original price of petrol be ₹1/litre & initial consumption = x litres

(iii) Expense = $1 \times x = x$

(iv) After a 20% increase, the new price become ₹1.20

(v) $1.20 \times y = ?$

$$y = \frac{x}{1.20}$$

$$\% \text{ reduction} = \frac{x - y}{x} \times 100$$

$$= \frac{x - \frac{x}{1.20}}{x} \times 100$$

$\therefore x = 16.67\%$

Q.36) The price of a TV increased by 20% decreased by 10%. What is the overall % change?

→ Increased % = 120

$120 \times \frac{10}{100}$

$120 - 12 = 108$

% of overall change $= \frac{108 - 100}{100} = \frac{8}{100} \times 100$

$= 8\%$

Q.37) A shopkeeper marks an item 25% above the cost price & gives a 20% discount. What is profit/loss %?

→ let CP = 100

M.P is 25% of CP

M.P = C.P + 25% of C.P = 100 + 25

= 125

Shopkeeper gives 20% discound on M.P

→ the discound is 20% of ₹125, which is:

$$\text{Discount} = \frac{25}{100} \times 125 = 25$$

S.P = M.P - Discount = 125 - 25 = 100

∴ for Profit & Loss

CP = 100 & S.P = 10

∴ no profit or loss

Q.38) If C.P = 500 & loss = 20% S.P = ?

$$SP = CP - \left(\frac{20 \times 500}{100}\right)$$

$$= 500 - 100$$

$$\boxed{S.P = 400}$$

Q.39) If a salary increased by 10% & then decreased by 10. What is final % change

→ increase by 10% = 110

& decrease by 10% = $110 \times \frac{10}{100}$

= 11

∴ after decreasing = 99

Net change $= \frac{99-100}{100} = -1\%$

Q.40) A student needs 40% marks to pass. He gets 200 marks & fails by 20 what are the total

→ passing marks = 220

40% of Total marks = 220

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

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

$T = \boxed{550}$

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Q.41 A man spends 20% of his salary on rent, 30% on food & 10% on transport. If he saves ₹18,000, what is his salary?

→ 20% - r
30% - f
10% - T
60%

remaining 40% of his salary

$\frac{40}{100} S = 18,000$

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

$S = \frac{180000}{4}$

$S = 45,000$

Q.42) increased by 30%, decreased by 30% overall % change

→ After 30% incr. = 130

$\frac{30}{100} \times 130 = 39$

$130 - 39 = (91)$

overall % change $= \frac{91-100}{100}$

$= \frac{-9}{100}$

= 9% decrease

Q.43) population increase by 10% every year
current population = 10,000
what after 3 year
→ $\frac{10}{100} \times 10,000 = 1000$ b

∴ for 1st year = 10,000 + 1000
= 11,000

for 2nd year
$= \frac{10}{100} \times 11,000$
= 1100
11,000 + 1100
12,100
for a 3rd year
$\frac{10}{100}$ 12,100
= 1210
= 12,100 + 1210
= 13310

Q.44) If 15% of A = 20% of B, then A:B=

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

$\frac{A}{B} = \frac{20}{100} \times \frac{100}{15_3}$

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

Q.45) If the C.P = 800 & profit = 25%, SP = ?

$$\text{profit} = S.P - C.P$$

$$S.P = 800 + \left(\frac{25 \times 800}{100}\right)$$

$$= 800 + 200$$

$$\boxed{S.P = 1000}$$

Q.46) C.P = 200 SP = 250 profit = ?

→

$$\text{Profit} = 250 - 200$$

$$= 50$$

$$\%\ \text{profit} = \frac{50}{200} \times 100 = 25\%$$

Q.47) A man sells an article for ₹ 720 at a profit of 20%. Find C.P

→

$$720 = CP \times \left(1 + \frac{20}{100}\right)$$

$$720 = CP \times 1.2$$

$$\boxed{CP = 600}$$

Q.48) Already done

Q.49) A man purchased a cycle for ₹ 1500 & sold it at loss of 10%. What was S.P

→

C.P = 1500

loss = 10%

$$S.P = 1500 - \left(\frac{10 \times 1500}{100}\right) = \boxed{1350}$$

q.50) A trader make his goods at 30% above the C.P & allows a discount of 10%. what is his gain %?

→ M.P = 100 + 30% * 100 = 130

Discount = 10% × 130 = 13

S.P = 130 − 13 = 117

$$\%\text{gain} = \frac{117 - 100}{100} = \boxed{17\%}$$