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### Aptitude

### Percentage, Profit & Loss Question bank

### Assignment - 1

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① what is 25% of 200

$$\rightarrow \frac{25}{100} \times 200$$

$$= 50$$

② If 40% of No is 80, what is the number?

$$\rightarrow 40\% \text{ of } x = 80$$

$$\frac{40}{100} \times x = 80$$

$$\therefore x = \frac{80 \times 100}{40}$$

$$x = 200$$

③ 75% of No is 150, What is number?

$$\rightarrow 75\% \text{ of } x = 150$$

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

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

$$x = 200$$

④ what is 15% of 120%

$$\rightarrow 15\% \text{ of } 120 = \frac{15}{100} \times 120$$

$$= 18$$

⑤ If 30% of no is 90 the what is number

$$30\% \text{ of } x = 90$$

$$30 \times x = 90 \\ 100$$

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

$$\boxed{x = 300}$$

⑥ Price of product increase from 200 Rs to 250 Rs  
what is % increase?

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

$$= \frac{50 \times 100}{200}$$

$$\boxed{= 25\%}$$

⑦ Salary increase from 40000 to 50000 Rs, find  
% increase?

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

$$= \frac{10000 \times 100}{40000}$$

$$\boxed{= 25\%}$$

⑧ ~~population~~ population of two town decreased from 10000  
to 8000 what is % decreased?

$$\% \text{ decreased} = \left( \frac{10000 - 8000}{10000} \right) \times 100$$

$$= \frac{2000 \times 100}{10000}$$

$$\boxed{= 20\%}$$

⑨ Book price drops from Rs 500 to 400. What is % decrease?

$$\rightarrow \text{% decreased} = \left( \frac{500 - 400}{500} \right) \times 100 \\ = \frac{100}{500} \times 100 \\ \boxed{= 20 \%}$$

⑩ Cost price of item is 600 Rs & S.P is 450 Rs what is % loss?

$$\rightarrow \text{% loss} = \left( \frac{600 - 450}{600} \right) \times 100 \\ = \frac{150}{600} \times 100 \\ \boxed{= 22.5 \%}$$

⑪ Which is greater 30% of 400 or 40% of 300?

$\rightarrow$ 30% of 400 $\frac{30 \times 400}{100}$ $= 120$	40% of 300 $\frac{40 \times 300}{100}$ $= 120$
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both are same.

i.e. 120.

⑫ Person spend 60% of income & saves 8000. What is his total income?

$$\rightarrow \text{60% spent then 40% saved}$$

$$40\% \text{ of income} = 8000 \text{ Rs}$$

$$\text{Total income} = \frac{8000 \times 100}{40}$$

$$\boxed{\text{Total income} = 20000 \text{ Rs}}$$

(13) A is 20% more than B, B is how much less than A?

→ If A is 120 of B

then B is  $\frac{100}{120}$

$$= 16.67 \text{ or } \frac{1}{6}$$

(14) Price of sugar increased by 25%. By how much should be consumption be reduced to maintain same expense?

Original price be 100

New price 125% of original

To maintain same cost

$$\text{To consumption reduced} = \frac{100 - 125}{125} \times 100$$

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

$$= 20\%$$

(15) A income is 40% more than B's income, then B's income is what % less than A's?

→ If A = 140% of B

$$B = \frac{100}{140} \times 100$$

$$= 28.57\%$$

(16) Price of item increased by 20% & decreased by 10%. What is net percentage change?

→ Let 100 be original price

$$20\% \uparrow \text{ New price} = 120 \text{ Rs}$$

$$10\% \downarrow \text{ New price} = 120 - 10\% = 108 \text{ Rs}$$

$$= 120 - 12 = 108 \text{ Rs}$$

$$= 108 \text{ Rs}$$

$$\begin{aligned} \text{%. decrease} &= \\ \frac{(120 - 108) \times 100}{120} &= \\ 8\% &= \end{aligned}$$

(17)

No increased by 30% & decreased by 20%. What is final % change?



Original NO be 100

$$30\% \uparrow \quad 100 + 30\% = 100 + 30 = 130$$

$$20\% \downarrow \quad 130 - 20\% = 130 - 26 = 104$$

$$\% \text{ increase} = \left( \frac{104 - 100}{100} \right) \times 100$$

$$\boxed{\% \text{ increase} = 4\%}$$

(18)

Population of city increased by 25% & decreased by 20%. What is net % change?



Let 100 be original population

$$25\% \uparrow \quad 100 + 25\% = 100 + 25 = 125$$

$$20\% \downarrow \quad 125 - 20\% = 125 - 25 = 100$$

$$\boxed{\underline{0\%} \quad \text{No change population}}$$

(19)

Price increased by 40% & then decreased by 30%. Final change?



Let 100 be original price

$$40\% \uparrow \quad 100 + 40\% = 100 + 40 = 140$$

$$30\% \downarrow \quad 140 - 30\% = 140 - 42 = 98.$$

$$\text{Change} = 100 - 98$$

$$\boxed{\text{Change} = 2\%}$$

(20)

Salary  $\uparrow$  20% &  $\downarrow$  10%. Find % change.



Let 100 be original salary

$$20\% \uparrow \quad \text{is } 100 + 20\% = 100 + 20 = 120.$$

$$10\% \downarrow \quad 120 - 10\% = 120 - 12 = 108$$

$$\% \text{ increase} = \left( \frac{108 - 100}{100} \right) \times 100$$

$$\boxed{\% \text{ increase} = 8\%}$$

(21) If article sold at profit 25%, the S.P. is what % of C.P?

$$\begin{aligned} \rightarrow S.P. &= 100 + 25\% \text{ of C.P.} \\ &= 100 + 25 \left( \frac{100 \times 25}{100} \right) \\ &= 100 + 25 \\ \boxed{S.P.} &= 125 \% \text{ of C.P.} \end{aligned}$$

Assumed  
Here 100 is  
C.P.

(22) Shopkeeper allows 10% discount on M.P. & still makes profit 8%. If M.P. is 500 Rs. What is C.P?

$$\begin{aligned} \rightarrow S.P. &= 90\% \text{ of } 500 \\ &= \frac{90}{100} \times 500 \\ &= 450 \text{ Rs} \end{aligned}$$

Let C.P. be  $x$

Profit 8%, S.P. = 108% of C.P.

$$450 = \frac{108}{100} x$$

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

$$\boxed{x = 420 \text{ Rs}}$$

(23) Profit is 20% of C.P., then what is profit % on S.P.?

Let 100 be original C.P.

$$\text{Profit \% S.P.} = \frac{20}{100+20} \times 100 = \frac{20}{120} \times 100$$

$$\boxed{\text{Profit \%} = 16.67 \%}$$

(24)

A product is marked at 1200 Rs & sold for 960 Rs  
What is % discount?



$$\text{discount \%} = \left( \frac{1200 - 960}{1200} \right) \times 100$$

$$\therefore \text{discount} = 20 \%$$

(25)

article brought for Rs 500 & sold for Rs 650, what is % profit.



$$\% \text{ profit} = \left( \frac{650 - 500}{500} \right) \times 100$$

$$= \frac{150}{500} \times 100$$

$$\therefore \% \text{ profit} = 30 \%$$

(26)

If A's income is 20% more than B, then B's income is what % less than A's?



$$B + 20\% = A$$

$$100 \rightarrow 120 \rightarrow 100$$

$$\begin{matrix} B \\ \downarrow \\ A \end{matrix}$$

$$\frac{20 \times 100}{120} = \frac{1}{6} \times 100$$

$$= 16.67\%$$

(27)

If ratio of boys to girls is 3:2 what % of total students are boys?



$$\text{parts Total} = 3+2 = 5$$

$$\therefore \text{boys} = \frac{3}{5} \times 100$$

$$\therefore \text{boys} = 60\%$$

$$\therefore \text{girls} = \frac{2}{5} \times 100$$

$$\therefore \text{girls} = 40\%$$

(28) City population increased from 200000 to 250000 in 2 years. What is % increase?

$$\begin{aligned} \% \text{ increase} &= \frac{250000 - 200000}{200000} \times 100 \\ &= \frac{50000}{200000} \times 100 \\ \boxed{\% \text{ increase}} &= 25\% \end{aligned}$$

(29) In election candidate get 65% of total votes & win by 3000 votes. How many total votes were cast?

→ Let total votes

$$65\% \text{ of } x = 3000$$

$$x = \frac{3000 \times 100}{65}$$

$$\boxed{x = 6000 \text{ votes}}$$

(30) Price of article reduced by 30%. By what % must be price be increased to restore original price

→ New price = 70% of original

$$\text{increase by} = \left( \frac{100 - 70}{70} \right) \times 100$$

$$\boxed{= 42.85\%}$$

(31) NO increased by 50% & decreased by 50%. What is net % change?

→ Let original

$$50\% \uparrow \quad 100 + 50\% \text{ of } 100 = 150$$

$$50\% \downarrow \quad 150 - 50\% \text{ of } 150 = 150 - 75$$

$$= 75$$

$$\% \text{ change} = \left( \frac{75 - 100}{100} \right) \times 100 = -25\%$$

$$\boxed{\% \text{ change} = -25\%}$$

(32) A is 20% taller than B then B is shorter than A by

$$\rightarrow \text{B is } \frac{100}{120} \times 100$$

$$\boxed{\text{B} = 16.67\% \text{ shorter than A}}$$

(33) If 30% of N is 90. what is 60% of same number?

$\rightarrow x$  be that number

$$30\% \text{ of } x = 90$$

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

$$x = 300$$

$$60\% \text{ of } 300 = \frac{60}{100} \times 300$$

$$\boxed{= 180}$$

(34) person spends 75% of his income & saves 5000 Rs what is his total income?

$$\rightarrow \text{total income} = 5000 \times \frac{100}{25}$$

$$\boxed{= 20000 \text{ Rs}}$$

(35) price of petrol increase by 20%. what % should consumption reduced to main same expense.

$$\rightarrow \text{original expense} = 100$$

$$\text{new expense} = 100 + 20\% \text{ of original} = 100 + 20 = 120$$

$$\text{Consumption reduced} = \left( \frac{100 - 120}{120} \right) \times 100$$

$$\boxed{= 16.67\%}$$

(36) price of TV ↑ 20% & ↓ 10%. what is overall change  
Ans: ?

Let be original

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

$$10\% \text{ decrease } 120 - 10\% \text{ of } 120 = 120 - 12 = 108$$

$$\% \text{ change} = \frac{108 - 100}{100} \times 100 \quad \boxed{1 \% \text{ change} = 8 \%}$$

(37) Shopkeeper marks an item 25% above C.P & gives 20% discount. What is profit / loss percentage?

Let C.P. be 100 Rs

$$M.P = 125 \text{ i.e. } 100 + 25 = 125 \text{ Rs}$$

$$S.P = 125 - 20\% \text{ of } 125$$

$$= 125 - 25$$

$$\boxed{S.P = 100 \text{ Rs}}$$

$$S.P = C.P \text{ i.e. } 0\% \text{ profit}$$

(38) man sold bicycle for 1500 Rs which he bought for 1200 Rs what is % profit?

$$\% P = \left( \frac{1500 - 1200}{1200} \right) \times 100 = 25\%$$

(39) If 40% of number is 60 what is number?

$40\% \text{ of } x = 60$

$$x = \frac{60 \times 100}{40}$$

$$\boxed{x = 150}$$

(40) population  $\uparrow 10\%$  annually, If current population is 10000. What will be population after 2 years?

~~population~~

$$\text{population after 2 years} = 10000 \times \left(1 + \frac{10}{100}\right)^2$$

$$= 10000 \times 1.2^2$$

$$= 12100$$

(41) If 5% of number is 25 what is number?

$$5\% \text{ of } x = 25$$

$$x = \frac{25 \times 100}{5}$$

$$x = 500$$

(42) A person saves 20% of his income. If his saving amount is 10000. What is his total income?

$$\text{total income} = \frac{10000 \times 100}{20}$$

$$= 500000 \text{ Rs}$$

(43) discount of 15% on shirts result in price reduction of RS 45. What is original price of shirt?

~~100 - 15~~

$$15\% \text{ of original price} = 45$$

$$\text{original price} = \frac{45 \times 100}{15}$$

$$\text{Original price} = 300 \text{ Rs}$$

(44) product sold for 600 & profit made is 120 Rs. what is % profit?

$$\% \text{ profit} = \frac{120}{600 - 120} \times 100$$

$$\boxed{\% \text{ profit} = 20 \%}$$

(45) If NO is reduced by 10 %. then ↑ by 10 %. what's % change?

100 be original

10% ↓ means 90

10% ↑ means  $90 + 10\% \cdot 90 = 90 + 9 = 99$

$$\% \text{ change} = \frac{(100 - 99)}{99} \times 100$$

$$\boxed{\% \text{ change} = 1 \% \text{ decreased.}}$$

(46) A person invest 5000 Rs at 8% simple interest per annum for 2 years. What is total interest earned?

$$\rightarrow \text{interest interest} = \frac{5000 \times 8 \times 2}{100}$$

$$\boxed{\text{interest} = 800 \text{ RS}}$$

(47) original price of shirt 300 Rs & sold for 360 Rs  
What is percentage increase?

$$\rightarrow \% \text{ increase} = \left( \frac{360 - 300}{300} \right) \times 100 = \frac{60}{300} \times 100 \\ = 20\%$$

(48) Price of product ↑ by 25%. If original price is 400Rs what is new price?

$$\rightarrow \text{New price} = 400 + 25\% \text{ of } 400 \\ = 400 + \frac{25 \times 400}{100} \\ = 400 + 100 \\ \boxed{\text{New price} = 500 \text{ Rs}}$$

(49) Price ↑ 25% & original price is

(50) person gains 200Rs by selling article for 1200Rs what is % profit?

$$\rightarrow \% \text{ profit} = \left( \frac{200}{1200 - 200} \right) \times 100 = \left( \frac{200}{1000} \right) \times 100 \\ \boxed{\% \text{ profit} = 20\%}$$

(50) If C.P is 1000Rs & S.P 1200Rs what is % profit?

$$\rightarrow \% \text{ profit} = \left( \frac{200}{1000} \right) \times 100 \quad \left( \frac{\text{change in price} \times 100}{\text{original price}} \right) \\ \boxed{\% \text{ profit} = 20\%}$$