Percentage & Profit Loss

1 What is 25% of 200

$$\frac{25}{100} \times 200 = 50$$

$\boxed{b}$

2 If 40% of a number is 80, what is the number

number = x

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

$$x = \frac{80}{100} \times 40 \quad \frac{80^2}{40} \times 100 = 200$$

$\boxed{c}$

3 75% of a number is 150. What is the number.

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

$$x = \frac{150^2 \times 100}{75} = 200$$

$\boxed{b}$

4 What is 15% 120

$$\frac{120 \times 15^3}{100} = 18$$

$\boxed{c}$

5 If 30% of a number is 90, then the number is:

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

$$x = 90^3 \times \frac{100}{30} = 300$$

$\boxed{c}$

6 The price of a product increases from ₹200 to ₹250. What is percentage increase?

$$250 - 200 = 50$$

$$\frac{\overset{25}{\cancel{50}}}{\cancel{200}} \times \cancel{100} = 25\%$$

[b]

7. A salary increases from ₹40000 to ₹50000. What is the percentage increase?

$$50000 - 40000 = 10000$$

$$\frac{\overset{25}{\cancel{10000}}}{\cancel{40000}} \times \cancel{100} = 25\%$$

[c]

8. The population of town decreesed from 10000 to 8000. What is the percentage decreese?

$$10000 - 8000 = 2000$$

$$\frac{\cancel{2000}}{\cancel{10000}} \times \cancel{100} = 20\%$$

[c]

9. A book's price drops from ₹500 to ₹400. What is the percentage decreese?

$$500 - 400 = 100$$

$$\frac{\cancel{100}}{\cancel{500}} \times \cancel{100} = 20\%$$

[c]

10. If the cost price of an item is ₹600 and selling price ₹450, What is the percentage loss?

$$600 - 450 = 150$$

$$\frac{150}{\cancel{600}} \times \cancel{100} = 25\%$$

[c]

11 Which is greater : 80% of 400 or 40% 800 ?

$$400 \times \frac{80}{100} \qquad\qquad 800 \times \frac{40}{100}$$

$$120 \qquad\qquad\qquad 120$$

[c] Both are equal

12 A person spends 60% of his income and saves ₹ 8000. What is his total income?

$$100 - 60 = 40$$

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

$$x = \frac{\overset{2000}{8000} \times 100}{40}$$

$$= 20000 \qquad\qquad [c]$$

13 If A is 20% more than B, then B is how much less than A?

$$B = 100$$

$$120 - 100 = 20$$

$$\frac{\overset{3.31}{20}}{\underset{6}{\overset{120}{120}}} \times 100 = \overset{2}{25} 16.65 \qquad [b]$$

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

$$\frac{25}{100+25} \times 100$$
$$\qquad\qquad\qquad\qquad [a]$$

$$\frac{25}{\underset{5}{125}} \times \overset{20}{100} = 20.\%$$

15 If A's income is 40% more than B's income is what percentage less than A's.

Assume B's incom = 100

$$140 - 100 = 40$$

$$\frac{40}{140} \times 100 = \frac{200}{7} = 28.57\%$$
$$\frac{40}{7}$$
[a]

16 The price of an item is increased by 20% and then decreased by 10%. What is the net percentage change.

| 100 | $\dfrac{100 \times 20}{100} = 20$ | + |

| 120 | $\dfrac{120 \times 10}{100} = 12$ | - |

108

100 → 108 = 8% increase   [a]

17 A number is increased by 80% and then decreased by 20%. What is the final percentage change?

| 100 | $\dfrac{100 \times 30}{100} = 30$ |

| 130 | $\dfrac{130 \times 20}{100} = 26$ |

104

100 → 104   4% increase   [a]

18 If the population of a city increase by 25% and then decrease by 20% what is the net percentage change?

100	$100 \times \dfrac{25}{100} = 25$	
125	$125 \times \dfrac{\overset{1}{2\emptyset}}{\underset{5}{10\emptyset}} = 25$	
100		

0 %   [a]

19 If a price increase by 40% and then decrease by 80%, the final change is:

100	$100 \times \dfrac{40}{100} = 40$	
140	$14\emptyset \times \dfrac{3\emptyset}{10\emptyset} = 42$	
98		

$100 \rightarrow 98$ 2% decrease   [d]

20 The salary of a person is first increased by 20% and then decreased by 10%. What is the overall percentage change?

100	$100 \times \dfrac{20}{100} = 20$	
120	$12\emptyset \times \dfrac{1\emptyset}{10\emptyset} = 12$	
108		

$100 \rightarrow 108$ 8% increase   [a]

21 If an article is sold at a profit of 25% the the selling price is what percentage of the cost price?   CP = 100

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

$$SP = 125 \% \qquad \boxed{b}$$

22 A shopkeeper allows a discount of 10% on the marked price and still makes a profit of 8% If the marked price is 500, what is the cost price?

$$500 - \left(\frac{10}{100} \times \overset{5}{500} \right)$$

$$SP = 500 - 50 = 450$$

cost price = x

$$\%P = \frac{SP - CP}{CP} \times 100$$

$$8 = \frac{450 - x}{x} \times 100$$

$$8 = \frac{45000 - 100x}{x}$$

$$8x = 45000 - 100x$$
$$8x + 108x = 45000$$
$$108x = 45000 \qquad \overset{416.6}{}$$
$$x = \frac{45000}{108} \quad \frac{22500 \; 8750}{}$$
$$\frac{108}{54}$$
$$9$$

$$= 146 \approx 420 \qquad \boxed{b}$$

23 If the profit 20% of cost price, then what is the profit percentage on the selling price

cost price 100

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

$$\frac{20}{\cancel{120}_{6}} \times \cancel{100} = \frac{\overset{16.666}{100}}{6} = 16.67 \quad \boxed{a}$$

24 A product is marked at 1200 and sold for 960 what is the percentage discount given?

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

$$\frac{\overset{20}{240}}{\cancel{1200}} \times \cancel{100} = 20\% \quad \boxed{b}$$

25 If an article is bought for ₹500 and sold for ₹650, what is percentage profit

$$\frac{650 - 500}{500} \times 100$$

$$\frac{\overset{30}{\cancel{150}}}{\cancel{500}} \times \cancel{100} = 30\% \quad \boxed{c}$$

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

$$B = 100$$

$$100 + 20 \cdot x \qquad \frac{100 + 20}{100} \times 100$$

$$\frac{20}{\cancel{120}} \times \cancel{100} = \frac{2000}{12} \qquad 120 \quad \boxed{a}$$

$$120 - 100 = 20 \qquad \frac{20}{\cancel{120}_{6}} \times \cancel{100} = \frac{\overset{16.67}{100}}{6}$$

27 If the ratio of boys to girls in a school is 8:2 what percentage of the total students are boys.

$$\frac{3}{5} \times 100 = 60\%$$

[b]

28 A city's population increased from 200000 to 2500000 in 2 years. What is the percentage increase?

$$\frac{250000 - 20000}{50000}$$

$$\frac{\overset{25}{\cancel{50000}}}{\cancel{200000}} \times \cancel{100} \quad 250\%$$

[b]

29 In an election, a candidate get 65% of total votes and wins by 3000 votes How many total votes were cast?

$$100 - 65 = 35 \quad \text{no vote}$$

$$65 - 35 = 30$$

$$\frac{30}{3000} \times \frac{x}{100} \cdot \frac{\overset{10000}{30000}}{3,}$$

[d]

30 The price of an article is reduced by 30%. By what percentage must the new price be increased to restore the original price?

$$\frac{30}{70} \times 100 = \frac{\overset{42.85}{300}}{7} = 42.85$$

[b]

81 If a number is increased by 50% and then decreased by 50% what is the net percentage change?

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

150     $\frac{50}{100} \times 150 = 75$

75      $100 \to 75$ 25% decrease   [b]

82 If A is 20% taller than B then B is shorter than A by.

$\frac{20}{120} \times 100 = \frac{16.67}{2000}$ 16.67   [a]

$+2,$

83 If 30% of a number is 90, what is 60% of the same number?

$\frac{30}{100} \times x = 90$ $x = \frac{\overset{3}{90} \times 100}{30} = 300$

$\frac{60 \times 300}{100} = 180$ [c]

34 A person spend 75% of his income and saves ₹ 5000 what is his total amount income?

save 25%

$\frac{25}{125} \times 5000$

$\frac{25}{100} \times x = 500$ $x = 5000 \times \frac{\overset{4}{100}}{25} = 20000$ [c]

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

$$\frac{20}{120} \times 100 = \frac{200}{12} = 16.67 \qquad \boxed{a}$$

36 The price of a TV was first increased by 20% and then decreased by 10%. What is the overall percentage change

100	$100 \times \dfrac{20}{100} = 20$	
120	$120 \times \dfrac{10}{100} = 12$	
108	$100 \to 108 \qquad 8\%\ \text{increas}$	$\boxed{a}$

37 A shopkeeper marks an item 25 % above the cost price and gives a 20% discount. What is his profit loss percentage.

100	$100 \times \dfrac{15}{100} = 25$	
125	$125 \times \dfrac{20}{100}$ $= \dfrac{25}{5}$	
$125 - 25 = 100 \to 10$	0%	$\boxed{a}$

38 If the cost price of an article is ₹500 and it is sold at a loss of 20% what is selling price?

$$500 - \frac{20}{100} \times \overset{5}{500}$$

$$500 - 100 = 400 \qquad \boxed{c}$$

39 If a salary is increased by 10% and then decreased by 10% what is the final percentage change?

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

$$110 \qquad \frac{110 \times 10}{100}$$

$$\underline{99}$$

$$100 \to 99 \qquad 1\% \text{ decrease} \qquad \boxed{b}$$

40 A student needs 40% marks to pass. He gets 200 marks and fails by 20 marks. What are the total marks?

$$\frac{2\cancel{2}0 \times 40}{100} \qquad 200 = x \times \frac{40}{100}$$

$$\frac{20\cancel{0} \times 40}{100} \qquad \frac{200 \times 100}{\underset{40}{\overset{50}{40}}} \qquad 500$$

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

$$\frac{220 \times 100}{\underset{4\cancel{0}}{\overset{55}{}}} = 550 \qquad \boxed{b}$$

41 A man spends 20% of his salary on rent, 30% on food and 10% an transport. If he saves ₹ 18000 what is his salary?

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

$$x = \frac{\overset{4500}{\cancel{18000}} \times 100}{\cancel{40}}$$

$$= 45000 \qquad \boxed{b}$$

42 The cost of an item is first increase by 30% and then decreased by 30% what is the overall percentage change?

$$100 \qquad\qquad 100 \times \frac{30}{100} = 30$$

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

$$\underline{91}$$

$$100 \rightarrow 91 \qquad\qquad 9\% \text{ decrease} \qquad \boxed{b}$$

43 The population of a town increase by 10% every year. If the current population is 10000 what will it be after 3 years?

10000	$10000 \times \frac{10}{100}$	1000
11000	$11000 \times \frac{10}{100}$	1100
12100	$12100 \times \frac{10}{100}$	1210
13310		$\boxed{a}$

44 IP 15% of A is equal to 20% then A:B is

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

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

$$\frac{20}{15} \space or \frac{4}{3} \qquad \boxed{b}$$

45 If the cost peice an item ₹800 and the peofit made is 25%, what is the selling peice?

$$\frac{800 \times 125}{100} = 1000$$

$$\boxed{b}$$

46 If the cost peice (CCP) of an item is ₹200 and then selling peice (CSP) is ₹250 what is the peofit peecentage?

$$250 - 200 = 50$$

$$\frac{500^{250}}{200} \times 100 = 25\% \qquad \boxed{b}$$

47 A man sells an aeticle foe ₹720 at a peofit of 20% Find the selling peice.

$$CP = 720 \times \frac{100}{20}$$

$$= \frac{720 \times 100}{120}$$

$$= 600 \qquad \boxed{a}$$

48 A shopkeeper sells an item at a loss of 15%. If the cost price.

$$100 - 15 = 85$$

$$500 \times \frac{85}{100} = 425 \qquad \boxed{b}$$

49 A man purchased a cycle for ₹1500 and sold at a loss of 10% what. what the selling price?

$$100 - 10 = 90$$

$$\frac{1500 \times 90}{100} = 1350 \qquad \boxed{c}$$

50 A trader marks his goods at 30% above the cost price and allows a discount of 10% what is his gain percent.

$$100 + 30 = 130$$
$$100 - 10 = 90$$

$$\left(\frac{130}{100} \times \frac{90}{100} - 1 \right) \times 100$$

$$\left(\frac{117}{100} - 1 \right) \times 100$$

$$\frac{117 - 100}{100} \times 100$$

$$17 \, \%$$