

# PERCENTAGE

## SECTION 1: PERCENTAGE — BASICS

### Percentage kya hota hai?

Percentage ek aisi expression hai jo kisi value ko 100 ke fraction ke roop mein dikhata hai. 'Per cent' ka matlab hai 'per hundred' (100 mein se). Jab hum kehte hain 40%, iska matlab hai 100 mein se 40 parts.

## SECTION 2: ALL IMPORTANT FORMULAS

### 1. Basic Formula:

$$\text{Percentage} = (\text{Part} / \text{Whole}) \times 100$$

### 2. Find Value from %:

$$\text{Value} = (\text{Percentage} \times \text{Total}) / 100$$

### 3. % Increase:

$$\% \text{ Increase} = [(\text{New} - \text{Old}) / \text{Old}] \times 100$$

### 4. % Decrease:

$$\% \text{ Decrease} = [(\text{Old} - \text{New}) / \text{Old}] \times 100$$

### 5. If A is x% more than B:

$$A = B \times (1 + x/100)$$

### 6. If A is x% less than B:

$$A = B \times (1 - x/100)$$

### 7. Successive % Change:

$$\text{Net Change} = a + b + (ab/100) \text{ [where a, b are \% changes]}$$

### 8. % to Fraction:

$$x\% = x/100 \text{ e.g. } 25\% = 1/4, 33.33\% = 1/3, 12.5\% = 1/8$$

### 9. Population Formula:

$$P(n) = P \times (1 + r/100)^n \text{ [compound growth]}$$

### 10. Expenditure = Price × Qty:

$$\text{If price increases by } r\%, \text{ qty must decrease by } r/(100+r) \times 100\%$$

### Important Fraction-Percentage Table (Yaad karo!):

Fraction	%	Fraction	%	Fraction	%
1/2	50%	1/3	33.33%	1/4	25%
1/5	20%	1/6	16.67%	1/7	14.28%
1/8	12.5%	1/9	11.11%	1/10	10%
2/3	66.67%	3/4	75%	3/5	60%

## SECTION 3: SOLVED EXAMPLES (Basic to Hard)

**Example 1 [Easy]: 40 ka 25% kitna hoga?**

$$\text{Sol: } (25/100) \times 40 = 10 \checkmark \text{ Ans: } 10$$

**Example 2 [Easy]: 80 mein se 20 ka percentage kya hai?**

$$\text{Sol: } (20/80) \times 100 = 25\% \checkmark \text{ Ans: } 25\%$$

**Example 3 [Medium]: Ek class mein 60 students hain. 40% girls hain. Boys kitne hain?**

$$\text{Sol: Girls} = 40\% \text{ of } 60 = 24. \text{ Boys} = 60 - 24 = 36 \checkmark \text{ Ans: } 36$$

**Example 4 [Medium]: Ek item ki price Rs.400 thi, ab Rs.500 ho gayi. % increase kya hai?**

$$\text{Sol: \% Increase} = [(500-400)/400] \times 100 = (100/400) \times 100 = 25\% \checkmark \text{ Ans: } 25\%$$

**Example 5 [Medium]: Agar A, B se 20% zyada hai aur B = 500 hai, toh A = ?**

$$\text{Sol: } A = 500 \times (1 + 20/100) = 500 \times 1.2 = 600 \checkmark \text{ Ans: } 600$$

**Example 6 [Hard]: Kisi number ka 35% = 140 hai. Uske 45% ka 60% kya hoga?**

$$\text{Sol: Number} = (140 \times 100)/35 = 400. \text{ 45\% of } 400 = 180. \text{ 60\% of } 180 = 108 \checkmark \text{ Ans: } 108$$

**Example 7 [Hard]: Price 10% badha, phir 10% ghata — net change kya?**

$$\text{Sol: Net \%} = 10 + (-10) + (10 \times (-10)/100) = 0 - 1 = -1\% \checkmark \text{ Ans: } 1\% \text{ decrease}$$

**Example 8 [Hard]: Salary 20% badhi, phir 25% ghati. Net % change kya hua?**

$$\text{Sol: Net} = 20 + (-25) + (20 \times (-25)/100) = -5 - 5 = -10\% \checkmark \text{ Ans: } 10\% \text{ decrease}$$

## SECTION 4: PRACTICE MCQs (Assam Police Level)

Note: Pehle khud solve karo, phir answer dekho. Questions Easy se Hard tak hain.

1. 150 ka 12% kya hoga?

- (A) 15
- (B) 18
- (C) 20
- (D) 16

Answer: (B) 18 | Sol:  $(12/100) \times 150 = 18$

2. 75 ka k■■■■ percent 15 hai?

- (A) 10%
- (B) 15%
- (C) 20%
- (D) 25%

Answer: (C) 20% | Sol:  $(15/75) \times 100 = 20\%$

3. Ek student ne 500 mein se 375 marks liye. Percentage kya hai?

- (A) 70%
- (B) 72%
- (C) 75%
- (D) 80%

Answer: (C) 75% | Sol:  $(375/500) \times 100 = 75\%$

4. 480 ka 37.5% kya hai?

- (A) 160
- (B) 170
- (C) 180
- (D) 190

Answer: (C) 180 | Sol:  $37.5\% = 3/8$ ;  $(3/8) \times 480 = 180$

5. Yadi 40% of x = 160, toh x = ?

- (A) 350
- (B) 380
- (C) 400
- (D) 420

Answer: (C) 400 | Sol:  $x = (160 \times 100)/40 = 400$

6. Rs.1200 ka 15% + Rs.800 ka 20% = ?

- (A) Rs.300
- (B) Rs.320
- (C) Rs.340
- (D) Rs.360

Answer: (C) Rs.340 | Sol:  $180 + 160 = 340$

7. Kisi company ka profit Rs.50000 se Rs.65000 hua. % increase = ?

- (A) 25%
- (B) 28%
- (C) 30%
- (D) 35%

Answer: (C) 30% | Sol:  $[(65000-50000)/50000] \times 100 = 30\%$

8. Ram ki salary Rs.12000 hai. 15% bonus mila. Kul milega?

- (A) Rs.13500
- (B) Rs.13600
- (C) Rs.13800
- (D) Rs.14000

**Answer: (C) Rs.13800 | Sol: Bonus = 1800; Total = 13800**

9. Ek dukan mein 20% discount mila. Original price Rs.750. Kya milega?

- (A) Rs.550
- (B) Rs.580
- (C) Rs.600
- (D) Rs.620

**Answer: (C) Rs.600 | Sol: Discount = 150; SP = 750-150 = 600**

10. Agar 60% log pass hue aur 800 fail, total = 2000 hai, fail % = ?

- (A) 35%
- (B) 38%
- (C) 40%
- (D) 42%

**Answer: (C) 40% | Sol: Fail = 2000-1200 = 800; % = (800/2000)×100 = 40%**

11. Price 25% ghata, phir 25% badha — net change = ?

- (A) No change
- (B) 6.25% decrease
- (C) 6.25% increase
- (D) 5% decrease

**Answer: (B) 6.25% decrease | Sol: Net = -25+25+((-25)(25)/100) = -6.25%**

12. Ek number ko 20% badhane ke baad 1440 mila. Original number = ?

- (A) 1100
- (B) 1150
- (C) 1200
- (D) 1250

**Answer: (C) 1200 | Sol:  $x \times 1.2 = 1440$ ;  $x = 1200$**

13. Yadi A, B se 30% kam hai, toh B, A se kitna % zyada hai?

- (A) 30%
- (B) 42.85%
- (C) 40%
- (D) 35%

**Answer: (B) 42.85% | Sol:  $A = 0.7B$ ;  $B-A = 0.3B$ ; % =  $(0.3B/0.7B) \times 100 = 42.85%$**

14. Population 2 saal mein 10% + 5% badhi. Net % increase = ?

- (A) 15%
- (B) 15.5%
- (C) 16%
- (D) 16.5%

**Answer: (B) 15.5% | Sol: Net = 10+5+(10×5/100) = 15.5%**

15. Ramesh ki salary 25% badhi aur 20% ghati. Net % change = ?

- (A) 0%
- (B) 5% increase
- (C) 5% decrease
- (D) 6% decrease

**Answer: (A) 0% | Sol: Net =  $25+(-20)+(25 \times (-20)/100) = 5-5 = 0\%$**

16. 1200 ka 33.33% kya hai?

- (A) 350
- (B) 380
- (C) 400
- (D) 420

**Answer: (C) 400 | Sol:  $33.33\% = 1/3$ ;  $1200/3 = 400$**

17. Ek election mein 55% votes A ko mile, baki B ko. Total 80000 votes. Difference = ?

- (A) 7000
- (B) 7500
- (C) 8000
- (D) 8500

**Answer: (C) 8000 | Sol: A = 44000, B = 36000; Diff = 8000**

18. 180 ka 40% - 90 ka 30% = ?

- (A) 40
- (B) 42
- (C) 44
- (D) 45

**Answer: (D) 45 | Sol:  $72 - 27 = 45$**

19. Ek item 20% markup pe Rs.600 mein becha. Cost price = ?

- (A) Rs.480
- (B) Rs.490
- (C) Rs.500
- (D) Rs.520

**Answer: (C) Rs.500 | Sol:  $CP \times 1.2 = 600$ ;  $CP = 500$**

20. x ka 15% = y ka 20%. Ratio x:y = ?

- (A) 3:4
- (B) 4:3
- (C) 2:3
- (D) 3:2

**Answer: (B) 4:3 | Sol:  $0.15x = 0.20y$ ;  $x/y = 20/15 = 4/3$**

21. Salary 10% ghati phir 10% badhi. Net change kya hua?

- (A) No change
- (B) 1% loss
- (C) 1% gain
- (D) 2% loss

**Answer: (B) 1% loss | Sol: Net =  $-10+10+((-10)(10)/100) = -1\%$**

22. Yadi 75% of  $(x + y) = 45\%$  of  $(x - y)$ , toh  $x:y = ?$

- (A) 1:4
- (B) 1:5
- (C) 1:6
- (D) 1:3

**Answer: (A) 1:4 | Sol:  $75x+75y = 45x-45y$ ;  $30x = -120y$ ;  $x:y = -4:1$ , i.e.  $|x:y| = 1:4$  (taking abs ratio)**

23. Kisi number ka 120% = 660. Uska 85% = ?

- (A) 462.5
- (B) 467.5
- (C) 472.5
- (D) 477.5

**Answer: (B) 467.5 | Sol: Number =  $(660/120) \times 100 = 550$ ; 85% of 550 = 467.5**

24. Ek shopkeeper ne 40% loss ke baad price 25% badhayi. Net % change = ?

- (A) -20%
- (B) -22%
- (C) -25%
- (D) -18%

**Answer: (C) -25% | Sol: Net =  $-40+25+((-40)(25)/100) = -15-10 = -25\%$**

25. Assam mein ek officer ki monthly salary Rs.45000 hai. Unhone 12% income tax diya, 5% PF kata, Rs.3000 HRA mila. Net salary = ?

- (A) Rs.37350
- (B) Rs.38350
- (C) Rs.39350
- (D) Rs.40350

**Answer: (D) Rs.40350 | Sol: Deductions = 17% of 45000 = 7650; After deductions = 37350; + HRA 3000 = 40350**

**Best of luck for Assam Police AB/UB/SI Examination! Practice daily and revise all formulas. — Study Smart, Score High!**