



Percentage



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A fraction with denominator 100 is called a per cent.

- **Converting fraction into percentage**
- **Converting percentage into fraction**
- **Converting ratio into percentage**
- **Converting percentage into ratio**
- **Converting percentage into decimal**
- **Converting decimal into percentage**

1/1	100%
1/2	50%
1/3	33.33%
1/4	25%
1/5	20%
1/6	16.67%
1/7	14.2857%
1/8	12.5%
1/9	11.11%
1/10	10%

1/11	9.09%
1/12	8.33%
1/13	7.7%
1/14	7.14%
1/15	6.66%
1/16	6.25%
1/17	5.88%
1/18	5.55%
1/19	5.26%
1/20	5%

1/21	4.76%
1/22	4.55%
1/23	4.35%
1/24	4.166%

Q. Calculate the following percentages:

- 1. 44.44% of 63**
- 2. $16\frac{2}{3}\%$ of 600 gm – $33\frac{1}{3}\%$ of 180 gm**
- 3. 2 is what percent of 50 ?**
- 4. $\frac{1}{2}$ is what percent of $\frac{1}{3}$?**
- 5. 0.25 % of ? = 0.04**
- 6. Which is greatest in $16\frac{2}{3}\%$, $2/15$, and 0.17**
- 7. What percent of 7 is 84 ?**

Concept of Reference/Base:

A = 100 and B = 150

How much is

- 1) A less than B**
- 2) B more than A**

Difference between absolute change and percentage change

Imagine A, B, C have Rs 200, Rs 300 and Rs 400 respectively

- 1. A is what % of B ?**
- 2. B is what % of A ?**
- 3. A is what % of C?**
- 4. C is what % more than B ?**
- 5. A is what % less than C ?**

Multiplicative factor:

A grows by

- **$50\% = A \times 150/100 = A \times 3/2 = A \times 1.5$**
- **25%**
- **20%**
- **44.44%**
- **14.28%**

Multiplicative factor:

A decreases by

- **50%**
- **25%**
- **20%**
- **44.44%**
- **14.28%**

Continuous growth/decline (or series of the same):

$A \rightarrow 10\% \rightarrow 20\%$

Conventional method

Percentage method: Net change = $x + y + (xy/100)$

Ratio method:

$10\% = 1/10$

$20\% = 1/5$

Examples:

$$C = 2 \pi r$$

$$C \propto r$$

So, if $r \uparrow 10\%$, then C also $\uparrow 10\%$

$$A = \pi r^2$$

$$A \propto r^2$$

So, if r increases by $x\%$, then A will increase by $(x + x + (x^2/100)) \%$

$A * B = \text{constant}$

E.g.: $L * B = \text{area}$; $P * Q = \text{expenditure}$

A, B being inversely related to each other

- **Speed and time if distance is constant**
- **Men and Time if work is constant**

If $A \uparrow \frac{x}{y} \rightarrow B \downarrow \frac{x}{x+y}$

If $A \downarrow \frac{x}{y} \rightarrow B \uparrow \frac{x}{y-x}$

Concept of 'By' and 'To'

'By' represents difference and 'To' represents final value

If the income is reduced by 40%, it means the new income is 60% of the original.

If the income is reduced to 40%, it means the new income is 40% of the original.

Practice Questions

1. In a flower shop, roses and lilies are sold in which 40% are roses and the remaining are lilies. Out of the total number of flowers sold, 45% are in red colour and the remaining are in white colour and the number of red colour roses sold is 180, which is 40% of the total number of red colour flowers sold. Find the number of lilies sold in the shop.

- A.600
- B.450
- C.500
- D.480
- E. None of these

Practice Questions

Answer. Option A

Practice Questions

2. In an examination, out of total number of questions, Sarika attended 80% of the questions. Out of the attended questions, she answered 60% of the questions correctly and the remaining questions answered incorrectly and for each correct question 2 marks is awarded and 0.5 marks are deducted for every wrong question and the total marks obtained by Sarika is 80. Find the number of questions in the examination.

- A.75
- B.90
- C.100
- D.120
- E.None of these

Practice Questions

Answer. Option C

Practice Questions

3. What is the area of the greatest circle which inscribed in a rectangle whose length is 75m and breadth is 56% of the length?

- A.1386 m²
- B.1586 m²
- C.1400 m²
- D.1456 m²
- E.1500 m²

Practice Questions

Answer. Option A

Practice Questions

4. 300% of the first integer is four more than the third integer and the second integer is three less than the third integer. The sum of the three integers is 31. Find the second largest integer among the three?

- A.15
- B.19
- C.17
- D.13
- E.11

Practice Questions

Answer. Option E

Practice Questions

5. The total number of students in schools A and C is 25% and 10% more than the total number of students in school B. If the total number of students in school A is decreased by 50 and school C is increased by 30, then the total number of students in school A becomes 20% less than that of school C, then find the total number of students in school B?

- A.100
- B.400
- C.200
- D.300
- E.None of these

Practice Questions

Answer. Option C

Practice Questions

6. Balu spends 22% of his monthly salary on Rent and out of the remaining salary, he spends 33.33% of his monthly salary in entertainment and spends Rs.3120 on food and 40% of his monthly salary is savings. Find the annual income of Balu.

A.Rs.120000

B.Rs.180000

C.Rs.150000

D.Rs.210000

E.None of these

Practice Questions

Answer. Option E

Practice Questions

7. In a cylinder, the ratio of radius and height is 1 : 2. If the radius is increased by 50% and height is decreased by 40%. Find the percentage change in volume of the cylinder.

- A) 32%
- B) 30%
- C) 35%
- D) 25%
- E) NOT

Practice Questions

Answer. Option C

Practice Questions

8. A spends 18% of his income on food and clothing, 22% on transport, 40% of his daughter's education and saves the remaining Rs.18600 in a month. What is the monthly income of A?

- A.Rs.35200
- B.Rs.15600
- C.Rs.93000
- D.Rs.25800
- E.None of these

Practice Questions

Answer. Option C

Practice Questions

9. Two numbers are 15% and 25% less than a third number respectively. Find the ratio between the first and second numbers.

1) 15 : 17

2) 17 : 15

3) 9 : 5

4) 5 : 9

5) None of these / इनमें से कोई नहीं

Practice Questions

Answer. Option B

Practice Questions

10. In a city number of female is 12.5% more than the number of children, but 20% more than the number of males. If the number of male increases in ratio 5 : 6 but the number of female increases by $22\frac{2}{9}\%$ and in the number of children increases by 630. Due to this total population increases by $28\frac{4}{7}\%$. Find the increment in the number of females.

- A) 320
- B) 340
- C) 360
- D) 380
- E) NOT

Practice Questions

Answer. Option C

Practice Questions

11. A and B invest in a business in the ratio of 6 : 7. A spend 60% of its amount in electricity and 20% of rest on medical, whereas B spends 40% of its amount on personal expenses and 60% of the rest on Goods charges. The total amount left with them is Rupees 36,000 then calculate their individual sum.

- A) 60000 /- and 60000/-
- B) 60000/- and 70000/-
- C) 70000/- and 70000/-
- D) 70000/- and 80000/-
- E) None of these

Practice Questions

Answer. Option B

Practice Questions

12. A man went to the market with Rs.1200 in his pocket. He spent 33.33% on buying medicine. 5x% of the remaining on buying food items and he spent 50% of the remaining on travelling, at last, he left with him Rupees 360. Find 5x%

- A) 20%
- B) 15%
- C) 10%
- D) 25%
- E) 12 %

Practice Questions

Answer. Option C

Practice Questions

13. Rohit spent of his $100/19\%$ on food and $100/9\%$ of remaining part on medicine and donate Rs. 400 and finally $25/3\%$ of remaining part on travelling and save Rupees 5500. Find the difference between his expenditure on food and travelling.

- A) 100/-
- B) 200/-
- C) 300/-
- D) 400/-
- E) None of these

Practice Questions

Answer. Option A

Practice Questions

14. A's income is 40% less of B's income, and expenditure of A is 75% of B's expenditure. If A's income is 80% of B's expenditure. If the saving difference of A and B is Rupees 5100/- then find the value of saving of B.

- A) Rs. 6,500/-
- B) Rs. 7,500/-
- C) Rs. 8,000/-
- D) Rs. 6,000/-
- E) None of these

Practice Questions

Answer. Option D

Practice Questions

15. 20% of the soldiers of an army camp are killed in the battle. 35% of the remaining soldiers died of corona and 50/3% of the remaining soldiers were disabled. Now only 1757600 soldiers were left in the army camp. How many totally soldiers were there at the beginning?

- A) 556500
- B) 4456000
- C) 4056000
- D) 4546000
- E) None of these

Practice Questions

Answer. Option C

Practice Questions

16. The number of students who appeared from a school for the Madhyamik examination in three consecutive years is in the ratio 5 : 7 : 9 and 70%, 85.5%, and 96.5% of students at respective years were successful. What is the percentage of students who were successful during these three years taken together?

- A) 86.51%
- B) 6.52%
- C) 88.66%
- D) 88.55%
- E) 15 %

Practice Questions

Answer. Option B

Practice Questions

17. Two numbers are less than the third number by 40% and 50% respectively. By how much percent is the first number greater than the second number?

- A) 16.66%
- B) 10%
- C) 20%
- D) 15%
- E) None of these / इनमें से कोई नहीं

Practice Questions

Answer. Option C

Practice Questions

18. A has 40 pens and some pencils. He sells 60% of pencils and 70% of pens. Now he has total 48 items remained with him. The sold pencils are what percent of sold items?

- A) 71%**
- B) 60%**
- C) 72%**
- D) 66%**
- E) 80%**

Practice Questions

Answer. Option D