Percentage

Basics

$\frac{80}{100} \rightarrow 80\%$

$\frac{80}{100} \quad \frac{40}{50} \rightarrow \frac{21}{37.5}$

$2 \div \frac{160}{200} \rightarrow 80\%$

$2 \div \frac{80}{100} \rightarrow 80\%$

Percentage

- **Percent means parts per hundred. The word comes from the Latin phrase *per centum*, which means per hundred.**
- **Numbers expressed as a fraction of 100, is known as percentage**

Basic Calculations

1. 30% of X = 150 → 500
2. 30% of 150 = X → 45
3. X% of 150 = 30 → 20

$\frac{30}{100} \times x = 150$

$x = \frac{1500}{3}$

$= 500$

Basic Calculations

1. 30% of 250 → 75
2. 49% of 450 → 220.5
3. 150% of 262 → 393
4. 160% of 440 →

250 – 100%

25 – 10%

100% + 50%

262 + 131

225
- 4.5
220.5

Observation

460

1. 50% → 230

1. 10% → 46

1. 5% → 23

1. 1% → 4.6

100 % of x

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

Point No 1

X%= X/100

50% = 50/100 = 1/2

Fraction to Percentage equivalent

- 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%
- 1/11 = 9.09%
- 1/12 = 8.33%
- 1/13 = 7.69%
- 1/14 = 7.14%
- 1/15 = 6.67%

Basic Calculations

1. 11.11% of 81 → 9
2. 9.09% of 88 → 8
3. 16.67% of 96 → 16
4. 14.28% of 63 → 9

$\frac{11.11}{100} \times 81$

Basic Calculations

1. 28.56% of 77 = 22
2. 62.5% of 96 = 60
3. 27.27% of 176 =
4. 83.33% of 72 =

$12.5\% = \frac{1}{8}$

$5(12.5)\% = \frac{5}{8} = 62.5\%$

$\frac{3}{11} \times 176$

$\frac{5}{8} \times 96 = 60$

Point No 2

X% of y= y% of x

Basic Calculations

1. 21.6% of 750 =
2. 31.6% of 75 =
3. 56.67% of 180 =

Point No 3

$$\text{Percent Change} = \frac{\text{Amount of Change}}{\text{Original Amount}} \text{ x } 100\ \%$$

The price of sugar becomes ₹7.25 per kg after an increase of 45%. Find the original price of sugar.

₹5/kg

100 : 10 ⟶ 145%

145 : 10 of O.P = 7.25

$OP = \frac{7.25}{1.45} = 5$

1.45 × 5

$\frac{1.45 \times 10}{2}$

$\frac{14.5}{2} = 7.25$

Ashok's salary increased by 25% this year. By what percentage was his last year salary less, when compared to this year's salary?

A B

100 140

$\frac{40}{1}$

$\frac{2}{5}$ ← B is 40% more than A

A is ___% less than B

$\frac{2}{2+5} = \frac{2}{7}$

28.56%

26.1. $\frac{1}{4}$ $\frac{9}{6}$ more

20.1. $\frac{1}{1+4}$ $\frac{9}{a+b}$ less.

A, B and C have certain number of mangoes with them. B has 10% less mangoes than A and C has 20% less than A. By what percentage is the number of mangoes with B more than those with C?

A → 100

B → 90

C → 80

$$\frac{90-80}{80} \times 100$$

$$= 12.5\%$$

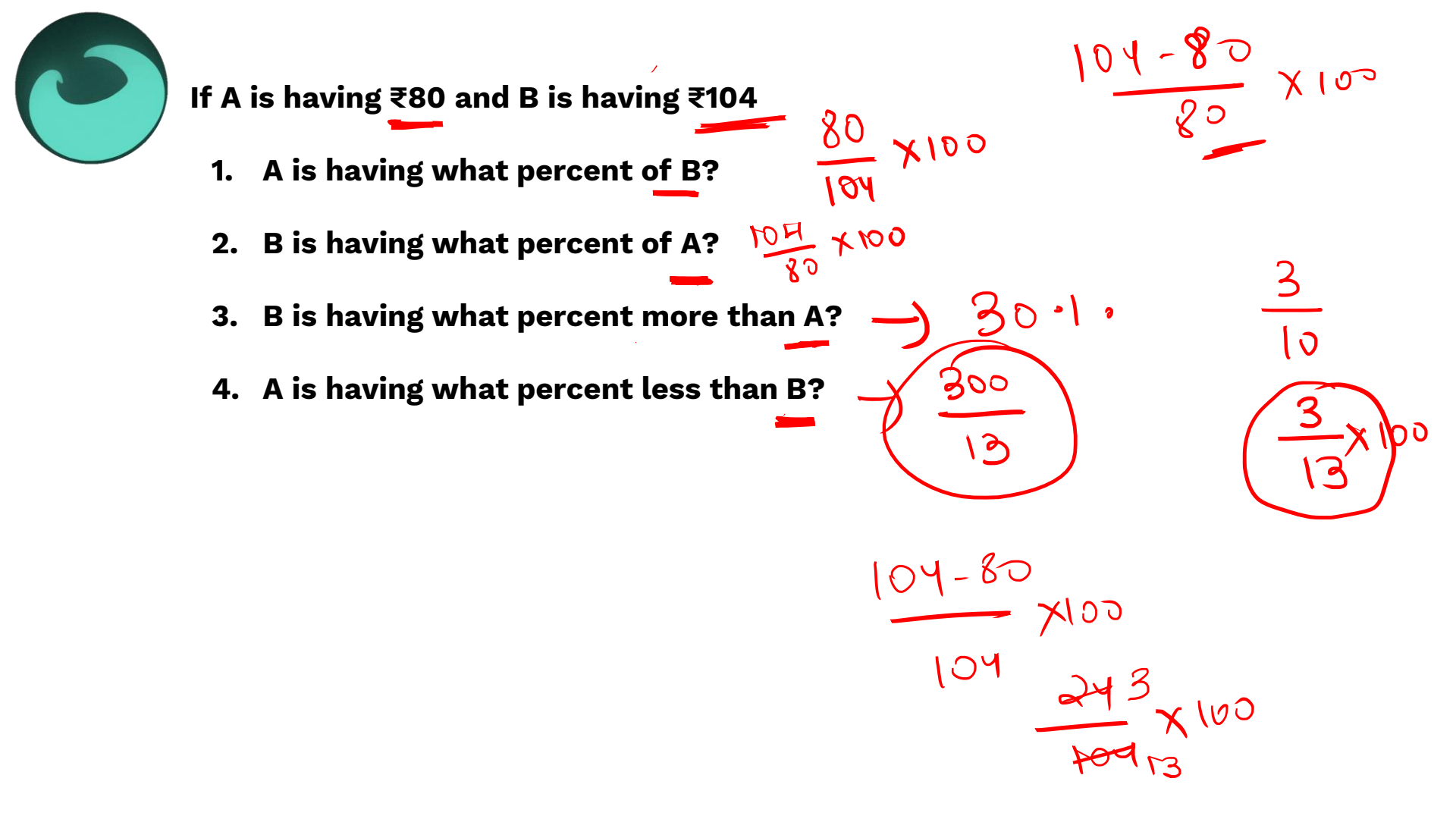
Point No 4

If a number X is $\frac{a}{b}$ more than Y then Y must $\frac{a}{a+b}$

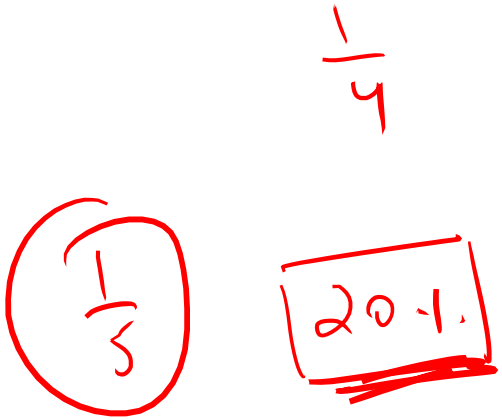
less than 1.

If A is having ₹80 and B is having ₹104

1. A is having what percent of B?
2. B is having what percent of A?
3. B is having what percent more than A?
4. A is having what percent less than B?



In an exam, Ram got 25% more marks than Laxman. By what percentage are the marks of Laxman less than that of Ram?



(23) → ₹1,00,000

24 → 10% ↑
25 → 10% ↑ } 21%.

Salary after 2nd hike ?

1.21 × 1,00,000

= 1,21,000

Point No 5

10↑ 10↑

Successive Percentage Change = X + Y + (XY/100)

10 + 10 + 100/100

= 21↑

In 2017, your salary was ₹10000. In 2018 your salary was increased by 10% and in 2019 increased by 20%. What was your salary after second increment?

10·1·

20·1

10+20+ $\frac{200}{100}$

= 32·1·

13200

22 → ₹ 10,000

23 10% ↑ → 11,000

24 10% ↓ → 11000

$$\begin{array}{r} 11000 \\ -\ 1100 \\ \hline 9900 \end{array}$$

$10 - 10 - \frac{100}{100}$

1% ↓

9900

= − 1% or 1% ↓

In 2017, your salary was ₹10000. In 2018 your salary was increased by 10% and in 2019 decreased by 20%. What was your salary after second change?

8800

If length of a rectangle is increased by 20% and breadth is increased by 30%. What will be the percentage change on area?

$$20 + 30 + \frac{600}{100}$$

$$= 56.1$$

In 2017, your salary was ₹10000. In 2018, 2019 & 2020 your salary was increased by 10%, 20% and 30% respectively. What is your salary after third increment?

2018 2019 2020

10000 → 11000 → 13200 → 17160

10000 × 71.6/100

71.6 × 100/100

7160

10 20 30

10 + 20 + 200/100 = 32

30 + 32 + 30×32/100

62 + 9.6 = 71.6

Point No 6

x ·1· T y ·1· T z ·1· T

Successive Percentage Change =

$$x + y + z + \frac{xy + yz + zx}{100} + \frac{xyz}{10,000}$$

10·1· 20·1· 30·1· 40·0

10+20+$\frac{200}{100}$ 70+$\frac{1200}{100}$

= 32·1· = 82·1·

114 + $\frac{32 \times 82}{100}$ =