

# GOUR INSTITUTE

PSC, Bank (Clerk/PO), SSC, Railways, S.I., Classes

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F - 12, City Bazar, Thatipur, Gwalior (M.P.) [www.gourinstitute.in](http://www.gourinstitute.in)

## PERCENTAGE

### INTRODUCTION

#### 1. Concept of Percentage:

By a certain percent, we mean that many hundredths.

Thus,  $x$  percent means  $x$  hundredths, written as  $x\%$ .

To express  $x\%$  as a fraction: We have,  $x\% = \frac{x}{100}$ .

$$\text{Thus, } 20\% = \frac{20}{100} = \frac{1}{5}.$$

To express  $\frac{a}{b}$  as a percent: We have,  $\frac{a}{b} = \left( \frac{a}{b} \times 100 \right)\%$ .

$$\text{Thus, } \frac{1}{4} = \left( \frac{1}{4} \times 100 \right)\% = 25\%.$$

#### 2. Percentage Increase/Decrease:

If the price of a commodity increases by  $R\%$ , then the reduction in consumption so as not to increase the expenditure is:

$$\left[ \frac{R}{(100 + R)} \times 100 \right]\%$$

If the price of a commodity decreases by  $R\%$ , then the increase in consumption so as not to decrease the expenditure is:

$$\left[ \frac{R}{(100 - R)} \times 100 \right]\%$$

#### 3. Results on Population:

Let the population of a town be  $P$  now and suppose it increases at the rate of  $R\%$  per annum, then:

$$1. \text{ Population after } n \text{ years} = P \left( 1 + \frac{R}{100} \right)^n$$

$$2. \text{ Population } n \text{ years ago} = \frac{P}{\left( 1 + \frac{R}{100} \right)^n}$$

#### 4. Results on Depreciation:

Let the present value of a machine be  $P$ . Suppose it depreciates at the rate of  $R\%$  per annum. Then:

$$1. \text{ Value of the machine after } n \text{ years} = P \left( 1 - \frac{R}{100} \right)^n$$

$$2. \text{ Value of the machine } n \text{ years ago} = \frac{P}{\left( 1 - \frac{R}{100} \right)^n}$$

$$3. \text{ If A is } R\% \text{ more than B, then B is less than A by } \left[ \frac{R}{(100 + R)} \times 100 \right]\%.$$

$$4. \text{ If A is } R\% \text{ less than B, then B is more than A by } \left[ \frac{R}{(100 - R)} \times 100 \right]\%.$$

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### EXERCISE

- If 96% population is 46080 of a town, then total population of the town is-  
(a) 45000 (b) 46000 (c) 47000 (d) 48000
- An ore contains 12% copper. How many kilograms of the ore are required to get 69 kg of copper-  
(a) 575 kg (b) 576 kg (c) 577 kg (d) 578 kg
- In an examination 65% of the total examinees passed. If the number of passed is 630, the total examinees were-  
(a) 1200 (b) 1400 (c) 1600 (d) 1800
- If price of rice increased by 60%, find how much percentage of new price must reduce so as not to increase expenditure-  
(a) 37.5% (b) 37 1/5% (c) 35 1/6% (d) 37 2/9%
- 0.08 is equal to –  
(a) 8/100% (b) 8/10% (c) 8% (d) none
- 5:4 is equal to –  
(a) 125% (b) 80% (c) 60% (d) none
- 0.05 = ? %  
(a) 50 (b) 5 (c) 0.05 (d) 0.5
- 22.5% is equal to –  
(a) 22.5 (b) 2.25 (c) 0.225 (d) 0.0225
- 63% of  $3\frac{4}{7}$  is-  
(a) 2.25 (b) 2.40 (c) 2.50 (d) 2.75
- $139370869 \div 199.54 + 15\%$  of 201 = ?  
(a) 150 (b) 90 (c) 80 (d) 100
- 40% of a number is 12.8. that number will be –  
(a) 42 (b) 32 (c) 36 (d) 51.2
- $8\frac{1}{3}\%$  of ? = 150  
(a) 1250 (b) 1800 (c) 1700 (d) 1400
- 12.5% of 192 = 50% of ?  
(a) 46 (b) 96 (c) 24 (d) none
- ? % of 130 = 11.7  
(a) 90 (b) 9 (c) 0.9 (d) 0.09
- ? % of 24 = 64  
(a) 133.33 (b) 37.5 (c) 2.66 (d) 266.66
- What percentage is 17 gm of 6.8 kg. –  
(a) 25 (b) 2.5 (c) 0/25 (d) 0.025
- What percentage is  $\frac{1}{35}$  of  $\frac{2}{7}$  –  
(a) 25 (b) 2.5 (c) 0.25 (d) 10

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## **ANSWER SHEET**

### **PERCENTAGE EXERCISE**

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
D	A	D	A	C	A	B	C	A	D	B	D	D	B	D	C	D