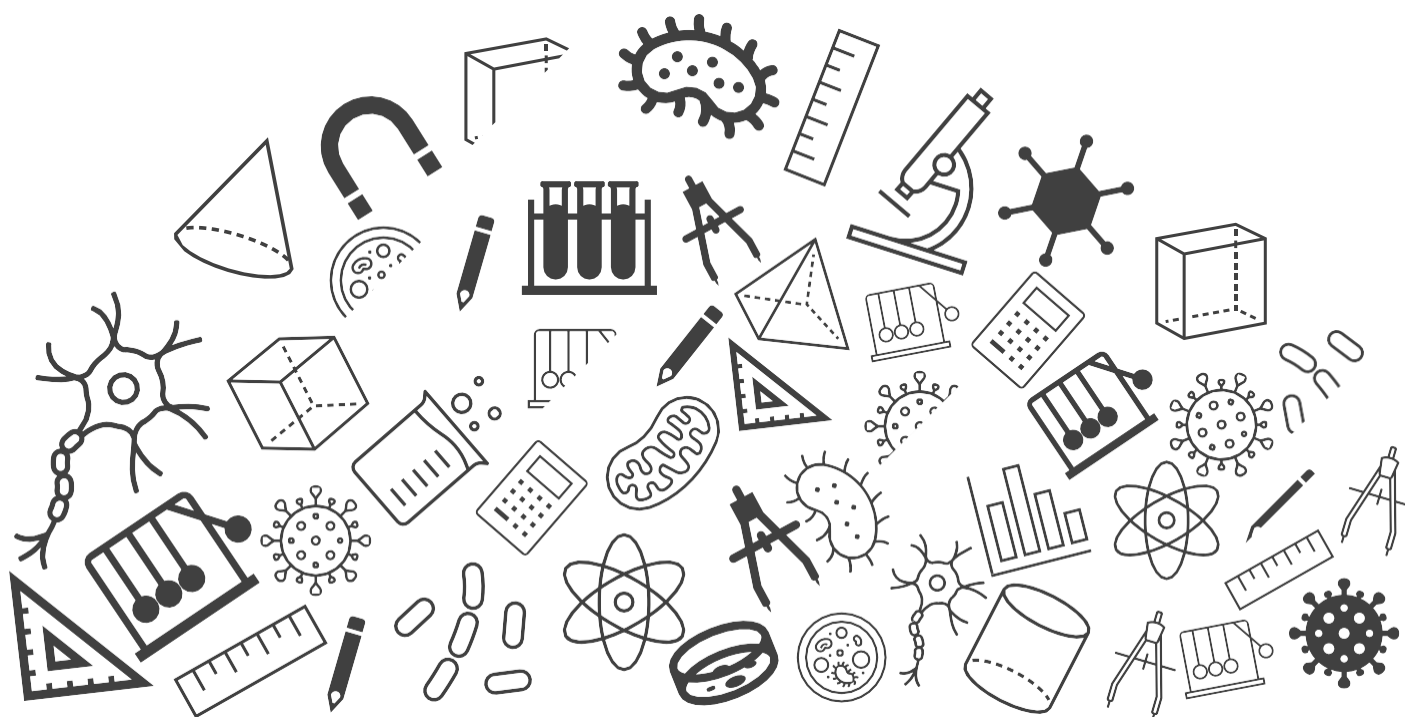




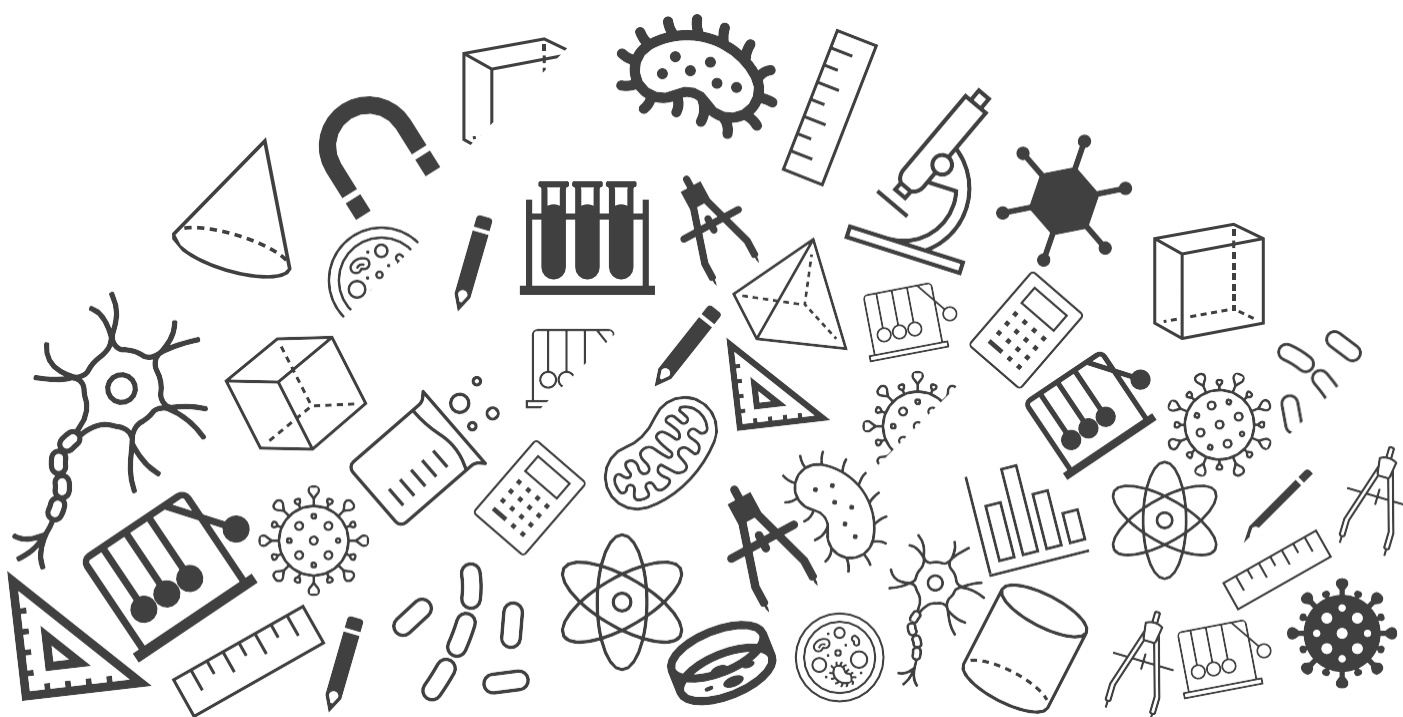
# **Grade 08: Maths**

## **Exam Important Questions**





# Comparing Quantities



## Comparing Quantities

1. I purchased a hair-dryer for Rs 5,400 including 8% VAT. Find the price before VAT was added.

[2 marks]

Original price without VAT

$$= \frac{100}{100+VAT} \times \text{Final Price}$$

[1 mark]

Original price without VAT

$$= \frac{100}{108} \times 5400 = 5000$$

[1 mark]

2. The value of a flat worth Rs. 500000 is depreciating at the rate of 10% per annum. In how many years will its value be reduced to Rs. 364500?

[3 marks]

We have,

Present value = Rs. 500000, Depreciated value = Rs 364500

Rate of depreciation = 10% per annum.

Let the depreciation period be of n years. Then,

$$364500 = 500000 \left(1 - \frac{10}{100}\right)^n$$

[1 mark]

$$\Rightarrow \frac{3645}{5000} = \left(\frac{9}{10}\right)^n$$

$$\Rightarrow \frac{729}{1000} = \left(\frac{9}{10}\right)^n \Rightarrow \left(\frac{9}{10}\right)^3 = \left(\frac{9}{10}\right)^n \Rightarrow n = 3$$

[2 marks]

Hence, in 3 years the value of the flat be reduced to Rs. 364500.

## Comparing Quantities

3. A sum of ₹ 69,300 is to be divided between two friends Mahesh and Suresh. They are 11 and 12 years old respectively. Their respective portions are compounded annually at 10% per annum. They will get the same amount when they are 24 years old. Find the share of Suresh.  
[5 marks]

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## Comparing Quantities

Let the share of Mahesh be  $x$ .

[0.5 mark]

Share of Suresh = ₹(69,300 -  $x$ )

[0.5 mark]

Amount received by Mahesh after 13 years (when he will turn 24) =  $x(1 + \frac{10}{100})^{13}$

[0.5 mark]

Amount received by Suresh after 12 years (when he will turn 24) =

$$(69,300 - x)(1 + \frac{10}{100})^{12}$$

[0.5 mark]

As per the question, both of them will get the same amount of money.

$$\text{So, } x(1 + \frac{10}{100})^{13} = (69,300 - x)(1 + \frac{10}{100})^{12}$$

$$\Rightarrow x(1 + \frac{10}{100}) = (69,300 - x)$$

$$\Rightarrow \frac{110x}{100} = 69,300 - x$$

$$\Rightarrow \frac{210x}{100} = 69,300$$

$$\Rightarrow x = ₹33,000$$

[2 marks]

So, the share of Mahesh = ₹33,000

[0.5 mark]

The share of Suresh = ₹(69,300 - 33,000) = ₹36,300

[0.5 mark]

## Comparing Quantities

4. A shopkeeper was selling all his items at 25% discount. During the off-season, he offered 30% discount over and above the existing discount. If Pragya bought a skirt which was marked for ₹1200, how much did she pay for it?  
[4 marks]

Marked price of the skirt = ₹1200

During normal season discount @ 25% =  $\frac{25}{100} \times 1200 = 25 \times 12 = ₹ 300$

Price of the skirt after discount = ₹1200 – ₹300 = ₹900

[2 marks]

In off season, the shopkeeper also offer discount @ 30% =  $\frac{30}{100} \times 900 = ₹ 270$

Price of skirt after 30% discount = ₹900 – ₹270 = ₹630

So, ₹630 paid by Pragya for the skirt.

[2 marks]

## Comparing Quantities

5. What will be the difference between simple and compound interests at the rate of 10% per annum on a sum of ₹ 1000 after 4 years?

Given: Principal,  $P = ₹ 1000$ , rate of interest,  $r = 10\%$  and time,  $t = 4$  years

$$\text{Simple interest, S.I} = \frac{P \times r \times t}{100}$$

$$= \frac{1000 \times 10 \times 4}{100}$$

$$= ₹ 400$$

[1 mark]

The amount at the end of  $n$  years when compounded annually,

$$A = P \left( 1 + \frac{R}{100} \right)^n$$

$$= 1000 \left( 1 + \frac{10}{100} \right)^4$$

$$= 1000 \left( \frac{11}{10} \right)^4$$

$$= 1000 \times \frac{11 \times 11 \times 11 \times 11}{10 \times 10 \times 10 \times 10}$$

$$= ₹ 1464.1$$

[2 marks]

$$\text{Compound interest, C.I.} = A - P$$

$$= ₹ (1464.1 - 1000)$$

$$= ₹ 464.1$$

[0.5 mark]

$$\therefore C.I. - S.I. = ₹ 64.10$$

[0.5 mark]

## Comparing Quantities

6. Kamala borrowed ₹26,400 from a bank to buy a scooter at the rate of 15% p.a. compounded yearly. What amount will she pay to clear the loan at the end of 2 years and 4 months?  
[4 marks]

Principal ( $P$ ) = ₹26,400  
rate of interest ( $R$ ) = 15%,  
Number of years ( $n$ ) = 2 years 4 months

Total amount after 2 years

$$\begin{aligned} &= P\left(1 + \frac{R}{100}\right)^n \\ &= ₹26,400 \times \left(1 + \frac{15}{100}\right)^2 \\ &= ₹26,400 \times (1.15)^2 \\ &= ₹34,914 \end{aligned}$$

[2 marks]

Now simple interest for 4 months on a principal of ₹34,914

$$\begin{aligned} &= ₹34,914 \times \frac{4}{12} \times \frac{15}{100} \\ &= ₹1745.7 \end{aligned}$$

[1 mark]

Hence, total amount = ₹34,914 + ₹1745.7 = ₹36659.7  
[1 mark]



## Comparing Quantities

7. Shyam deposited ₹7,500 in a bank for 6 months at the rate of 8% interest compounded quarterly. Find the amount he receives after 6 months.

[2 marks]

- ☐ A. ₹7,800
- ☒ B. ₹7,803
- ☐ C. ₹7,500
- ☐ D. ₹6,500

Here,  $P = ₹7,500$

$R = 8\%$

$n = 6 \text{ months} = \frac{6}{12} = \frac{1}{2} \text{ year}$

$$\begin{aligned} \text{Amount after 6 months} &= P\left(1 + \frac{R}{400}\right)^{4n} \\ &= ₹7,500\left(1 + \frac{8}{400}\right)^{4 \times \frac{1}{2}} \\ &= ₹7,500\left(\frac{51}{50}\right)^2 \\ &= ₹7,803 \end{aligned}$$

[2 marks]

## Comparing Quantities

8. The population of a town was 160000 three years ago. If it had increased by 3%, 2.5%, and 5% in the last three years, find the present population of the town.

[2 marks]

- ☒ A. 17336
- ☒ B. 177366
- ☒ C. 163456
- ☒ D. None of them

Let  $P$  be the present population of the town.

Then,

$$P = 160000 \times \left(1 + \frac{3}{100}\right) \times \left(1 + \frac{2.5}{100}\right) \times \left(1 + \frac{5}{100}\right)$$

$$\Rightarrow P = 160000 \times \left(\frac{103}{100}\right) \times \left(\frac{41}{40}\right) \times \left(\frac{21}{20}\right)$$

$$\Rightarrow P = 177366$$

[2 marks]