

CLASS 8

MATHS

EXTRA QUESTIONS

Extra Questions for Class 8 Maths Chapter 8: Fractions in Disguise (Percentages) – HOTS

Original HOTS-level (Higher Order Thinking Skills) practice questions for Class 8 Maths Chapter 8 (Fractions in Disguise — Percentages), genuinely harder than the textbook exercise, using fresh numbers not found in the NCERT book. Full worked solutions included. These Class 8 Mathematics Chapter 8 important questi...

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Class 8 Mathematics Chapter 8 – Solutions and Notes

Original HOTS-level (Higher Order Thinking Skills) practice questions for Class 8 Maths Chapter 8 (Fractions in Disguise — Percentages), genuinely harder than the textbook exercise, using fresh numbers not found in the NCERT book. Full worked solutions included. These Class 8 Mathematics Chapter 8 important questions are handy for last-minute exam practice.

Q1 (Reverse percentage). A jacket's price was reduced twice: first by 20%, then the reduced price by a further 10%, to reach ₹1,440. Find the original price.

Solution: $\text{Original} \times 0.8 \times 0.9 = 1440 \Rightarrow \text{Original} \times 0.72 = 1440 \Rightarrow \text{Original} = \text{₹}2,000$.

Q2 (General proof). Prove that increasing a quantity by $a\%$ and then decreasing the result by $a\%$ always gives a net decrease, and find that decrease in terms of a .

Solution: Overall factor $= (1+a/100)(1-a/100) = 1 - a^2/100^2$, which is always less than 1 for $a \neq 0$. So there's always a net decrease of $a^2/100$ percent. Example: $a = 20 \Rightarrow \text{decrease} = 400/100 = 4\%$.

Q3 (Compound growth, spot-the-error). A town's population is 20,00,000 and grows at 8% per year. A student claims that after 2 years, the population will be exactly $2 \times$ (first year's growth) more than the starting figure of 21,60,000. Check this claim with real numbers.

Solution: After 1 year: $20,00,000 \times 1.08 = 21,60,000$ (growth = 1,60,000). After 2 years: $21,60,000 \times 1.08 = 23,32,800$ (total growth over 2 years = 3,32,800). Twice the first year's growth = 3,20,000. Since $3,32,800 \neq 3,20,000$, **the student's claim is false** — compounding always adds a bit extra (here, 12,800 extra) beyond simply doubling the first year's growth.

Q4 (Assertion–Reason). Assertion (A): If the cost price of 8 articles equals the selling price of 5 articles, the profit percentage is 60%. Reason (R): Profit % is always calculated as $(\text{Profit} \div \text{CP}) \times 100$.

Solution: Let CP of 1 article = ₹1, so CP of 8 = ₹8 = SP of 5 $\Rightarrow$ SP of 1 = $8/5 = 1.6$. Profit per article = 0.6, so Profit% = 60%. A is true. R is also a true, correct general statement that explains A. **Both A and R are true, and R is the correct explanation of A.**

Q5 (Multi-step word problem). A trader marks goods 40% above cost price and allows two successive discounts of 10% and 5% during a sale. Find his actual profit percentage.

Solution: $\text{MP} = \text{CP} \times 1.40$. $\text{SP} = \text{MP} \times 0.90 \times 0.95 = \text{CP} \times 1.40 \times 0.855 = \text{CP} \times 1.197$. **Profit = 19.7%.**

Q6 (Reverse-engineering GST). The price printed on a bill after adding 18% GST is ₹11,800. Find the pre-GST price and the GST amount.

Solution: Pre-GST price $= 11800 \div 1.18 = \text{₹}10,000$. GST amount $= 11800 - 10000 = \text{₹}1,800$.

Q7 (General proof – order independence). Show that increasing a quantity first by $p\%$ then by $q\%$ gives the same final result as increasing it first by $q\%$ then by $p\%$, and find the single equivalent overall percentage increase.

Solution: Final value $= P(1+p/100)(1+q/100)$; since multiplication is commutative, the order doesn't matter. Expanding: overall increase $= p + q + pq/100$ percent.

Q8 (Compound vs simple interest crossover). At what whole number of years will the compound interest (annually compounded) on ₹15,000 at 10% p.a. first exceed the simple interest on the same sum and rate by more than ₹500?

Solution: SI at year $t = 1500t$. CI at year $t = 15000[(1.1)^t - 1]$. $t=3$: CI=4965, SI=4500, difference=465 (not yet over 500). $t=4$: CI≈6966.15, SI=6000, difference≈966. **The difference first exceeds ₹500 in year 4.**

Q9 (Combined percentage – area). The length and breadth of a rectangular field are both increased by 25%. By what percentage does the area increase? If the original area was 4,800 m², find the new area.

Solution: New area factor $= 1.25 \times 1.25 = 1.5625$, an increase of **56.25%**. New area $= 4800 \times 1.5625 = 7,500 \text{ m}^2$.

Q10 (Chained discount word problem). A shopkeeper wants an effective discount of 30% on a ₹2,000 item using two successive discounts, the first being 20%. Find the required second discount, and the final selling price.

Solution: Overall factor needed = 0.70. First discount factor = 0.80. Second factor = $0.70 \div 0.80 = 0.875$, so the second discount = **12.5%**. Final SP = $2000 \times 0.70 = \text{₹}1,400$.

Class 8 Mathematics Chapter 8 – Solutions and Notes

For complete step-by-step answers and a quick summary, check the [Class 8 Mathematics Chapter 8 Solutions](#) and [Class 8 Mathematics Chapter 8 Revision Notes](#).

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