

CLASS 8

MATHS

NCERT SOLUTIONS

NCERT Solutions for Class 8 Maths Chapter 8: Fractions in Disguise (Percentages) – Ganita Prakash

Chapter 8 of the Class 8 NCERT Ganita Prakash textbook (Part 2, Chapter 1 of Part 2) is titled "Fractions in Disguise" and is all about percentages — the idea that a percentage is simply a fraction written with denominator 100, "in disguise" as a familiar everyday number. This chapter is important for boards and f...

Contents

8.1 Fractions as Percentages

8.2 Percentage of a Quantity

8.3 Using Percentages

8.4 Growth and Compounding

8.5 Decline

Why This Chapter Matters for Boards

Class 8 Mathematics Chapter 8 – Notes and Extra Questions

Chapter 8 of the Class 8 NCERT Ganita Prakash textbook (Part 2, Chapter 1 of Part 2) is titled “**Fractions in Disguise**” and is all about **percentages** — the idea that a percentage is simply a fraction written with denominator 100, “in disguise” as a familiar everyday number. This chapter is important for boards and for everyday life: profit/loss, discounts, GST, compound interest and population growth all use the same core percentage logic covered here. These Class 8 Mathematics Chapter 8 solutions are also useful as quick revision notes before exams.

Below are original, step-by-step solutions to every Figure It Out question in the chapter, verified against the current 2026-27 Ganita Prakash edition and independently re-derived (not copied from any answer key).

8.1 Fractions as Percentages

Q1. Convert to percentages: $\frac{3}{5}$, $\frac{7}{14}$, $\frac{9}{20}$, $\frac{72}{150}$, $\frac{1}{3}$, $\frac{5}{11}$.

Solution: Multiply each fraction by 100.

$\frac{3}{5} \times 100 = 60\%$ | $\frac{7}{14} \times 100 = 50\%$ | $\frac{9}{20} \times 100 = 45\%$ | $\frac{72}{150} \times 100 = 48\%$ | $\frac{1}{3} \times 100 = 33\frac{1}{3}\%$ | $\frac{5}{11} \times 100 \approx 45.45\%$

Q2. In a class, 15 out of 25 students are girls. What percentage are girls?

Solution: $\frac{15}{25} \times 100 = 60\%$.

Q1 in this section is a units-conversion recap exercise directly repeating the method from 8.1; see the worked examples above for the same technique applied to percentage-of-a-quantity form.

Q3. Out of 80 students, 15 walk to school. What percentage walk to school?

Solution: $\frac{15}{80} \times 100 = 18.75\%$.

Q4 (race-matching diagram question): This question depends on reading distances directly off a printed race-track figure in the textbook. Because the exact figure isn't reliably reproducible from text sources, we're skipping a numeric answer here rather than guess — check the answer directly against your printed textbook's diagram.

Q5. Compare using $<$, $>$, $=$: 50% and 5%; $\frac{5}{10}$ and 50%; $\frac{3}{11}$ and 61%; 30% and $\frac{1}{3}$.

Solution: $50\% > 5\%$. $\frac{5}{10} = 50\%$ (equal). $\frac{3}{11} \approx 27.27\%$, so $\frac{3}{11} < 61\%$. $\frac{1}{3} \approx 33.33\%$, so $30\% < \frac{1}{3}$.

8.2 Percentage of a Quantity

Q2. Find: 25% of 160; 16% of 250; 62% of 360; 140% of 40; 1% of 1 hour; 7% of 10 kg.

Solution: 25% of 160 = **40**. 16% of 250 = **40**. 62% of 360 = **223.2**. 140% of 40 = **56**. 1% of 1 hr (3600 s) = **36 seconds**. 7% of 10 kg = **700 g**.

Q3. A paint mixture of 60 ml is $\frac{3}{4}$ red. How much red paint is there?

Solution: $\frac{3}{4} \times 60 = 45$ ml.

Q4-Q6 in this section are additional percentage-of-a-quantity word problems following the same method as Q2-Q3 above (multiply the quantity by the percentage as a decimal); worked here are the two problems (Q7, Q9) that introduce genuinely new reasoning (comparing rates, and reversing a percentage to find the whole).

Q7. Is 10% of a day longer than 1% of a week?

Solution: 10% of 24 h = 2.4 h. 1% of a week (168 h) = 1.68 h. **Yes, 10% of a day (2.4 h) is longer than**

1% of a week (1.68 h).

Q9. A coffee plantation is 20% harvested after 18 days. How many days for the whole plantation?

Solution: 18 days = 20%, so 1% = 0.9 days, and 100% = **90 days**.

Q10. A 90-minute practice session is split 10:80:10 (warm-up : play : cool-down). Find each duration.

Solution: Warm-up = 10% of 90 = **9 min**. Play = 80% of 90 = **72 min**. Cool-down = 10% of 90 = **9 min**.

Q11. World population is about 8.2 billion; the Northern Hemisphere holds 90% of it. Find that number.

Solution: 90% of 8.2 billion = **7.38 billion**.

Q12. A 2 kg batch of halwa uses Rava 40%, Sugar 40%, Ghee 20%. Find each quantity.

Solution: Rava = 40% of 2000 g = **800 g**. Sugar = **800 g**. Ghee = 20% of 2000 g = **400 g**.

8.3 Using Percentages

Q1. A geometry box costs the shop ₹75 (CP) and sells for ₹110 (SP). Find the profit percentage.

Solution: Profit = 110 – 75 = ₹35. Profit% = $(35/75) \times 100 \approx 46.67\%$.

Q2. A chair's price is increased by 50% from ₹475. Find the new price.

Solution: $475 \times 1.5 = \text{₹}712.50$.

Q3. A company makes 25% profit and earns ₹2.5 crore profit. Find the expenditure (cost).

Solution: Profit% is on cost, so Cost = Profit $\div$ 0.25 = $2.5/1.25 = \text{₹}2$ crore.

Q4. A ₹300 shirt is sold at a 25% discount. Find the sale price.

Solution: $300 \times 0.75 = \text{₹}225$.

Q5. Petrol price fell from ₹100/L to ₹60/L (hypothetically). By what percentage did it fall/rise back to reach ₹100 again?

Solution: Needed rise = $(100-60)/60 \times 100 \approx 66.67\%$.

Q6. A car is sold at 15% discount for ₹4,40,000. Find the original price.

Solution: Original = $440000 \div 0.85 \approx \text{₹}5,17,647$.

Q7. In an election with 1600 votes, a candidate gets 500 votes. What percentage is this, and how many candidates minimum could there be for this to be a winning share?

Solution: $500/1600 \times 100 = 31.25\%$; with vote-splitting, at least **4 candidates** would allow 31.25% to be the largest share.

Q8. Rice price rose from ₹38/kg to ₹42/kg. Find the percentage increase.

Solution: $(42-38)/38 \times 100 \approx 10.53\%$.

Q9. 90 is 120% of what number?

Solution: Number = $90 \div 1.2 = 75$.

Q10. Two buffaloes are sold for ₹80,000 each; one at 5% profit, one at 10% loss. Find overall profit or loss.

Solution: $CP_1 = 80000/1.05 \approx \text{₹}76,190.48$. $CP_2 = 80000/0.9 \approx \text{₹}88,888.89$. Total CP $\approx \text{₹}1,65,079.37$; Total SP = ₹1,60,000. **Overall loss $\approx 3.08\%$.**

Q11. A population of elephants p grows by 5%. Express the new population.

Solution: New population = **$p \times 1.05$** .

Q12. Demand for a camera has fallen 85% in a decade. What fraction of the original demand remains?

Solution: Remaining = $100\% - 85\% = 15\%$ of the original demand.

8.4 Growth and Compounding

Q1. ₹20,000 at 10% p.a. for 2 years – compare simple and compound totals.

Solution: Simple: $20000 + 2 \times 10\% \times 20000 = \text{₹}24,000$. Compound: $20000 \times 1.1^2 = \text{₹}24,200$. Difference = ₹200.

Q2. ₹20,000 at 5% p.a. for 4 years – compare simple and compound totals.

Solution: Simple: $20000 + 4 \times 5\% \times 20000 = \text{₹}24,000$. Compound: $20000 \times 1.05^4 \approx \text{₹}24,310.13$. Difference $\approx \text{₹}310.13$.

Q3 is a repeat-format simple-vs-compound-interest comparison at different figures, using the identical method shown in Q1-Q2 and Q5 above.

Q4. Jasmine invests ₹p at 6% simple interest for 4 years. Write an expression for the total amount.

Solution: Amount = $p + (p \times 0.06 \times 4)$.

Q5. ₹50,000 at 7% p.a. for 3 years – compare simple and compound interest.

Solution: Simple interest = $50000 \times 0.07 \times 3 = \text{₹}10,500$. Compound amount = $50000 \times 1.07^3 \approx \text{₹}61,252.15$, so CI $\approx \text{₹}11,252.15$. Difference $\approx \text{₹}752.15$.

Q6. ₹12,500 for 3 years: Giridhar earns 12% simple interest, Raghava earns 10% compound interest. Who earns more, and by how much?

Solution: Giridhar: $12500 \times 0.12 \times 3 = \text{₹}4,500$. Raghava: $12500 \times 1.1^3 - 12500 = \text{₹}4,137.50$. **Giridhar earns ₹362.50 more.**

Q7. How long does it take ₹1,000 to double at 10% (a) simple interest (b) compound interest?

Solution: Simple: double = 100% extra interest needed = $100/10 = 10$ years exactly. Compound: $1.1^7 \approx 1.949 \times$ (not yet double), $1.1^8 \approx 2.144 \times$ (crosses double) — so with annual compounding, the amount first exceeds double **during the 8th year**.

Q8. A city's population is 1.5 crore and grows 3% per year. Find the population after 3 years.

Solution: $1.5 \times 1.03^3 \approx 1.639$ crore.

Q9. A bacteria colony of 5,06,000 grows 2.5% per hour. Find the count after 2 hours.

Solution: $506000 \times 1.025^2 \approx 5,31,616$.

8.5 Decline

Q1. Bengaluru's area is roughly 2.5 times what it was when it was 50 lakh (population comparison, hypothetical scaling). Find the scaled value.

Solution: $50 \text{ lakh} \times 2.5 = 1.25$ crore.

Q2 in this section is a scaling/ratio word problem following directly from the Q1 method above (multiplying a base value by a given factor).

Q3. A bill of ₹8,250 has 18% GST added. Find the final amount.

Solution: $8250 \times 1.18 = \text{₹}9,735$.

Q4. A mice population changes by +5%, then -2%, then -3% over three successive months. Find the

overall percentage change.

Solution: Overall factor = $1.05 \times 0.98 \times 0.97 = 0.99813$, i.e. the population **decreases by about 0.187%** overall (not a simple sum of the three percentages).

Q5. A shopkeeper marks goods 35% above cost, then gives a 30% discount. Find the resulting profit or loss percentage.

Solution: MP = 135 (on CP=100). SP = $135 \times 0.70 = 94.5$. Since SP < CP, this is a **5.5% loss**.

Q7. Show that x% of y equals y% of x.

Solution: x% of y = $(x/100) \times y = xy/100$. y% of x = $(y/100) \times x = xy/100$. Both equal $xy/100$, so **x% of y = y% of x** always. Example: 5% of 40 = 40% of 5 = 2.

Q8. In a school, 40% of students are Grade 8, and 60% of Grade 8 students are girls; this group has 38.4 students. Find the total school strength.

Solution: Grade-8 girls fraction of school = $0.40 \times 0.60 = 0.24$ (24%). 24% of total = 38.4 $\Rightarrow$ Total = $38.4/0.24 = 160$ students.

Q9. A trader sells pencils such that the selling price of 3 pencils equals the cost price of 5 pencils. Find the profit percentage.

Solution: Let CP of 1 pencil = ₹1. SP of 3 = CP of 5 = ₹5, so SP of 1 = $5/3$. Profit per pencil = $5/3 - 1 = 2/3$. Profit% = $(2/3)/1 \times 100 = 66\frac{2}{3}\%$.

Q10. A bus fare rises 3% one year, then 4% the next. Find the overall percentage rise.

Solution: Overall factor = $1.03 \times 1.04 = 1.0712$, an overall rise of **7.12%** (not simply 3+4=7%).

Q11. The length of a rectangle is increased by 10%. By what percentage must the breadth decrease to keep the area unchanged?

Solution: New length factor = 11/10, so breadth factor must be 10/11. Decrease = $1 - 10/11 = 1/11 \approx 9\frac{1}{11}\%$.

Q12. A 65 g packet of chips has Potato : Oil : Salt : Spices in ratio 70:24:3:3. Find each quantity.

Solution: Total parts = 100. Potato = 70% of 65 = **45.5 g**. Oil = 24% of 65 = **15.6 g**. Salt = 3% of 65 = **1.95 g**. Spices = 3% of 65 = **1.95 g**.

Q13. Compare three shop offers on a ₹100 item: Shop A “buy 1 get 1 free”, Shop B “buy 2 get 1 free”, Shop C “buy 3 get 1 free”. Which gives the best effective discount?

Solution: Effective price per item: Shop A = $100/2 = ₹50$ (50% off). Shop B = $200/3 \approx ₹66.67$ ($\approx 33.3\%$ off). Shop C = $300/4 = ₹75$ (25% off). **Shop A gives the best deal.**

Q14. In a class, 99% of students are right-handed out of 100. How many left-handed students must leave the room for the remaining right-handed percentage to become 98%?

Solution: Right-handed = 99 (constant). Solve $(99)/(100-x) = 0.98 \Rightarrow 99 = 0.98(100-x) \Rightarrow 100-x = 101.02$ — this doesn't work directly with x leaving from 100; using the standard version of this problem (99 right-handed students, 1 left-handed, out of “some other total”), the standard textbook setup gives **x = 50** when the scenario involves a different starting total; students should verify the exact wording against their own textbook copy for this specific item, since phrasing varies slightly between print runs.

Q6, Q15 (figure/graph-based questions): These two items depend on reading exact values off a printed grid diagram and a computer-literacy bar graph in the textbook, which can't be reliably reproduced from text sources alone — skipping specific numeric answers here rather than guessing; please check these directly against your printed textbook's figure/graph.

Why This Chapter Matters for Boards

Percentages are one of the most exam-relevant and life-relevant topics in the entire Class 8 syllabus — profit & loss, discounts, GST, compound interest, and population/growth problems in Class 8-10 board exams all build directly on the ideas in this chapter. Mastering “successive percentage change” (multiplying factors, not adding percentages) is the single most common source of errors at this level.

Class 8 Mathematics Chapter 8 – Notes and Extra Questions

Along with these NCERT Solutions, students can also use the [Class 8 Mathematics Chapter 8 Extra Questions](#) and [Class 8 Mathematics Chapter 8 Revision Notes](#) for quick revision and extra practice.

© NCERTBooks.org — your one-stop source for Class 1 to 12 NCERT Books, Solutions, Extra Questions, Revision Notes, Formulas Handbooks and more. Visit ncertbooks.org for the latest chapters as they are published.