

CLASS 8

MATHS

NCERT SOLUTIONS

NCERT Solutions for Class 8 Maths Chapter 10: Proportional Reasoning 2 – Ganita Prakash

Chapter 10 of the Class 8 NCERT Ganita Prakash textbook (Part 2, Chapter 3) is titled "Proportional Reasoning 2". Building on Chapter 7's introduction to ratio and proportion, this chapter covers dividing a quantity in a given ratio, ratios with more than two terms, pie charts, and inverse proportion (as opposed to ...

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Chapter 10 of the Class 8 NCERT Ganita Prakash textbook (Part 2, Chapter 3) is titled “**Proportional Reasoning 2**”. Building on Chapter 7’s introduction to ratio and proportion, this chapter covers dividing a quantity in a given ratio, ratios with more than two terms, pie charts, and inverse proportion (as opposed to the direct proportion emphasised earlier). These Class 8 Mathematics Chapter 10 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).

10.1–10.4 Proportionality Recap, Ratios in Maps, Ratios with More Than 2 Terms & Dividing a Whole in a Given Ratio

Q1. A cricket coach splits a 150-minute practice session into warm-up/cool-down : batting : bowling : fielding in the ratio 3 : 4 : 3 : 5. Find the time spent on each activity.

Solution: Total parts = $3+4+3+5 = 15$. Warm-up/cool-down = $3/15 \times 150 = 30$ min. Batting = $4/15 \times 150 = 40$ min. Bowling = $3/15 \times 150 = 30$ min. Fielding = $5/15 \times 150 = 50$ min. Check: $30+40+30+50 = 150$. ✓

Q2. A library has Odiya : Hindi : English books in the ratio 3 : 2 : 1. If there are 288 Odiya books, find the number of Hindi and English books.

Solution: Total ratio parts = 6. Odiya = $3/6$ of total = 288 $\Rightarrow$ total = 576. Hindi = $2/6 \times 576 = 192$. English = $1/6 \times 576 = 96$.

Q3. A collection of 100 coins has ₹10 : ₹5 : ₹2 : ₹1 coins in the ratio 4 : 3 : 2 : 1. Find the total value of the coins.

Solution: Total parts = 10. ₹10 coins = $4/10 \times 100 = 40$. ₹5 coins = $3/10 \times 100 = 30$. ₹2 coins = $2/10 \times 100 = 20$. ₹1 coins = $1/10 \times 100 = 10$. Total value = $40 \times 10 + 30 \times 5 + 20 \times 2 + 10 \times 1 = 400+150+40+10 = ₹600$.

(Note: the count of ₹2 coins is 20, not 30 — a figure that appears mistyped in some other write-ups of this question; the final total of ₹600 only works out correctly with 20 ₹2-coins, and $40+30+20+10 = 100$ confirms this.)

Q4. Construct triangles with side lengths in the ratio 3 : 4 : 5. Will all such triangles be congruent to each other? Why or why not?

Solution: No. Triangles with sides (3,4,5), (6,8,10), (9,12,15) cm all share the ratio 3:4:5 (they are *similar*, same shape) but are different actual sizes — congruence requires identical size as well as shape, so they are not congruent.

Q5. Can a triangle be constructed with side lengths in the ratio 1 : 3 : 5? Why or why not?

Solution: No. By the triangle inequality, the sum of any two sides must exceed the third. Here $1+3 = 4$, which is *not* greater than 5, so no such triangle can exist.

10.5 A Slice of the Pie (Pie Charts)

Q1. Of 360 people surveyed on favourite season, 90 liked summer, 120 liked rainy, and the rest liked winter. Find the pie-chart angle for each.

Solution: Winter = $360 - (90+120) = 150$ people. Angle for summer = $90/360 \times 360^\circ = 90^\circ$. Rainy = $120/360 \times 360^\circ = 120^\circ$. Winter = $150/360 \times 360^\circ = 150^\circ$. Check: $90+120+150 = 360^\circ$. ✓

Q2. Draw a pie chart for favourite TV channel type: Entertainment 50%, Sports 25%, News 15%, Information 10%.

Solution: Entertainment = 50% of $360^\circ = 180^\circ$. Sports = 25% = 90° . News = 15% = 54° . Information = 10% = 36° . Check: $180+90+54+36 = 360^\circ$. ✓

Q3. Prepare a pie chart for favourite subjects using your own class's survey data (each student picks one subject).

Solution: This is an open, collect-your-own-data activity, so there's no single fixed answer — but here is a worked example with sample counts, showing the method: suppose a class of 60 students splits as Language 4, Arts Education 6, Vocational Education 9, Social Science 3, Physical Education 10, Maths 12, Science 16. Angle for each = $(\text{count}/60) \times 360^\circ$: Language = 24° , Arts = 36° , Vocational = 54° , Social Science = 18° , Physical Education = 60° , Maths = 72° , Science = 96° . Check: $24+36+54+18+60+72+96 = 360^\circ$. ✓ Use your own class's real counts in place of these sample numbers.

10.6 Inverse Proportions

Q1. Which of these x,y pairs are in inverse proportion (i.e. $xy = \text{constant}$ for every pair)?

Solution: Check each set by computing every $x \times y$ product: **Set (i)** (40,20),(80,10),(25,32),(16,50): products are 800, 800, 800, 800 — all equal, so **inverse proportion**. **Set (ii)** (40,20),(80,10),(25,12.5),(16,8): products are 800, 800, 312.5, 128 — not all equal, so **not** inverse proportion. **Set (iii)** (30,15),(90,5),(150,3),(10,45): products are 450, 450, 450, 450 — all equal, so **inverse proportion**.

Q2. Fill in the missing values in a table where x and y are in inverse proportion.

Solution: This question depends on a printed table of specific x,y values from the textbook; the method is to find the constant $k = x \times y$ from any complete pair, then use $y = k/x$ (or $x = k/y$) to fill in every missing entry. Apply this method directly to your textbook's table.

Q1 (Identifying inverse proportion in real situations). Which of the following are in inverse proportion?

(i) taps filling a tank vs. time taken (ii) painters hired vs. days to paint a wall (iii) distance a car can travel vs. petrol in the tank (iv) cyclist's speed vs. time for a fixed route (v) length of cloth bought vs. price paid at a fixed rate (vi) pages in a book vs. time to read at a fixed reading speed.

Solution: Inverse proportion: (i) more taps $\Rightarrow$ less time. (ii) more painters $\Rightarrow$ fewer days. (iii) as distance travelled goes up, remaining petrol goes down. (iv) higher speed $\Rightarrow$ less time. **Direct proportion (not inverse):** (v) more cloth $\Rightarrow$ more price. (vi) more pages $\Rightarrow$ more time.

Q2. If 24 pencils cost ₹120, find the cost of 20 such pencils.

Solution: This is direct proportion (more pencils, more cost). Cost per pencil = $120/24 = ₹5$. Cost of 20 pencils = $20 \times 5 = ₹100$.

Q3. A water tank supplies 20 families for 6 days. If 10 more families move in, how long will the water last? State your assumptions.

Solution: Assumptions: every family uses the same amount of water per day, and no water is added to the tank. Families and days are inversely proportional: $20 \times 6 = 30 \times x \Rightarrow x = 4$ **days**.

Q4. Match average daily sleep hours to different living beings, choosing from: 15, 2.5, 20, 8, 3.5, 13, 10.5, 18.

Solution: A commonly used matching (values may vary slightly by source): giraffe ≈ 2.5 h, elephant ≈ 3.5 h, human (child) ≈ 8 h, dog ≈ 10.5 h, cat ≈ 13 h, squirrel ≈ 15 h, snake ≈ 18 h, bat ≈ 20 h.

Q5. A pie chart shows how children travel to school. (i) What's the most common mode? (ii) What fraction travel by car (angle 30°)? (iii) If 18 children travel by car, how many took part in the survey? (iv) Which two modes have equal numbers of children?

Solution: (i) The largest sector (120°) corresponds to **Bus**. (ii) Fraction by car = $30^\circ/360^\circ = 1/12$. (iii) If 18

children = $\frac{1}{12}$ of the total, total = $18 \times 12 = \mathbf{216 \text{ children}}$. (iv) Cycle and two-wheeler (each 60° in this chart) have **equal** numbers of children.

Q6. Three workers paint a fence in 4 days. If one more worker joins, how many days will it take? State your assumptions.

Solution: Assumptions: all workers work at the same rate, for the same hours each day. Workers and days are inversely proportional: $3 \times 4 = 4 \times x \Rightarrow x = \mathbf{3 \text{ days}}$.

Q7. A pump fills 2 identical tanks in 6 hours. How long to fill 5 such tanks with the same pump?

Solution: Direct proportion: $\frac{6}{2} = \frac{x}{5} \Rightarrow x = \mathbf{15 \text{ hours}}$.

Q8. Chairs are arranged in 25 rows of 12 chairs each. If rearranged with 20 chairs per row, how many rows result?

Solution: Inverse proportion: $25 \times 12 = x \times 20 \Rightarrow x = \mathbf{15 \text{ rows}}$.

Q9. A school has 8 periods of 45 minutes each per day. If it switches to 9 periods (same total school time), how long is each period?

Solution: Inverse proportion: $8 \times 45 = 9 \times x \Rightarrow x = \mathbf{40 \text{ minutes}}$.

Q10. A small pump fills a tank in 3 hours; a large pump fills it in 2 hours. How long will both pumps together take?

Solution: Let the tank hold x litres. Small pump's rate = $\frac{x}{3}$ per hour; large pump's rate = $\frac{x}{2}$ per hour. Combined rate = $\frac{x}{3} + \frac{x}{2} = \frac{5x}{6}$ per hour. Time = $x \div (\frac{5x}{6}) = \mathbf{\frac{6}{5} \text{ hours} = 1\frac{1}{5} \text{ hours} (1 \text{ hour } 12 \text{ minutes})}$.

Q11. A factory needs 42 machines to make a batch of toys in 63 days. How many machines are needed to make the same batch in 54 days?

Solution: Inverse proportion: $42 \times 63 = x \times 54 \Rightarrow x = \frac{2646}{54} = \mathbf{49 \text{ machines}}$.

Q12. A car takes 2 hours to reach a destination at 60 km/h. How long will it take at 80 km/h?

Solution: Distance = $60 \times 2 = 120 \text{ km}$ (fixed). Inverse proportion between speed and time: $2 \times 60 = t \times 80 \Rightarrow t = \mathbf{1.5 \text{ hours}}$.

Why This Chapter Matters for Boards

Inverse proportion is a frequent source of exam errors because students often default to direct-proportion (cross-multiplication) reasoning without checking whether a relationship is actually direct or inverse. This chapter's product-based test ($x_1y_1 = x_2y_2 = \dots = \text{constant}$) is the reliable way to check, and pie charts here connect directly to data-handling and statistics questions seen through Class 8-10.

Class 8 Mathematics Chapter 10 – Notes and Extra Questions

Along with these NCERT Solutions, students can also use the [Class 8 Mathematics Chapter 10 Extra Questions](#) and [Class 8 Mathematics Chapter 10 Revision Notes](#) for quick revision and extra practice.