

NCERT Solutions for Class 10 Maths Chapter 3 Ex 3.7 | Updated 2026-27

⚡ Quick Revision Box — Chapter 3 Ex 3.7

- **Chapter:** 3 — Pair of Linear Equations in Two Variables
- **Exercise:** 3.7 (Last exercise — all word problems / application questions)
- **Total Questions:** 8 (all application-based)
- **Key Skill:** Translate real-life situations into a pair of linear equations and solve
- **Methods Used:** Substitution, Elimination, Cross-Multiplication
- **Important Property:** Opposite angles of a cyclic quadrilateral are supplementary (sum = 180°)
- **Angle Sum:** Sum of angles in a triangle = 180°
- **Board Weightage:** Chapter 3 carries significant marks in CBSE Class 10 board exams 2026-27

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The **NCERT Solutions for Class 10 Maths Chapter 3 Ex 3.7** cover all 8 word problems from the final exercise of the Pair of Linear Equations in Two Variables chapter, updated for the **2026-27** CBSE board exam syllabus. You can find the complete [NCERT Solutions for Class 10](#) on our website. These solutions help you master the skill of forming and solving pairs of linear equations from real-life situations — a skill that is directly tested in board exams. Download the free PDF or study online with step-by-step working for every question. The [NCERT official textbook](#) is the primary reference for all solutions on this page.

Exercise 3.7 is the most application-heavy exercise in Chapter 3. It tests whether you can convert word problems — involving ages, money, trains, students, triangles, and quadrilaterals — into linear equations and solve them accurately. Browse all our [NCERT Solutions](#) for every class and subject.

Chapter Overview — Pair of Linear Equations in Two Variables

Chapter 3 of the Class 10 NCERT Maths textbook (Mathematics — Textbook for Class X) deals with **Pair of Linear Equations in Two Variables**. The chapter teaches you how to represent two linear equations graphically and solve them algebraically using substitution, elimination, and cross-multiplication methods.

Exercise 3.7 is the culminating exercise of the chapter. Every question here is a word problem — you must read carefully, define variables, form two equations, and solve. This

mirrors exactly how CBSE board exam questions are framed in the 3-mark and 5-mark sections.

Field	Details
Class	10
Subject	Mathematics
Chapter	3 — Pair of Linear Equations in Two Variables
Exercise	3.7
Number of Questions	8
Difficulty Level	Medium to Hard (all word problems)
Academic Year	2026-27
Board	CBSE

Key Concepts and Methods for Exercise 3.7

Before solving Exercise 3.7, make sure you are comfortable with these core ideas:

Forming Linear Equations from Word Problems

The most important skill in Ex 3.7 is translating English sentences into algebraic equations. Always define your variables clearly at the start (e.g., "Let Ani's age = x years and Biju's age = y years"). Every condition in the problem gives you one equation.

Elimination Method

Multiply one or both equations by suitable constants so that the coefficient of one variable becomes equal in both equations. Then add or subtract to eliminate that variable. This method works fastest for most questions in Ex 3.7.

Substitution Method

Express one variable in terms of the other from one equation, then substitute into the second equation. This is especially useful when one equation is already simple (e.g., $x = 2y$).

Cyclic Quadrilateral Property

A key geometric fact used in Question 8: **opposite angles of a cyclic quadrilateral are supplementary**. This means:

$$\angle A + \angle C = 180^\circ \text{ and } \angle B + \angle D = 180^\circ$$

Angle Sum Property of a Triangle

Used in Question 5: the sum of all three angles of a triangle is always 180° .

$$\angle A + \angle B + \angle C = 180^\circ$$

NCERT Solutions for Class 10 Maths Chapter 3 Ex 3.7 — All 8 Questions

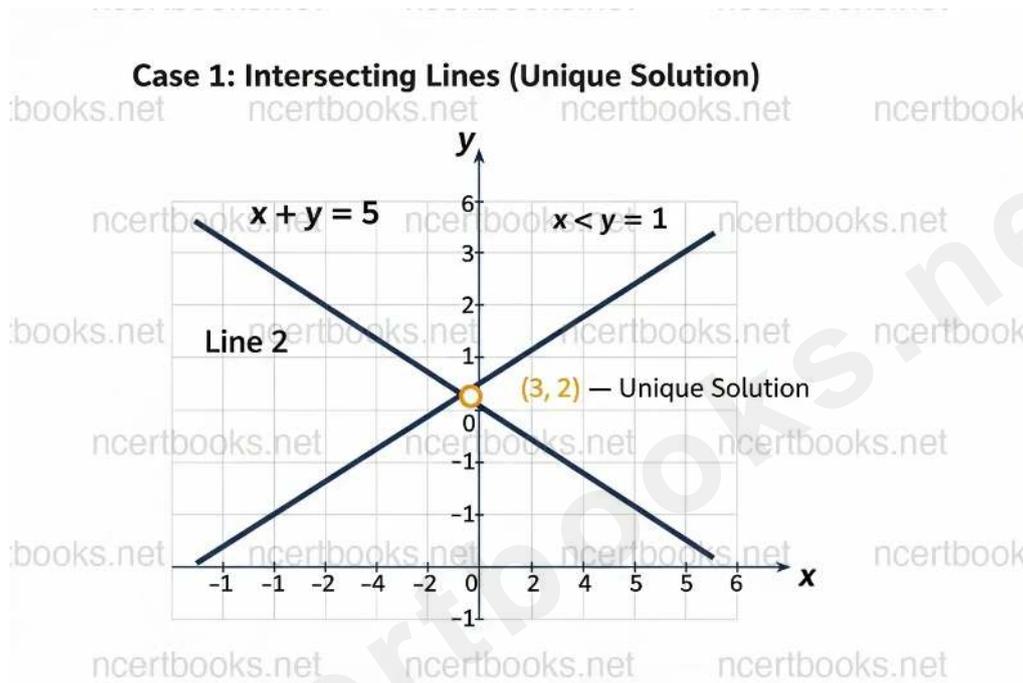


Fig 3.1: Intersecting lines — unique solution at point of intersection

Question 1

Medium

The age of two friends Ani and Biju differ by 3 years. Ani's father Dharam is twice as old as Ani and Biju is twice as old as his sister Cathy. The ages of Cathy and Dharam differ by 30 years. Find the ages of Ani and Biju.

Setting up the equations

Step 1: Let Ani's age = x years and Biju's age = y years.

Step 2: Dharam's age = $2x$ years (twice Ani's age). Cathy's age = $y/2$ years (Biju is twice Cathy's age).

Step 3: The ages of Ani and Biju differ by 3 years, giving two possible cases:

Case 1 — Ani is older than Biju:

$$x - y = 3 \dots(i)$$

Case 2 — Biju is older than Ani:

$$y - x = 3 \Rightarrow -x + y = 3 \dots(iii)$$

Step 4: The ages of Cathy and Dharam differ by 30 years. Dharam is older, so:

$$2x - y/2 = 30 \Rightarrow 4x - y = 60 \dots(ii)$$

For Case 2:

$$2x - y/2 = 30 \Rightarrow 4x - y = 60 \dots(iv)$$

Step 5 (Case 1): Subtract equation (i) from equation (ii):

$$(4x - y) - (x - y) = 60 - 3$$

$$3x = 57 \Rightarrow x = 19$$

Substituting $x = 19$ in equation (i):

$$19 - y = 3 \Rightarrow y = 16$$

Step 6 (Case 2): Subtract equation (iii) from equation (iv):

$$(4x - y) - (-x + y) = 60 - 3$$

$$5x - 2y = 57$$

From equation (iii): $y = x + 3$. Substitute:

$$5x - 2(x+3) = 57 \Rightarrow 3x - 6 = 57 \Rightarrow 3x = 63 \Rightarrow x = 21$$

$$y = 21 + 3 = 24$$

∴ Ani's age is either 19 years or 21 years, and Biju's age is either 16 years or 24 years.

Board Exam Note: This type of question typically appears in 3-5 mark long answer sections. Always consider both cases (who is older) and solve both — CBSE awards marks for both valid solutions.

Question 2

Medium

One says, "Give me a hundred, friend! I shall then become twice as rich as you". The other replies, "If you give me ten, I shall be six times as rich as you". Tell me what is the amount of their (respective) capital?

Setting up the equations

Step 1: Let the two friends have ₹ x and ₹ y respectively.

Step 2 (Condition 1): The first friend receives ₹100 from the second. Then first has $(x + 100)$ and second has $(y - 100)$. First becomes twice as rich as second:

$$x + 100 = 2(y - 100)$$

$$x + 100 = 2y - 200$$

$$x - 2y = -300 \dots(i)$$

Step 3 (Condition 2): The second friend receives ₹10 from the first. Then first has $(x - 10)$ and second has $(y + 10)$. Second becomes six times as rich as first:

$$6(x - 10) = y + 10$$

$$6x - 60 = y + 10$$

$$6x - y = 70 \dots(ii)$$

Step 4: Multiply equation (ii) by 2:

$$12x - 2y = 140 \dots(iii)$$

Step 5: Subtract equation (i) from equation (iii):

$$12x - 2y - (x - 2y) = 140 - (-300)$$

$$11x = 440 \Rightarrow x = 40$$

Step 6: Substitute $x = 40$ in equation (ii):

$$6(40) - y = 70 \Rightarrow 240 - y = 70 \Rightarrow y = 170$$

Verification: First gets ₹100: $40 + 100 = 140 = 2 \times 70 = 2(170 - 100)$. ✓ Second gets ₹10: $6(40 - 10) = 180 = 170 + 10$. ✓

∴ The first friend has ₹40 and the second friend has ₹170.

Board Exam Note: Money-exchange problems appear regularly in board papers. Always write the algebraic condition clearly before forming the equation — examiners award method marks.

Question 3

Hard

A train covered a certain distance at a uniform speed. If the train would have been 10 km/h faster, it would have taken 2 hours less than the scheduled time. And, if the train were slower by 10 km/h, it would have taken 3 hours more than the scheduled time. Find the distance covered by the train.

Setting up the equations

Step 1: Let the original speed of the train = x km/h and the scheduled time = y hours.

Key Concept: Distance = Speed \times Time. Since the distance is constant in all cases, we equate the distances.

Step 2 (Case 1 — faster speed): Speed = $(x + 10)$ km/h, Time = $(y - 2)$ hours.

$$xy = (x + 10)(y - 2)$$

$$xy = xy - 2x + 10y - 20$$

$$2x - 10y = -20$$

$$-x + 5y = 10 \dots(i)$$

Step 3 (Case 2 — slower speed): Speed = $(x - 10)$ km/h, Time = $(y + 3)$ hours.

$$xy = (x - 10)(y + 3)$$

$$xy = xy + 3x - 10y - 30$$

$$3x - 10y = 30 \dots(ii)$$

Step 4: Multiply equation (i) by 3:

$$-3x + 15y = 30 \dots(iii)$$

Step 5: Add equations (ii) and (iii):

$$3x - 10y + (-3x + 15y) = 30 + 30$$

$$5y = 60 \Rightarrow y = 12$$

Step 6: Substitute $y = 12$ in equation (ii):

$$3x - 10(12) = 30 \Rightarrow 3x = 150 \Rightarrow x = 50$$

Step 7: Calculate distance:

$$\text{Distance} = x \times y = 50 \times 12 = 600 \text{ km}$$

∴ **The distance covered by the train is 600 km.** (Original speed = 50 km/h, Time = 12 hours)

Board Exam Note: Speed-distance-time word problems are a favourite in long answer sections of CBSE board papers. Always state the formula Distance = Speed × Time and expand both sides clearly.

Question 4

Medium

The students of a class are made to stand in rows. If 3 students are extra in a row, there would be 1 row less. If 3 students are less in a row, there would be 2 rows more. Find the number of students in the class.

Setting up the equations

Step 1: Let the number of rows = x and the number of students in each row = y . Total students = xy .

Step 2 (Case 1): 3 extra students per row, 1 row less. Students per row = $(y + 3)$, rows = $(x - 1)$.

$$(x - 1)(y + 3) = xy$$

$$xy + 3x - y - 3 = xy$$

$$3x - y = 3 \dots(i)$$

Step 3 (Case 2): 3 fewer students per row, 2 rows more. Students per row = $(y - 3)$, rows = $(x + 2)$.

$$(x + 2)(y - 3) = xy$$

$$xy - 3x + 2y - 6 = xy$$

$$-3x + 2y = 6 \dots(ii)$$

Step 4: Add equations (i) and (ii):

$$(3x - y) + (-3x + 2y) = 3 + 6$$

$$y = 9$$

Step 5: Substitute $y = 9$ in equation (i):

$$3x - 9 = 3 \Rightarrow 3x = 12 \Rightarrow x = 4$$

Step 6: Total students:

$$xy = 4 \times 9 = 36$$

Verification: Case 1: $3 \times (9+3) = 3 \times 12 = 36$. ✓ Case 2: $6 \times (9-3) = 6 \times 6 = 36$. ✓

∴ **The total number of students in the class is 36.**

Board Exam Note: Arrangement problems like this appear in 3-mark sections. Always verify your answer by substituting back into both original conditions.

Question 5

Medium

In a $\triangle ABC$, $\angle C = 3\angle B = 2(\angle A + \angle B)$. Find the three angles.

Setting up and solving the equations

Step 1: Let $\angle A = a$, $\angle B = b$, $\angle C = c$ (all in degrees).

Step 2: From the given condition $\angle C = 3\angle B$:

$$c = 3b \dots(i)$$

Step 3: From $3\angle B = 2(\angle A + \angle B)$:

$$3b = 2(a + b)$$

$$3b = 2a + 2b$$

$$b = 2a \dots(ii)$$

Step 4: Use the angle sum property of triangle:

$$a + b + c = 180^\circ \dots(iii)$$

Step 5: Substitute (i) and (ii) into (iii). From (ii): $b = 2a$. From (i): $c = 3b = 6a$.

$$a + 2a + 6a = 180^\circ$$

$$9a = 180^\circ \Rightarrow a = 20^\circ$$

Step 6: Find all angles:

$$\angle A = 20^\circ, \angle B = 2 \times 20^\circ = 40^\circ, \angle C = 3 \times 40^\circ = 120^\circ$$

Verification: $20^\circ + 40^\circ + 120^\circ = 180^\circ$. ✓ Also $\angle C = 3\angle B = 120^\circ$ ✓ and $2(\angle A + \angle B) = 2(60^\circ) = 120^\circ$ ✓

$$\therefore \angle A = 20^\circ, \angle B = 40^\circ, \angle C = 120^\circ$$

Board Exam Note: Angle problems using linear equations appear in 2-3 mark sections. Always write the angle sum property as a separate step — it earns method marks.

Question 6

Hard

Draw the graphs of the equations $5x - y = 5$ and $3x - y = 3$. Determine the coordinates of the vertices of the triangle formed by these lines and the y-axis.

Graphical solution and triangle vertices

Step 1: Find points for the line $5x - y = 5$, i.e., $y = 5x - 5$.

When $x = 0$: $y = -5 \rightarrow$ Point A: (0, -5)

When $x = 1$: $y = 0 \rightarrow$ Point B: (1, 0)

When $x = 2$: $y = 5 \rightarrow$ Point C: (2, 5)

Step 2: Find points for the line $3x - y = 3$, i.e., $y = 3x - 3$.

When $x = 0$: $y = -3 \rightarrow$ Point D: (0, -3)

When $x = 1$: $y = 0 \rightarrow$ Point E: (1, 0)

When $x = 2$: $y = 3 \rightarrow$ Point F: (2, 3)

Step 3: Find the intersection of the two lines. Both lines pass through (1, 0) — this is the common solution (intersection point).

Why? Subtracting $3x - y = 3$ from $5x - y = 5$:

$$2x = 2 \Rightarrow x = 1, y = 0$$

Step 4: Find where each line meets the y-axis (set $x = 0$):

Line 1 meets y-axis at (0, -5). Line 2 meets y-axis at (0, -3).

Step 5: The triangle is formed by the two lines and the y-axis. Its three vertices are the three intersection points:

- Intersection of the two lines: (1, 0)
- Line 1 meets y-axis: (0, -5)
- Line 2 meets y-axis: (0, -3)

[Graph: Two straight lines $5x - y = 5$ and $3x - y = 3$ plotted on coordinate axes, both passing through $(1, 0)$, cutting the y -axis at $(0, -5)$ and $(0, -3)$ respectively, forming a triangle with the y -axis segment between these two points.]

∴ The vertices of the triangle are: $(1, 0)$, $(0, -5)$, and $(0, -3)$.

Board Exam Note: Graphical questions appear in long answer sections. You must plot at least 2-3 points per line and clearly label the vertices of the triangle for full marks.

Question 7

Hard

Solve the following pairs of linear equations: (i) $px + qy = p - q$; $qx - py = p + q$ (ii) $ax + by = c$; $bx + ay = 1 + c$ (iii) $x/a - y/b = 0$; $ax + by = a^2 + b^2$ (iv) $(a - b)x + (a + b)y = a^2 - 2ab - b^2$; $(a + b)(x + y) = a^2 + b^2$ (v) $152x - 378y = -74$; $-378x + 152y = -604$

(i) $px + qy = p - q$; $qx - py = p + q$

Step 1: Multiply equation 1 by p and equation 2 by q :

$$p^2x + pqy = p(p-q) \dots(A)$$

$$q^2x - pqy = q(p+q) \dots(B)$$

Step 2: Add (A) and (B):

$$(p^2 + q^2)x = p^2 - pq + pq + q^2 = p^2 + q^2$$

$$x = 1$$

Step 3: Substitute $x = 1$ in equation 1:

$$p + qy = p - q \Rightarrow qy = -q \Rightarrow y = -1$$

∴ $x = 1, y = -1$

(ii) $ax + by = c$; $bx + ay = 1 + c$

Step 1: Multiply equation 1 by a and equation 2 by b :

$$a^2x + aby = ac \dots(A)$$

$$b^2x + aby = b(1+c) \dots(B)$$

Step 2: Subtract (B) from (A):

$$(a^2 - b^2)x = ac - b - bc$$

$$x = (ac - b - bc)/(a^2 - b^2) = (c(a-b) - b)/((a-b)(a+b))$$

Step 3: Multiply equation 1 by b and equation 2 by a:

$$abx + b^2y = bc \dots(C)$$

$$abx + a^2y = a(1+c) \dots(D)$$

Step 4: Subtract (C) from (D):

$$(a^2 - b^2)y = a + ac - bc$$

$$y = (a + c(a-b))/(a^2 - b^2) = (a + c(a-b))/((a-b)(a+b))$$

$$\therefore x = (ac - b - bc)/(a^2 - b^2), y = (a + ac - bc)/(a^2 - b^2)$$

(iii) $x/a - y/b = 0$; $ax + by = a^2 + b^2$

Step 1: From equation 1: $x/a = y/b \Rightarrow x = ay/b \dots(A)$

Step 2: Substitute (A) in equation 2:

$$a \cdot ay/b + by = a^2 + b^2$$

$$(a^2y)/(b) + by = a^2 + b^2$$

$$y((a^2 + b^2)/(b)) = a^2 + b^2$$

$$y = b$$

Step 3: From (A): $x = (a \cdot b)/(b) = a$

$$\therefore x = a, y = b$$

(iv) $(a - b)x + (a + b)y = a^2 - 2ab - b^2$; $(a + b)(x + y) = a^2 + b^2$

Step 1: Rewrite equation 2: $(a+b)x + (a+b)y = a^2 + b^2 \dots(ii)$

Step 2: Subtract equation 1 from equation 2:

$$[(a+b) - (a-b)]x = (a^2 + b^2) - (a^2 - 2ab - b^2)$$

$$2bx = 2b^2 + 2ab = 2b(a + b)$$

$$x = a + b$$

Step 3: Substitute $x = a+b$ in equation 2:

$$(a+b)(a+b) + (a+b)y = a^2 + b^2$$

$$(a+b)y = a^2 + b^2 - (a+b)^2 = a^2 + b^2 - a^2 - 2ab - b^2 = -2ab$$

$$y = (-2ab)/(a+b)$$

$$\therefore x = a + b, y = (-2ab)/(a+b)$$

$$(v) 152x - 378y = -74 ; -378x + 152y = -604$$

Step 1: Add both equations:

$$(152 - 378)x + (-378 + 152)y = -74 - 604$$

$$-226x - 226y = -678$$

$$x + y = 3 \dots(A)$$

Step 2: Subtract equation 2 from equation 1:

$$(152 + 378)x + (-378 - 152)y = -74 + 604$$

$$530x - 530y = 530$$

$$x - y = 1 \dots(B)$$

Step 3: Add (A) and (B):

$$2x = 4 \Rightarrow x = 2$$

Step 4: From (A): $y = 3 - 2 = 1$

$$\therefore x = 2, y = 1$$

Board Exam Note: Parametric equation pairs (with a, b, p, q) appear in long answer sections. Show substitution and elimination steps clearly — each step carries partial marks in CBSE marking scheme.

Question 8

Hard

ABCD is a cyclic quadrilateral (see figure). Find the angles of the cyclic quadrilateral.

Given (from NCERT figure): The angles are expressed as: $\angle A = 4y + 20$, $\angle B = 3y - 5$, $\angle C = -4x$, $\angle D = -7x + 5$ (all in degrees).

Using the cyclic quadrilateral property

Key Property: Opposite angles of a cyclic quadrilateral are supplementary:

$$\angle A + \angle C = 180^\circ \text{ and } \angle B + \angle D = 180^\circ$$

Step 1: Apply $\angle A + \angle C = 180^\circ$:

$$(4y + 20) + (-4x) = 180$$

$$-4x + 4y = 160$$

$$-x + y = 40 \dots(i)$$

Step 2: Apply $\angle B + \angle D = 180^\circ$:

$$(3y - 5) + (-7x + 5) = 180$$

$$-7x + 3y = 180 \dots(ii)$$

Step 3: From equation (i): $y = x + 40$. Substitute in equation (ii):

$$-7x + 3(x + 40) = 180$$

$$-7x + 3x + 120 = 180$$

$$-4x = 60 \Rightarrow x = -15$$

Step 4: Find y :

$$y = -15 + 40 = 25$$

Step 5: Calculate all angles:

$$\angle A = 4(25) + 20 = 100 + 20 = 120^\circ$$

$$\angle B = 3(25) - 5 = 75 - 5 = 70^\circ$$

$$\angle C = -4(-15) = 60^\circ$$

$$\angle D = -7(-15) + 5 = 105 + 5 = 110^\circ$$

Verification: $\angle A + \angle C = 120^\circ + 60^\circ = 180^\circ \checkmark$ and $\angle B + \angle D = 70^\circ + 110^\circ = 180^\circ \checkmark$

$\therefore \angle A = 120^\circ, \angle B = 70^\circ, \angle C = 60^\circ, \angle D = 110^\circ$

Board Exam Note: Cyclic quadrilateral problems combine geometry with algebra. Always state the supplementary angles property explicitly — it earns a dedicated step mark in CBSE board papers.

Formula Reference Table — Chapter 3 Linear Equations

Formula / Property	Expression (LaTeX)	Variables / Notes
General form of linear equation	$ax + by + c = 0$	$a, b \neq 0$ simultaneously
Distance = Speed \times Time	$d = s \times t$	Used in train problems (Q3)

Formula / Property	Expression (LaTeX)	Variables / Notes
Angle sum — Triangle	$\angle A + \angle B + \angle C = 180^\circ$	Used in Q5
Cyclic quadrilateral — opposite angles	$\angle A + \angle C = 180^\circ, \angle B + \angle D = 180^\circ$	Used in Q8
Elimination method	Multiply equations to equalise one coefficient, then add/subtract	Most efficient for Q2, Q3, Q4
Substitution method	Express x or y from one equation, substitute in other	Efficient when one equation is simple
Condition for unique solution	$a_1/a_2 \neq b_1/b_2$	Lines intersect at one point

Solved Examples Beyond NCERT — Class 10 Maths Chapter 3

Extra Example 1

Medium

The sum of the digits of a two-digit number is 9. If the digits are reversed, the new number is 27 more than the original number. Find the original number.

Step 1: Let the tens digit = x and units digit = y. Original number = $10x + y$.

Step 2: Condition 1: $x + y = 9$... (i)

Step 3: Reversed number = $10y + x$. Condition 2: $10y + x = 10x + y + 27 \Rightarrow 9y - 9x = 27 \Rightarrow y - x = 3$... (ii)

Step 4: Add (i) and (ii): $2y = 12 \Rightarrow y = 6$. From (i): $x = 3$.

∴ The original number is 36.

Extra Example 2

Medium

Five years ago, A was thrice as old as B. Ten years later, A will be twice as old as B. Find their present ages.

Step 1: Let A's present age = x, B's present age = y.

Step 2: Five years ago: $x - 5 = 3(y - 5) \Rightarrow x - 3y = -10$... (i)

Step 3: Ten years later: $x + 10 = 2(y + 10) \Rightarrow x - 2y = 10$... (ii)

Step 4: Subtract (i) from (ii): $y = 20$. From (ii): $x = 50$.

∴ A's present age = 50 years, B's present age = 20 years.

Extra Example 3

Hard

A boat goes 30 km upstream and 44 km downstream in 10 hours. In 13 hours it can go 40 km upstream and 55 km downstream. Determine the speed of the stream and that of the boat in still water.

Step 1: Let speed of boat in still water = x km/h, speed of stream = y km/h. Upstream speed = $x - y$, downstream speed = $x + y$.

Step 2: Let $u = 1/x - y$ and $v = 1/x + y$. Condition 1: $30u + 44v = 10$...(i). Condition 2: $40u + 55v = 13$...(ii).

Step 3: Multiply (i) by 4 and (ii) by 3: $120u + 176v = 40$ and $120u + 165v = 39$. Subtract: $11v = 1 \Rightarrow v = 1/11 \Rightarrow x + y = 11$.

Step 4: From (i): $30u = 10 - 44 \times 1/11 = 10 - 4 = 6 \Rightarrow u = 1/5 \Rightarrow x - y = 5$.

Step 5: $x + y = 11$ and $x - y = 5$. Adding: $2x = 16 \Rightarrow x = 8, y = 3$.

∴ Speed of boat = 8 km/h, Speed of stream = 3 km/h.

Important Questions for Board Exam 2026-27 — Chapter 3 Linear Equations

1-Mark Questions

1. Write the condition for the pair of equations $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2 = 0$ to have a unique solution. **Answer:** $a_1/a_2 \neq b_1/b_2$
2. What is the property of opposite angles in a cyclic quadrilateral? **Answer:** They are supplementary (their sum = 180°).
3. If $2x + 3y = 12$ and $x - y = 1$, find y . **Answer:** $y = 2$

3-Mark Questions

1. The sum of a two-digit number and the number obtained by reversing its digits is 66. If the digits differ by 2, find the number. **Answer:** Let tens digit = x , units digit = y . $x + y = 6$ (from sum condition after simplification) and $x - y = 2$. Solving: $x = 4, y = 2$. Number = 42 or 24.

2. A fraction becomes $\frac{1}{3}$ when 1 is subtracted from the numerator and it becomes $\frac{1}{4}$ when 8 is added to its denominator. Find the fraction. **Answer:** Let fraction = $\frac{x}{y}$. Equations: $3(x-1) = y$ and $4x = y + 8$. Solving: $x = 5$, $y = 12$. Fraction = $\frac{5}{12}$.

5-Mark Questions

1. A train covered a certain distance at a uniform speed. If the train had been 6 km/h faster, it would have taken 4 hours less. If the train had been 6 km/h slower, it would have taken 6 hours more. Find the distance. **Approach:** Let speed = x km/h, time = y hours. Form two equations from the two conditions and solve by elimination. Distance = xy . (This tests the same skill as Q3 of Ex 3.7 at a slightly higher level.)

Common Mistakes Students Make in Chapter 3 Ex 3.7

Mistake 1: Forgetting to consider both cases in age problems (who is older).

Why it's wrong: The problem says ages "differ by" 3 years — this allows for two scenarios. Solving only one case gives an incomplete answer.

Correct approach: Always set up both Case 1 (Ani older) and Case 2 (Biju older) and solve both. Write both pairs of answers.

Mistake 2: In money exchange problems, reversing who gives and who receives money.

Why it's wrong: "Give me 100" means the second person loses 100 and the first gains 100. Swapping this changes both equations and gives wrong answers.

Correct approach: Re-read each condition carefully. Write explicitly: "After exchange, first person has ___ and second person has ___" before writing the equation.

Mistake 3: In the train problem, forgetting that distance is constant (not speed or time).

Why it's wrong: Students sometimes equate speeds or times instead of distances, leading to incorrect equations.

Correct approach: Always write Distance = Speed \times Time and equate $xy = (x+10)(y-2)$ for Case 1.

Mistake 4: Not applying the cyclic quadrilateral property correctly in Question 8.

Why it's wrong: Some students add all four angles to 360° (which is always true for any quadrilateral) instead of using the supplementary property of opposite angles.

Correct approach: Use $\angle A + \angle C = 180^\circ$ and $\angle B + \angle D = 180^\circ$ to form two separate equations.

Mistake 5: Skipping the verification step after finding the solution.

Why it's wrong: CBSE awards marks for verification. Without it, you may also miss arithmetic errors in your working.

Correct approach: Always substitute your values back into both original equations and confirm both sides are equal.

Exam Tips for 2026-27 CBSE Board — Chapter 3 Linear Equations

- **Define variables first:** In every word problem, spend 30 seconds writing "Let $x = \underline{\quad}$ and $y = \underline{\quad}$ " before forming equations. CBSE awards 1 mark for correct variable definition in many questions.
- **Show all steps:** The 2026-27 CBSE marking scheme awards step marks for method. Even if your final answer is wrong, you can score 2–3 marks by showing correct equation formation and method.
- **Label your cases:** In problems with two scenarios (like the train problem), clearly label "Case 1" and "Case 2" — this makes your solution easy to follow and earns presentation marks.
- **Verify your answer:** Always substitute back into the original word problem (not just the equations) to confirm your answer makes sense in context.
- **Graph questions — plot 3 points:** For graphical questions like Q6, plot at least 3 points per line and clearly mark the intersection and triangle vertices with coordinates.
- **Chapter 3 weightage:** Pair of Linear Equations in Two Variables typically contributes 6–8 marks in the CBSE Class 10 board paper. Exercise 3.7-type word problems are the most commonly tested.

Frequently Asked Questions — NCERT Solutions Class 10 Maths Chapter 3 Ex 3.7

How many questions are there in NCERT Class 10 Maths Chapter 3 Exercise 3.7?

Exercise 3.7 of Class 10 Maths Chapter 3 contains exactly 8 questions. All 8 are word problems (application questions) that require forming and solving pairs of linear equations. This exercise is the final and most challenging exercise in Chapter 3 because it tests your ability to apply algebraic methods to real-world situations.

Is Exercise 3.7 of Class 10 Maths important for CBSE board exams 2026-27?

Yes, Exercise 3.7 is highly important for the 2026-27 CBSE board exams. Word problems from this exercise — especially age problems, train problems, and geometry-based problems — frequently appear in the 3-mark and 5-mark sections of the board paper. Practising all 8 questions with step-by-step working is essential for scoring full marks.

How do you solve the pair of linear equations word problems in Class 10 Chapter 3 Exercise 3.7?

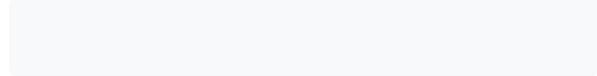
The key steps are: (1) Read the problem carefully and identify the two unknown quantities. (2) Define variables — let x = first unknown and y = second unknown. (3) Translate each condition in the problem into an algebraic equation. (4) Solve the pair of equations using substitution, elimination, or cross-multiplication. (5) Verify your answer by substituting back into the original conditions.

What is the answer to the train distance problem in Class 10 Maths Chapter 3 Ex 3.7 Question 3?

The distance covered by the train is 600 km. The original speed of the train is 50 km/h and the scheduled time is 12 hours. This is found by letting speed = x km/h and time = y hours, forming two equations from the two speed conditions, and solving by elimination to get $x = 50$ and $y = 12$. Distance = $50 \times 12 = 600$ km.

What property of cyclic quadrilaterals is used in Question 8 of Ex 3.7 Class 10 Maths?

Question 8 uses the property that opposite angles of a cyclic quadrilateral are supplementary, meaning their sum equals 180° . Specifically, $\angle A + \angle C = 180^\circ$ and $\angle B + \angle D = 180^\circ$. These two conditions give you two linear equations in two variables, which you then solve to find all four angles of the cyclic quadrilateral ABCD.



Where can I download NCERT Solutions for Class 10 Maths Chapter 3 Exercise 3.7 PDF free?

You can download the free PDF of NCERT Solutions for Class 10 Maths Chapter 3 Exercise 3.7 directly from this page on ncertbooks.net. All 8 questions are solved with complete step-by-step working, updated for the 2026-27 CBSE syllabus. You can also access the official NCERT textbook from the NCERT website at ncert.nic.in.

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