

The complete Heights & Distances practice map

NCERT Class 10 Mathematics · Chapter 9 · 2026–27 reprint

Chapter 9 has 22 questions, and they are three types. This guide holds all three types, all 22 questions with the page each one sits on, and the order to practise them in. Nothing is held back for later.

$$\boxed{7 \text{ worked Examples}} + \boxed{15 \text{ Exercise 9.1 questions}} = \boxed{22}$$

HOW TO USE THIS GUIDE

Sheet 3 is the one to work down. All 22 in practice order, with a box to tick and the book page beside each.

Sheet 4 looks up. Open your textbook at any question, find it in book order, and see which type it is and where it falls in the practice order.

Your book prints the exercise items as 1. to 15. We write them as Q1 to Q15 so a number never loses its exercise.

All 22 use only the 30° , 45° and 60° values.

Draw the diagram first, every time.

WHAT IS INSIDE

SHEET 2 The three types · and the five that appear once

SHEET 3 The practice order · all 22, in the order to do them

SHEET 4 All 22 in book order · to look one up

SHEET 5 What we counted, what we did not · and the videos

Ex 9.1 Q1

Start here. Open your textbook at Exercise 9.1, question 1 — the shortest complete run-through of the move the whole chapter is built on. The rest of the order is on sheet 3.

Every one of the 22 sits in exactly one type. The lists below are the real members — not samples. Find the ones you have already done, and you can see what is left.

6

One triangle

6 OF THE 22

WHAT IT ASKS Choose sin, cos or tan from the side you know and the side the question asks for.

WHAT YOU NEED Opposite · Adjacent · Hypotenuse, and the $30^\circ \cdot 45^\circ \cdot 60^\circ$ table.

Example 1

Example 2

Ex 9.1 Q1

Q3

Q4

Q5

4

Check the final answer

4 OF THE 22

WHAT IT ASKS Does the triangle give the whole answer, or only one part of it?

WHAT YOU NEED Mark the part that sits outside the triangle. Then add it, subtract it, or take the distance difference.

Example 3

Ex 9.1 Q2

Q6

Q14

12

Two triangles

12 OF THE 22

WHAT IT ASKS How are the distances in the two triangles connected?

WHAT YOU NEED Same height · Same base · Longer base · Bases add · Distances subtract.

Example 4

Example 5

Example 6

Example 7

Ex 9.1 Q7

Q8

Q9

Q10

Q11

Q12

Q13

Q15

THE FIVE THAT APPEAR ONCE

Each of these turns up exactly once inside these 22 Chapter 9 questions. They are worth a second look, because there is no second one to learn them on.

Example 2

Contact point below the top

Use the actual vertical reach, $5 - 1.3$, before trig.

Ex 9.1 Q2

Broken tree

Original height = standing part + fallen part.

Ex 9.1 Q3

Two separate slides

Solve the two triangles independently.

Ex 9.1 Q10

Fixed road width

Equal heights; the two bases add to 80 m.

Ex 9.1 Q15

Time from a distance ratio

Keep height symbolic; it cancels.

One-off inside these 22 Chapter 9 questions — not a claim about other books or other papers.

Practise in this order. It is built on what each question needs you to already know, so nothing asks you for a move you have not met yet. Tick them off as you go.

START HERE

- | | | | | |
|--------------------------|----|-----------|------------------------------|--------|
| ☐ | 01 | Ex 9.1 Q1 | Circus artist, rope and pole | p. 141 |
|--------------------------|----|-----------|------------------------------|--------|

ONE TRIANGLE

- | | | | | |
|--------------------------|----|-----------|------------------------------|--------|
| ☐ | 02 | Ex 9.1 Q4 | Tower from 30 m away | p. 141 |
| ☐ | 03 | Ex 9.1 Q5 | Kite and string | p. 141 |
| ☐ | 04 | Ex 9.1 Q3 | Two playground slides | p. 141 |
| ☐ | 05 | Example 1 | Tower from a point 15 m away | p. 135 |
| ☐ | 06 | Example 2 | Ladder reaching a pole | p. 136 |

CHECK THE FINAL ANSWER · PART 1

- | | | | | |
|--------------------------|----|-----------|----------------------|--------|
| ☐ | 07 | Example 3 | Observer and chimney | p. 137 |
| ☐ | 08 | Ex 9.1 Q2 | Broken tree | p. 141 |

TWO TRIANGLES

- | | | | | |
|--------------------------|----|------------|--|-------------|
| ☐ | 09 | Example 4 | Flagstaff on a building | pp. 137–138 |
| ☐ | 10 | Ex 9.1 Q7 | Tower above a building | p. 141 |
| ☐ | 11 | Ex 9.1 Q8 | Statue on a pedestal | p. 142 |
| ☐ | 12 | Ex 9.1 Q9 | Building and 50 m tower | p. 142 |
| ☐ | 13 | Example 5 | Tower with two shadow lengths | pp. 138–139 |
| ☐ | 14 | Ex 9.1 Q11 | TV tower across a canal | p. 142 |
| ☐ | 15 | Example 6 | Two buildings and angles of depression | pp. 139–140 |
| ☐ | 16 | Ex 9.1 Q13 | Lighthouse and two ships | p. 142 |
| ☐ | 17 | Example 7 | Bridge and river banks | pp. 140–141 |
| ☐ | 18 | Ex 9.1 Q10 | Equal poles across a road | p. 142 |
| ☐ | 19 | Ex 9.1 Q12 | Building and cable tower | p. 142 |
| ☐ | 20 | Ex 9.1 Q15 | Car approaching a tower | pp. 142–143 |

CHECK THE FINAL ANSWER · PART 2

- | | | | | |
|--------------------------|----|------------|-------------------------------|--------|
| ☐ | 21 | Ex 9.1 Q6 | Boy walking toward a building | p. 141 |
| ☐ | 22 | Ex 9.1 Q14 | Girl and moving balloon | p. 142 |

Q6 and Q14 come last on purpose: each asks you to spot the part outside the triangle *and* to connect two triangles, both at once. This is our practice order, worked out from what each question needs — not the order printed in your book, and not an official NCERT order.

Open your textbook at any question and find it here: which type it is, what that type asks of you, and where it falls in the practice order on sheet 3.

IN THE BOOK	WHAT IT IS ABOUT	PAGE	TYPE	ORDER	WHAT THE TYPE ASKS OF YOU
Example 1	Tower from a point 15 m away	135	One triangle	05	Choose sin, cos or tan from the side you know and the side the question asks for.
Example 2	Ladder reaching a pole	136	One triangle	06	Choose sin, cos or tan from the side you know and the side the question asks for.
Example 3	Observer and chimney	137	Check the final answer	07	Does the triangle give the whole answer, or only one part of it?
Example 4	Flagstaff on a building	137–138	Two triangles	09	How are the distances in the two triangles connected?
Example 5	Tower with two shadow lengths	138–139	Two triangles	13	How are the distances in the two triangles connected?
Example 6	Two buildings and angles of depression	139–140	Two triangles	15	How are the distances in the two triangles connected?
Example 7	Bridge and river banks	140–141	Two triangles	17	How are the distances in the two triangles connected?
Ex 9.1 Q1	Circus artist, rope and pole	141	One triangle	01	Choose sin, cos or tan from the side you know and the side the question asks for.
Ex 9.1 Q2	Broken tree	141	Check the final answer	08	Does the triangle give the whole answer, or only one part of it?
Ex 9.1 Q3	Two playground slides	141	One triangle	04	Choose sin, cos or tan from the side you know and the side the question asks for.
Ex 9.1 Q4	Tower from 30 m away	141	One triangle	02	Choose sin, cos or tan from the side you know and the side the question asks for.
Ex 9.1 Q5	Kite and string	141	One triangle	03	Choose sin, cos or tan from the side you know and the side the question asks for.
Ex 9.1 Q6 +	Boy walking toward a building	141	Check the final answer	21	Does the triangle give the whole answer, or only one part of it?
Ex 9.1 Q7	Tower above a building	141	Two triangles	10	How are the distances in the two triangles connected?
Ex 9.1 Q8	Statue on a pedestal	142	Two triangles	11	How are the distances in the two triangles connected?
Ex 9.1 Q9	Building and 50 m tower	142	Two triangles	12	How are the distances in the two triangles connected?
Ex 9.1 Q10	Equal poles across a road	142	Two triangles	18	How are the distances in the two triangles connected?
Ex 9.1 Q11	TV tower across a canal	142	Two triangles	14	How are the distances in the two triangles connected?
Ex 9.1 Q12	Building and cable tower	142	Two triangles	19	How are the distances in the two triangles connected?
Ex 9.1 Q13	Lighthouse and two ships	142	Two triangles	16	How are the distances in the two triangles connected?
Ex 9.1 Q14 +	Girl and moving balloon	142	Check the final answer	22	Does the triangle give the whole answer, or only one part of it?
Ex 9.1 Q15	Car approaching a tower	142–143	Two triangles	20	How are the distances in the two triangles connected?

+ Q6 and Q14 also need the two-triangle move, which is why the practice order puts them last.

Two different things are counted here, and we keep them apart: the 22 questions in your textbook, and the Chapter 9 questions in the board papers we hold.

Across the **38 distinct Chapter 9 questions** in the **41 board paper sets we admitted** (four years), **27 use the two-triangle diagram**.

Board papers we admitted · 4 years · 41 paper sets

Chapter 9 appears in **all 41** of those paper sets.

Chapter 9 count · 41 of 41 paper sets

WHAT WE ADMITTED, AND HOW WE COUNTED

- **41 CBSE board paper sets** with their official marking schemes, across four sessions: 2022–23, 2023–24, 2024–25 and 2025–26.
- **The NCERT Class 10 Mathematics textbook, Chapter 9**, 2026–27 reprint — the source of all 22 items and their page numbers. jemh109.pdf · SHA-256 89c6c125039bfb8c7708b6bc5a27321021de629d4a1608f7f94812a96698f63f
- Those 41 sets print **66** Chapter 9 questions. Sets from the same session repeat questions between them, so after collapsing those repeats the count is **38 distinct questions**, carrying 142 marks in total in those papers.

WHAT WE DO NOT HAVE, AND WHAT THIS DOES NOT SAY

- **We have no link from a board question to a textbook item.** We never say that a board question is one of the 22, or that the 22 are what the board asks.
- **Official NCERT worked solutions are in our hands for Examples 1–7 only.** For Exercise 9.1 Q1–Q15 we hold the printed questions, and the type each one belongs to here is our own reading of them, not an official solution.
- **3 of the 38** come from merges we grade medium-confidence. Left unmerged, the count would read 43 distinct questions instead of 38.
- **Four sessions of papers, and nothing beyond them.** None of this is a statement about a paper that has not been written yet.
- **The practice order is ours**, derived from the 22 — not the book's printed order.

THE VIDEOS — HONESTLY, WHERE EACH ONE STANDS TODAY

Two triangles

the video that brought you here

One triangle

video lesson not made yet

Check the final answer

video lesson not made yet

When a type's video lesson is ready, it will be on examreels.com. You do not have to wait for it to start — this guide is the whole map, today.