Achievers Home Tuitions
Home tuitions since 1999 · Chandigarh and online

FREE RESOURCE
hometutorsindia.com

FORMULA SHEET · CLASS 10

CBSE Class 10 Maths Formulas

All the formulas in the NCERT Class 10 Mathematics book, in chapter order, with the trigonometry table and the statistics formulas students most often mix up.

CBSE 10

01 Real numbers and polynomials

HCF and LCM – HCF(a, b) × LCM(a, b) = a × b

Irrational numbers – √2, √3, √5 and √p for any prime p are irrational

Quadratic polynomial $ax^2 + bx + c$ – sum of zeros $\alpha + \beta = -b/a$, product $\alpha\beta = c/a$

Building a quadratic – x^2 − (sum of zeros)x + (product of zeros)

02 Pair of linear equations

Unique solution (lines intersect) – $a_1/a_2 \neq b_1/b_2$

No solution (parallel lines) – $a_1/a_2 = b_1/b_2 \neq c_1/c_2$

Infinitely many solutions (same line) – $a_1/a_2 = b_1/b_2 = c_1/c_2$

03 Quadratic equations

Quadratic formula – $x = [-b \pm \sqrt{(b^2 - 4ac)}]/2a$

Discriminant – $D = b^2 - 4ac$

Nature of roots – $D > 0$ two distinct real roots; $D = 0$ two equal roots; $D < 0$ no real roots

04 Arithmetic progressions

nth term – $a_n = a + (n - 1)d$

Sum of n terms – $S_n = (n/2)[2a + (n - 1)d] = (n/2)(a + l)$

Finding a term from sums – $a_n = S_n - S_{n-1}$

05 Triangles and coordinate geometry

Basic proportionality theorem – if DE ∥ BC in triangle ABC, then AD/DB = AE/EC

Similarity criteria – AAA (AA), SSS, SAS

Pythagoras – hypotenuse^2 = base^2 + perpendicular^2

Distance – $\sqrt{[(x_2 - x_1)^2 + (y_2 - y_1)^2]}$

Section formula (ratio m:n) – $[(mx_2 + nx_1)/(m + n), \quad (my_2 + ny_1)/(m + n)]$

Midpoint – $[(x_1 + x_2)/2, \quad (y_1 + y_2)/2]$

06 Trigonometric values

	0°	30°	45°	60°	90°
sin	0	1/2	1/√2	√3/2	1
cos	1	√3/2	1/√2	1/2	0
tan	0	1/√3	1	√3	not defined

07 Trigonometry

Ratios – sinθ = P/H, cosθ = B/H, tanθ = P/B = sinθ/cosθ

Reciprocals – cosecθ = 1/sinθ, secθ = 1/cosθ, cotθ = 1/tanθ

Identities – $\sin^2\theta + \cos^2\theta = 1$; $1 + \tan^2\theta = \sec^2\theta$; $1 + \cot^2\theta = \text{cosec}^2\theta$

Heights and distances – tan(angle of elevation) = height/horizontal distance

08 Circles and areas

Tangents – a tangent is perpendicular to the radius at the point of contact; tangents from an outside point are equal

Circle – circumference 2πr, area πr^2

Arc of angle θ – length (θ/360°) × 2πr

Sector of angle θ – area (θ/360°) × πr^2

Segment – area of sector − area of the triangle

09 Surface areas and volumes

Cuboid – TSA 2(lb + bh + hl), volume lbh

Cube – TSA $6a^2$, volume a^3

Cylinder – CSA 2πrh, TSA 2πr(r + h), volume $\pi r^2 h$

Cone – slant height $l = \sqrt{(r^2 + h^2)}$, CSA $\pi r l$, TSA $\pi r(l + r)$, volume $\frac{1}{3}\pi r^2 h$

Sphere – surface area $4\pi r^2$, volume $(4/3)\pi r^3$

Hemisphere – CSA $2\pi r^2$, TSA $3\pi r^2$, volume $(2/3)\pi r^3$

10 Statistics and probability

Mean (direct) – $\bar{x} = \Sigma f_i x_i / \Sigma f_i$

Mean (assumed mean) – $\bar{x} = a + \Sigma f_i d_i / \Sigma f_i$, $d_i = x_i - a$

Median – $l + [(n/2 - cf)/f] \times h$

Mode – $l + [(f_1 - f_0)/(2f_1 - f_0 - f_2)] \times h$

Empirical relation – 3 Median = Mode + 2 Mean

Probability – $P(E)$ = favourable outcomes/total outcomes; $0 \le P(E) \le 1$; $P(\text{not } E) = 1 - P(E)$

Useful counts – a deck has 52 cards, 26 red, 12 face cards; two dice give 36 outcomes

How to use this sheet

1. In the board paper, write the formula first, then substitute: step marks reward it.
2. Draw a figure for every geometry and trigonometry question, even if the paper does not ask.
3. Learn the trig table by its pattern: sin goes 0, 1, 2, 3, 4 under √ divided by 2.

ACHIEVERS · SINCE 1999

Want a Class 10 Maths tutor?

One-to-one tutors at home in the Chandigarh Tricity, or live online anywhere. Our office confirms the tutor and the fee before the first class.

WhatsApp +91 86990 09555
hometutorsindia.com

Scan to WhatsApp

Free to print and share for study. Please keep the Achievers name and number on every page. Exam patterns change, so always check the details with the official board or testing agency. © 2026 Achievers Home Tuitions · https://www.hometutorsindia.com/cbse-class-10-maths-formulas.html

Achievers Home Tuitions
Home tuitions since 1999 · Chandigarh and online

FREE RESOURCE
hometutorsindia.com

REVISION NOTES · CLASS 10

CBSE Class 10 Science Key Points

The definitions, equations and examples that score in CBSE Class 10 Science, taken chapter by chapter from the NCERT textbook.

CBSE 10

01 Chemical reactions

Types – combination, decomposition (thermal, electrolytic, photolytic), displacement, double displacement, redox

Oxidation – gain of oxygen or loss of hydrogen; reduction is the reverse

Balancing – follows the law of conservation of mass

Corrosion and rancidity – rusting needs air and water; antioxidants and nitrogen flushing slow rancidity

02 Acids, bases and salts

Indicators – litmus red in acid, blue in base; phenolphthalein colourless in acid, pink in base; methyl orange red in acid, yellow in base

pH – 0 to 14, 7 is neutral; tooth decay starts below pH 5.5

Reactions – acid + base → salt + water; acid + metal → salt + H_2; acid + carbonate → salt + CO_2 + H_2O

Common salts – baking soda $NaHCO_3$; washing soda $Na_2CO_3 \cdot 10H_2O$; bleaching powder $CaOCl_2$; plaster of Paris $CaSO_4 \cdot \frac{1}{2}H_2O$

03 Metals and non-metals

Reactivity series – K > Na > Ca > Mg > Al > Zn > Fe > Pb > H > Cu > Hg > Ag > Au

Amphoteric oxides – Al_2O_3 and ZnO react with both acids and bases

Extraction – very reactive metals by electrolysis; middle metals by roasting (sulphides) or calcination (carbonates), then reduction

Thermite reaction – $Fe_2O_3 + 2Al \rightarrow 2Fe + Al_2O_3$

Ionic compounds – high melting points; conduct when molten or dissolved

04 Carbon compounds

Homologous series – members differ by $–CH_2–$

Functional groups – –OH alcohol; –CHO aldehyde; >C=O ketone; –COOH carboxylic acid

Esterification – ethanoic acid + ethanol (conc. H_2SO_4) → ethyl ethanoate, sweet-smelling

Saponification – ester + NaOH → soap; detergents still work in hard water

Hydrogenation – vegetable oils + H_2 (nickel catalyst) → fats

05 Life processes

Photosynthesis – $6CO_2 + 12H_2O \rightarrow C_6H_{12}O_6 + 6O_2 + 6H_2O$ (chlorophyll, sunlight)

Respiration – glucose → pyruvate in the cytoplasm; aerobic in mitochondria → CO_2 + H_2O + energy; yeast → ethanol + CO_2; muscles → lactic acid

Transport – double circulation in a four-chambered heart; xylem carries water, phloem carries food

Excretion – the nephron is the working unit of the kidney

06 Control, reproduction, heredity

Reflex arc – receptor → sensory neuron → spinal cord → motor neuron → effector

Brain – cerebrum (thinking), cerebellum (balance), medulla (involuntary actions)

Hormones – insulin, thyroxine (needs iodine; lack causes goitre), adrenaline, growth hormone

Asexual reproduction – fission, fragmentation, regeneration, budding, vegetative propagation, spores

Heredity – Mendel's monohybrid ratio 3:1, dihybrid 9:3:3:1; a child's sex is set by the father's X or Y

07 Light

Mirror formula – $1/v + 1/u = 1/f$, $f = R/2$, $m = –v/u$

Lens formula – $1/v – 1/u = 1/f$, $m = v/u$

Power of a lens – $P = 1/f$ with f in metres, unit dioptre

Refractive index – n = c/v; Snell's law sin i/sin r = constant

Defects of vision – myopia, concave lens; hypermetropia, convex lens; presbyopia, bifocal lens

In the sky – scattering makes the sky blue and sunsets red; atmospheric refraction makes stars twinkle

08 Electricity and magnetism

Basics – I = Q/t, V = W/Q, Ohm's law V = IR, R = ρl/A

Combinations – series $R = R_1 + R_2 + \ldots$; parallel $1/R = 1/R_1 + 1/R_2 + \ldots$

Heating and power – $H = I^2Rt$; $P = VI = I^2R = V^2/R$; 1 kWh = 3.6×10^6 J

Magnetic field – right-hand thumb rule for a straight wire; a solenoid acts like a bar magnet

Force on a conductor – Fleming's left-hand rule

Safety – earthing and fuses protect against overloading and short circuits

09 Our environment

Food chains – only about 10% of energy passes to the next level

Biological magnification – harmful chemicals concentrate up the food chain

Ozone – depleted by CFCs; it shields Earth from ultraviolet radiation

How to use these notes

1. Write balanced equations with state symbols where you can; examiners notice.
2. Learn one labelled diagram per chapter: heart, nephron, eye, flower, electric circuit.
3. For numericals, write the formula, substitute with units, then box the answer.

ACHIEVERS · SINCE 1999

Want a Class 10 Science tutor?

One-to-one tutors at home in the Chandigarh Tricity, or live online anywhere. Our office confirms the tutor and the fee before the first class.

WhatsApp +91 86990 09555
hometutorsindia.com

Scan to WhatsApp

Free to print and share for study. Please keep the Achievers name and number on every page. Exam patterns change, so always check the details with the official board or testing agency. © 2026 Achievers Home Tuitions · https://www.hometutorsindia.com/cbse-class-10-science-notes.html

Achievers Home Tuitions
Home tuitions since 1999 · Chandigarh and online

FREE RESOURCE
hometutorsindia.com

STUDY PLAN · CLASS 10 AND 12

Board Exam Study Plan and Answer-Writing Guide

An eight-week plan for the run-up to the Class 10 or Class 12 boards, with a daily routine that leaves time for sleep and a short guide to writing answers the way examiners mark them.

CBSE 10 | CBSE 12 | Study skills

01 The eight weeks

Weeks	Focus	Each day
1–2	Finish any pending chapters; make one summary sheet per chapter	Two new topics, one summary sheet, 30 minutes of revision
3–4	Chapter-wise practice from NCERT exercises, exemplar and previous papers	One chapter's questions, marked against the solutions
5–6	Full sample papers in three hours, exactly like the exam	One paper every other day; spend the next day on your mistakes
7	Weak topics only, found from your marked papers	Re-learn, then re-test the same topic the next day
8	Light revision of summary sheets and formula lists	No new topics; same sleep time as exam days

02 A daily routine that works

Three focused blocks – 90 minutes each, with a 15-minute break between them

Active recall – close the book and write what you remember, then check

Spaced revision – revisit each topic after 1 day, 3 days and 7 days

Sleep – 7–8 hours; memory is consolidated while you sleep

Phones – in another room during study blocks

03 Writing answers that score

Use the reading time – CBSE gives 15 minutes to read the paper; choose your order of attack

Start strong – answer the questions you know first, but keep the section numbering clear

Show steps – in maths and numericals, the method earns marks even if the final answer slips

Units and labels – write units in physics and chemistry; label every diagram

Match the marks – a 1-mark answer is a line; a 5-mark answer needs points, a diagram or an example

Keep 15 minutes – to check calculations and answers you skipped

04 Exam-day checklist

- Admit card and school ID
- Two blue or black pens, pencil, eraser, sharpener, ruler and geometry box
- Transparent water bottle
- Reach the centre well before the reporting time

Official papers – CBSE sample papers and marking schemes are on cbseacademic.nic.in; NCERT books are free at ncert.nic.in

How to use this plan

1. Stick the eight-week table on your wall and tick each day off.
2. Mark every sample paper honestly with the official marking scheme.
3. If a week slips, shorten week 7 rather than skipping full papers.

ACHIEVERS · SINCE 1999

Want a tutor for your board exams?

One-to-one tutors at home in the Chandigarh Tricity, or live online anywhere. Our office confirms the tutor and the fee before the first class.

WhatsApp +91 86990 09555

hometutorsindia.com

Scan to WhatsApp

Free to print and share for study. Please keep the Achievers name and number on every page. Exam patterns change, so always check the details with the official board or testing agency. © 2026 Achievers Home Tuitions · https://www.hometutorsindia.com/board-exam-study-plan.html