(Note: As per the CBSE 2026-27 Science Curriculum directives, the topics under "Evolution" are to be assessed formatively only to reduce academic stress . Therefore, the summative assessment section focuses exclusively on Heredity, while Evolution is integrated into the Internal Assessment/Portfolio).

Lesson Plan: Heredity (CBSE Class X 2026-27)

Teacher: Class: X

Subject: Science (Subject Code - 086)

Unit II: World of Living (Unit Weightage: 25 Marks)

Chapter: 8 – Heredity

Estimated Number of Periods: 10

---

1. Gist of the Lesson & Curricular Goals

- **Core Syllabus:** Heredity; Mendel's contribution - Laws for inheritance of traits; Sex determination (brief introduction).
- **Formative Syllabus (Not for Board Exam):** Evolution (Acquired and Inherited Traits, Speciation, Classification, Fossils, Human Evolution).
- **Educational Aim:** To build an understanding of the mechanisms of heredity and genetic variation, developing capacities for systemic analysis of inheritance patterns using mathematical models (Punnett squares).

---

2. Teaching-Learning Plan & Pedagogy

Key Concepts	**Competencies (C) & Learning Outcomes**	**Teaching-Learning Activities (Pedagogy)**	**Assessment Strategies**
Introduction to Heredity & Variation	**C-3.3:** Describes the mechanisms of heredity and variation. • *Outcome:* Students	• **Observation Activity:** Have students observe and tally free vs. attached earlobes in the classroom.	• **[Demonstrate Knowledge - VSA]:** *Define* heredity and variation. • **[Application - SA]:**

	will define heredity and identify observable variations in human populations.	• **Discussion:** Differentiate between inherited traits (eye color) and acquired traits (a scar or a learned skill).	*Distinguish* between inherited and acquired traits.
Mendel's Contribution (Monohybrid Cross)	**C-4.4:** Analyses patterns of inheritance of traits in terms of Mendel's laws. • *Outcome:* Students will construct a monohybrid cross and deduce the Law of Dominance and Law of Segregation.	• **Visual Mapping/Board Work:** Step-by-step construction of a Punnett square for a monohybrid cross (Tall vs. Dwarf pea plants). • **Analysis:** Calculate the phenotypic (3:1) and genotypic (1:2:1) ratios in the F2 generation.	• **[Application - Objective]:** *Calculate* the percentage of dwarf plants in the F2 generation of a monohybrid cross. • **[Demonstrate Knowledge - SA]:** *State* Mendel's Law of Dominance.
Dihybrid Cross & Independent Assortment	**C-4.4:** Analyses patterns of inheritance. **C-8.1:** Develops accurate mathematical models. • *Outcome:* Students will trace the inheritance of two traits simultaneously.	• **Mathematical Modeling:** Construct a dihybrid Punnett square (e.g., Round/Yellow seeds crossed with Wrinkled/Green seeds). • **Discussion:** Connect the 9:3:3:1 ratio to the Law of Independent Assortment.	• **[Formulate & Analyze - LA]:** *Interpret* the results of a dihybrid cross to explain how traits are inherited independently. • **[Analyze & Evaluate - Assertion-Reasoning]: ***Evaluate* statements regarding allele combinations.
Sex Determination	**C-3.3:** Describes the	• **Flowcharting:**	• **[Demonstrate**

in Humans	mechanisms of heredity (chromosomes). • *Outcome:* Students will map the chromosomal mechanism of sex determination in humans.	Draw the genetic cross between a human male (XY) and female (XX). • **Discussion:** Address social misconceptions by scientifically proving that the sex of the child is determined by the father's chromosomes.	**Knowledge - VSA]:** *Name* the sex chromosomes present in human males and females. • **[Application - SA]:** *Illustrate* the mechanism of sex determination in humans with a flowchart.

---

3. Assessment Structure & Weightage

Summative assessments for the *Heredity* portion are strictly modeled on the CBSE 2026-27 Theory Question Paper Design (80 marks) :

- **Demonstrate Knowledge and Understanding (50%):** Assessed via questions asking students to *state, name, list, identify, define, suggest, describe, outline, and summarize* (e.g., defining dominant traits, naming chromosomes).
- **Application of Knowledge/Concepts (30%):** Assessed via questions asking students to *calculate, illustrate, show, adapt, explain, and distinguish* (e.g., calculating Punnett square ratios, illustrating crosses).
- **Formulate, Analyze, Evaluate and Create (20%):** Assessed via questions asking students to *interpret, analyze, compare, contrast, examine, evaluate, discuss, and construct* (e.g., analyzing dihybrid cross results).

---

4. Digital Integration & Portfolio Enrichment (Internal Assessment - 20 Marks)

- **Subject Enrichment (5 Marks):** Since there is no mandatory laboratory experiment prescribed for this chapter, enrichment will focus on a data collection activity. Students will survey 10 families in their neighborhood to trace a specific visible trait (like rolling of the tongue or widow's peak) across two generations and present the data using a simple family tree diagram.
- **Digital Integration Strategy:** To reinforce genetic modeling ahead of Periodic Assessments, utilize interactive digital simulations (such as the PhET Interactive Simulations on heredity via DIKSHA) where students can digitally breed plants or animals

to instantly visualize F1 and F2 generation probability ratios.

- **Portfolio Task (5 Marks - Formative Assessment of Evolution):** As mandated by the CBSE guidelines to assess the "Evolution" module formatively , students will *examine* the concept of speciation or tracing evolutionary relationships (e.g., homologous vs. analogous organs). They will prepare a brief, creative write-up or a visually rich timeline of human evolution, securely adding this to their academic portfolio.