

Class 10 Science Chapterwise PYQs

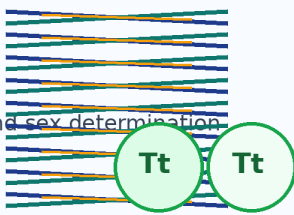
Chapter 8: Heredity | 2026-27 board revision

This file is a transparent NCERT-based board-style practice set. The local chapterwise PYQ source sheet currently has no extractable Heredity rows, so these prompts are organised around the official Class 10 Science Heredity chapter themes.

Class 10 Science
Chapter 8 | PYQ PDF

Heredity

Board-style practice for Mendel crosses, genes, variation and sex determination



32 practice prompts **Mendel + Punnett square** **2026-27 board revision**

How to use this PDF

- Revise the NCERT concepts first, then attempt the questions without looking at notes.
- For crosses, write parent genotypes, gametes, Punnett square and final ratio.
- For sex determination, show XX and XY chromosomes clearly and state the probability.
- Use this as chapter-wise board practice before solving full Science papers.

Question Distribution

Section	Marks	Focus
A	1 mark	Core definitions and terms
B	2 marks	Short reasoning and examples
C	3 marks	Crosses, variation and sex determination
D	4 marks	Case and assertion-reason practice
E	5 marks	Long-answer Mendel and inheritance questions

Section A: 1 Mark Questions

- Q1.** Define heredity. Why do offspring resemble their parents?
- Q2.** What is a gene? Write its role in inheritance.
- Q3.** Name the plant used by Mendel for his inheritance experiments.
- Q4.** What is a dominant trait? Give one example from pea plant traits.
- Q5.** What is a recessive trait? Why can it remain hidden in F1 generation?
- Q6.** Write the full form of DNA and state where it is present in a cell.

Section B: 2 Mark Questions

- Q7.** Why are acquired characters not inherited by the next generation?
- Q8.** Differentiate between genotype and phenotype with one example.
- Q9.** Explain the meaning of homozygous and heterozygous condition.
- Q10.** A tall pea plant is crossed with a dwarf pea plant. Write the genotype of F1 if tallness is dominant.
- Q11.** Why did Mendel choose pea plants for his experiments? Write two reasons.
- Q12.** What is a monohybrid cross? Name the phenotypic ratio obtained in F2 generation.
- Q13.** State the law of segregation in simple words.
- Q14.** How does DNA copying create variations?

Section C: 3 Mark Questions

- Q15.** A trait appears in the F2 generation but not in F1. Explain using dominant and recessive terms.
- Q16.** Draw a Punnett square for a cross between two heterozygous tall pea plants, Tt x Tt.
- Q17.** In pea plants, round seed shape is dominant over wrinkled seed shape. Show the expected ratio in F2 generation.
- Q18.** Explain how sex is determined in human beings.
- Q19.** Why is the probability of a male or female child nearly equal in humans?
- Q20.** A man with genotype XY and a woman with genotype XX have a child. Use a cross to show possible sex chromosomes of children.
- Q21.** How do variations help a species survive in a changing environment?
- Q22.** Differentiate between inherited traits and acquired traits with two examples.

Section E: Long Answer Questions

- Q23.** Explain Mendel's monohybrid cross between tall and dwarf pea plants up to F2 generation.
- Q24.** Describe the inheritance of two contrasting traits in pea plants and write the dihybrid ratio.

Q25. What is independent assortment? Explain with a pea plant example.

Q26. Explain the relationship between chromosomes, DNA and genes.

Q27. How does heredity bring similarity and variation together in sexually reproducing organisms?

Q28. A farmer crosses pure tall pea plants with pure dwarf pea plants. Write F1 and F2 results with genotype and phenotype ratios.

Section D: Case and Assertion-Reason Questions

Q29. Case based: A teacher crosses pea plants with yellow round seeds and green wrinkled seeds. What do the terms dominant and recessive mean in this context?

Q30. Case based: A couple has three daughters. Explain whether the chance of a son in the next child changes. Give reason using sex chromosomes.

Q31. Assertion and Reason: Assertion - Only the father decides the sex of a child in humans.
Reason - The father produces both X and Y carrying sperms. Choose and justify.

Q32. A student says muscles developed by exercise will be inherited by children. Is the statement correct? Give scientific reason.

Quick Answer-Writing Checklist

- Do not write only the final ratio. Add a one-line explanation of dominant and recessive traits.
- Keep symbols consistent. If tall is T, dwarf must be t throughout the answer.
- For sex determination, write that the father's sperm contributes either X or Y chromosome.
- For variation, connect DNA copying with survival advantage in changing surroundings.