

CLASS 12

PHYSICS

REVISION NOTES

Class 12 Physics Chapter 5 Magnetism and Matter – Revision Notes

A bar magnet behaves like a pair of magnetic poles, and this Class 12 Physics Chapter 5 summary traces that idea through axial and equatorial field formulas, Earth's own magnetism, and how different materials classify by their response to a field.

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Bar Magnet

Magnetic moment: $m = q_m \times 2l$.

Axial field: $B = (\mu_0/4\pi)(2m/r^3)$; Equatorial: $B = (\mu_0/4\pi)(m/r^3)$.

Torque $\tau = mB \sin\theta$; PE $U = -mB \cos\theta$.

Earth's Magnetism

Declination, dip/inclination, horizontal component $B_H = B \cos(\text{dip})$.

Material Classification

Diamagnetic: $\chi < 0$, weakly repelled (e.g. bismuth).

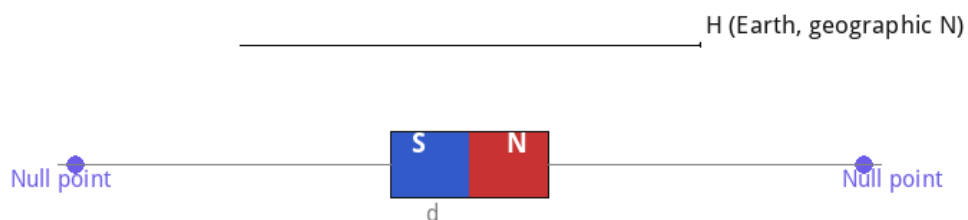
Paramagnetic: $\chi > 0$ small, weakly attracted (e.g. aluminium); Curie's law $\chi \propto 1/T$.

Ferromagnetic: large $\chi > 0$, strongly attracted, hysteresis (e.g. iron).

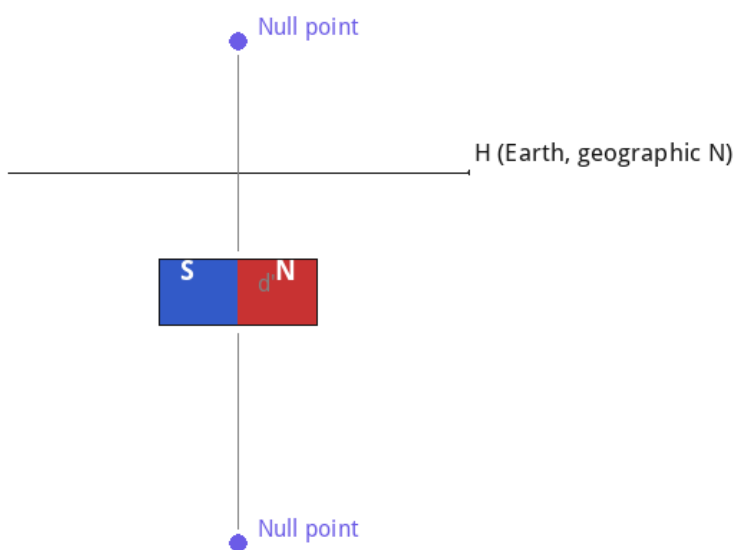
One-Line Summary

A bar magnet behaves as an equivalent solenoid producing dipole-like fields; materials are classified as diamagnetic, paramagnetic, or ferromagnetic based on their magnetic susceptibility.

Quick visual: a worked diagram from the full [Solutions](#) page, for reference.



Null points on the axis: magnet's N pole points geographic north.



Magnet turned 180deg: null points shift to the equatorial line.

Class 12 Physics Chapter 5 – Solutions and Important Questions

Need full answers or more practice? See the [Class 12 Physics Chapter 5 Solutions](#) and [Class 12 Physics Chapter 5 Extra Questions](#).

See also: [Chapter 1](#) | [Chapter 2](#) | [Chapter 3](#) | [Chapter 5](#)

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Quick revision: [Chapter 1](#) | [Chapter 2](#) | [Chapter 3](#)

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