



17.2

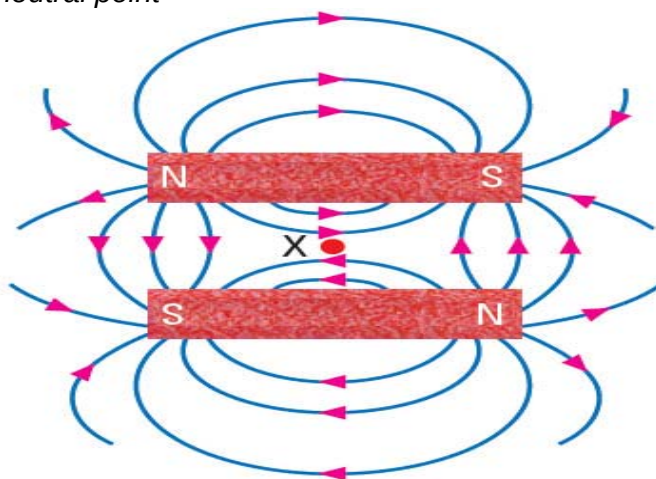
Example 17.1

Steel is a magnetic material. The two needles will be induced with unlike poles at its ends. Since unlike poles attract, the ends will be attracted to each other.

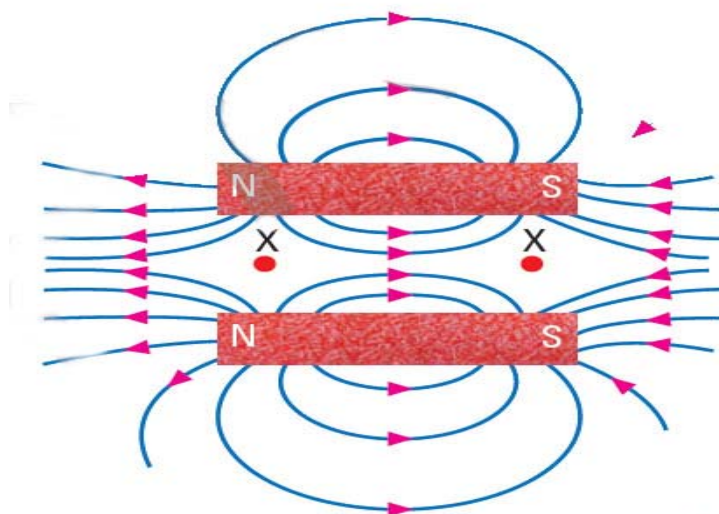
17.4

Example 17.2

(a) *Note: X is the neutral point*



(b)

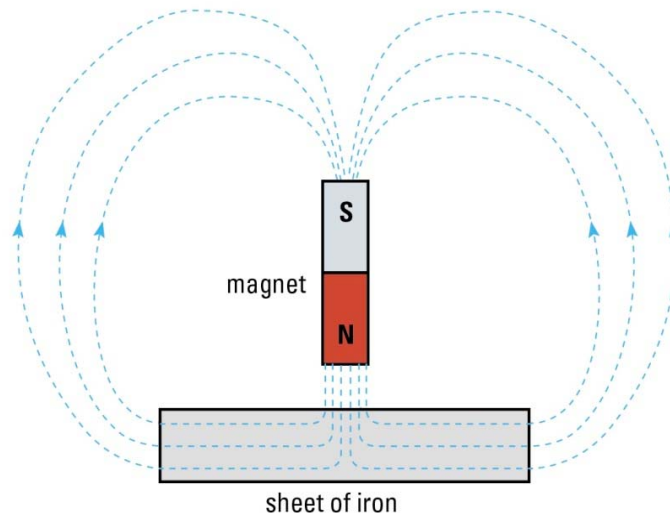


17.5

Example 17.3

Note:

- The magnetic field lines have to be drawn as continuous lines!
- A compass placed below the sheet of iron will not detect any magnetic field line from the North pole of the bar magnet now!



Example 17.4

(a) The end of the magnet near to the compass is a north pole since unlike poles attract. [and the bar magnet's magnetic field is much stronger than the Earth's.]

(b) As the bar magnet moves away from the compass, the compass needle in position shown in Fig. 17.4a gradually rotates clockwise till it is in position shown in Fig. 17.4a again. This is because the magnetic field due to the bar magnet decreases to zero, as it moves far away from the compass, such the the compass is again influenced only by the Earth's field.

[Note: This can also be explained by considering the direction of the compass as showing the vector addition of the magnetic field strengths of the bar magnet and the Earth.]

Exercises

- 1 D
- 2 C
- 3 B
- 4 D
- 5 C
- 6 B
- 7 C
- 8 B