Chapter 16. Magnetism

Contents:

New word list:

4.1 Simple phenomena of magnetism

Core

1 Describe the forces between magnetic poles and between magnets and magnetic materials, including the use of the terms north pole (N pole), south pole (S pole), attraction and repulsion, magnetised and unmagnetised

2 Describe induced magnetism

3 State the differences between the properties of temporary magnets (made of soft iron) and the properties of permanent magnets (made of steel)

4 State the difference between magnetic and non-magnetic materials

5 Describe a magnetic field as a region in which a magnetic pole experiences a force

6 Draw the pattern and direction of magnetic field lines around a bar magnet

7 State that the direction of a magnetic field at a point is the direction of the force on the N pole of a magnet at that point

8 Describe the plotting of magnetic field lines with a compass or iron filings and the use of a compass to determine the direction of the magnetic field

9 Describe the uses of permanent magnets and electromagnets

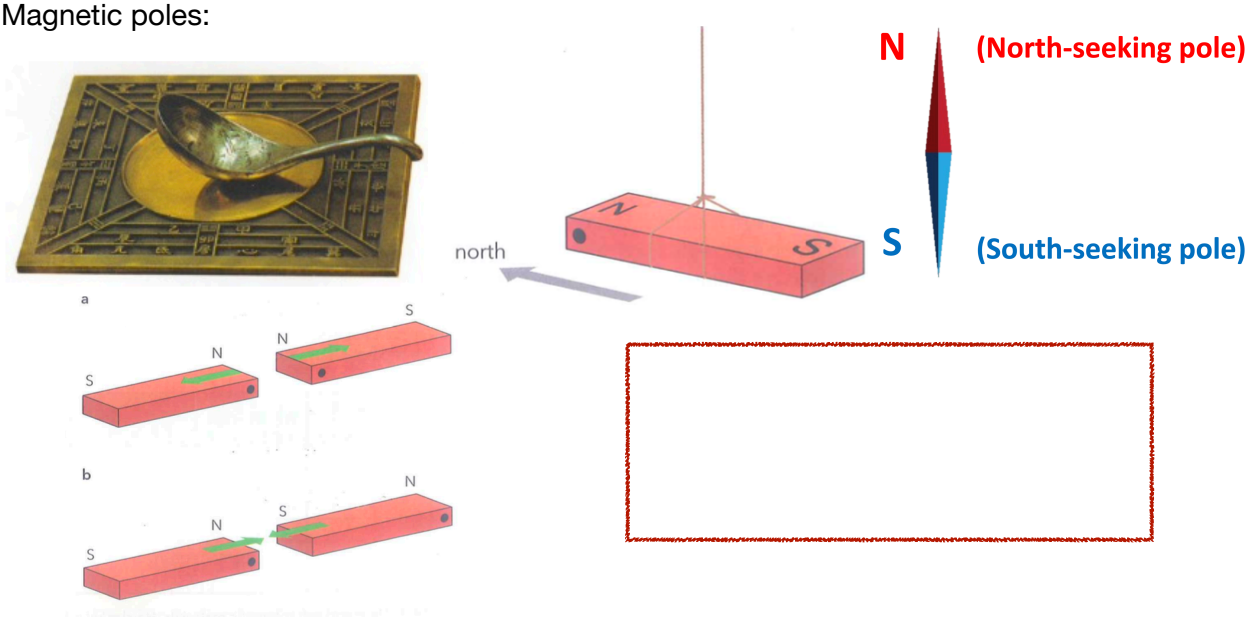
Supplement

10 Explain that magnetic forces are due to interactions between magnetic fields

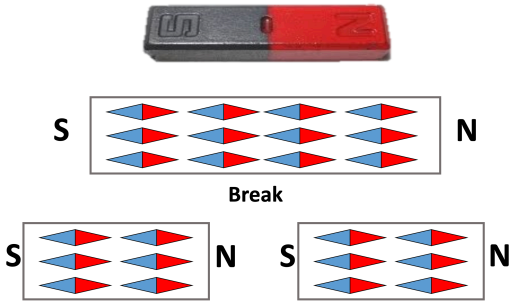
11 Know that the relative strength of a magnetic field is represented by the spacing of the magnetic field lines

16.1 Permanent magnets

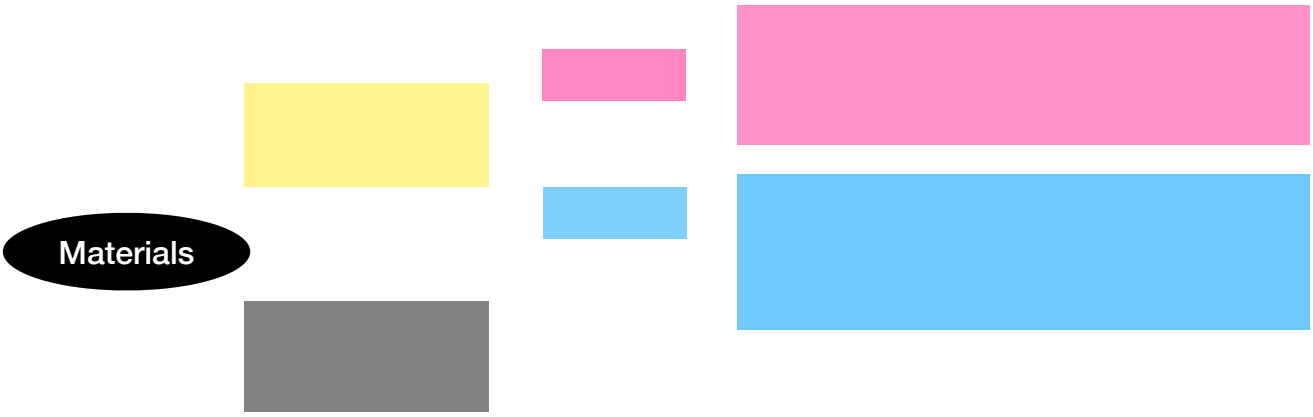
Magnetic poles:



What would happen if you cut a bar magnet in half?

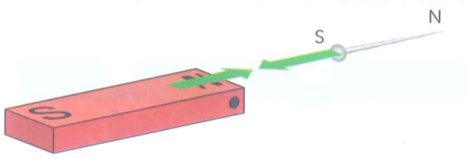


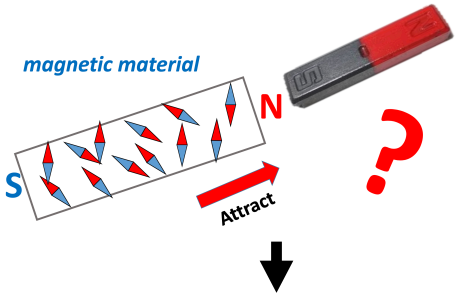
Magnetic material:



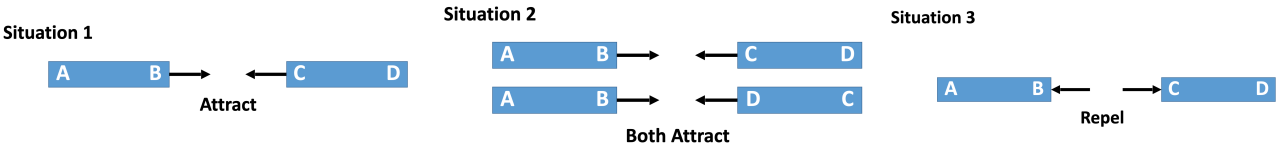
Induced magnetism

Why magnets can attract magnetic material?



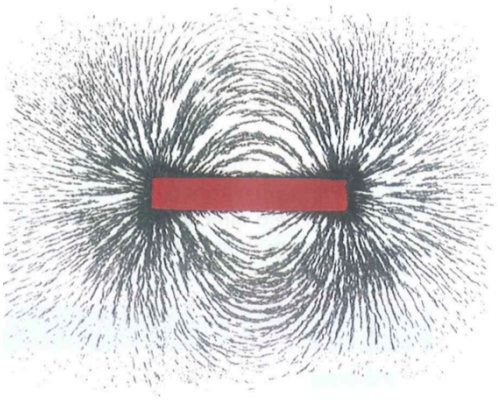


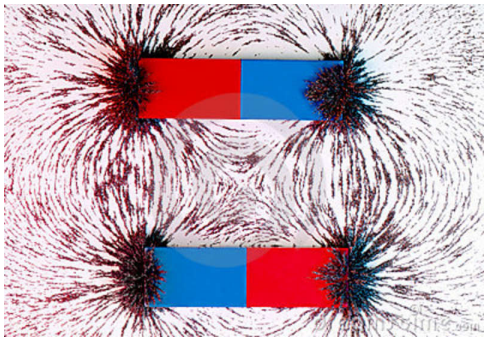
Exercise.
Which object is magnet in the following situations respectively?



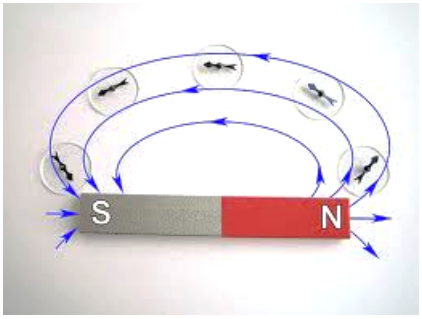
16.2 Magnetic field

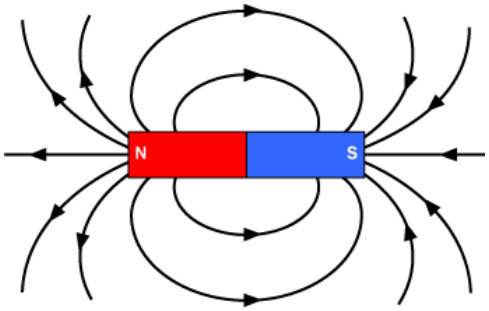
Region around the magnet where magnetic materials experience forces

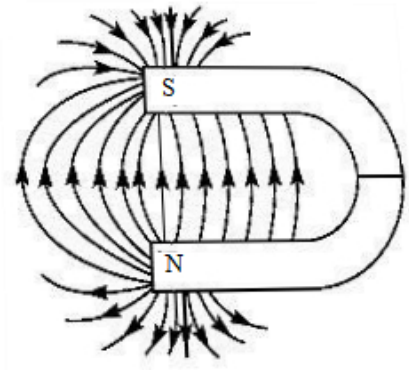


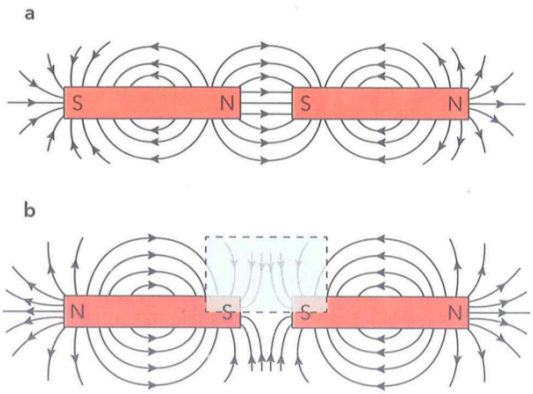


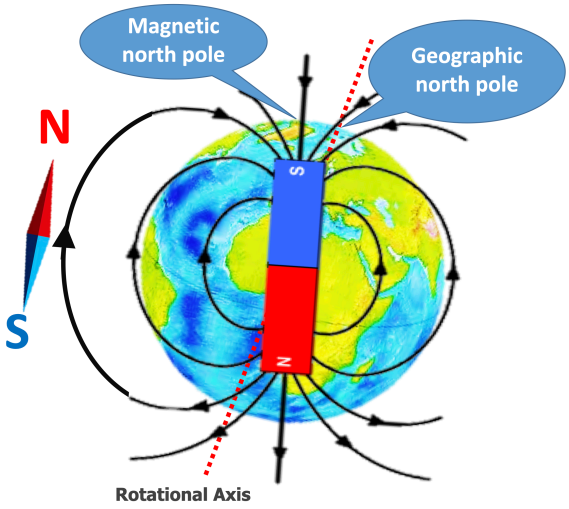
Magnetic field lines



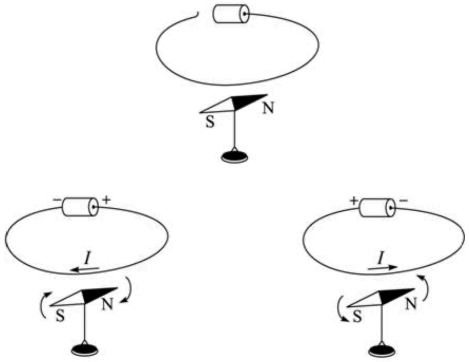




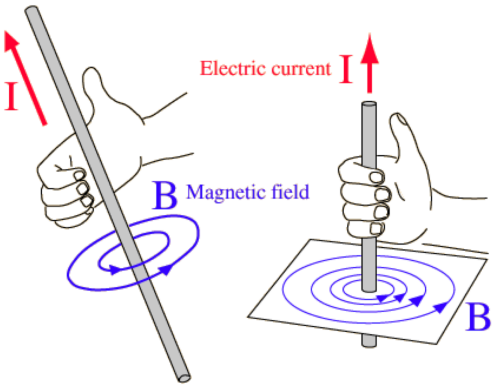




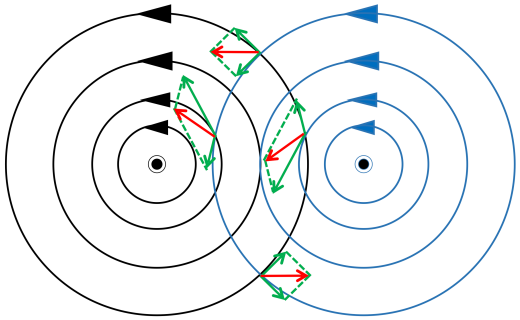
Magnetic field around a current

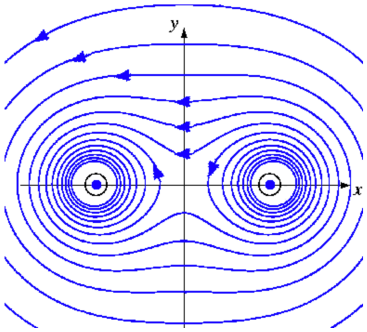


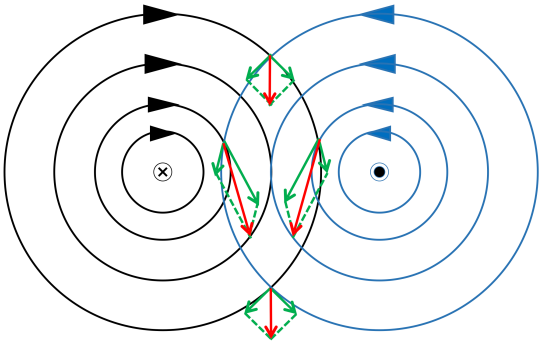
The Right-hand Grip Rule

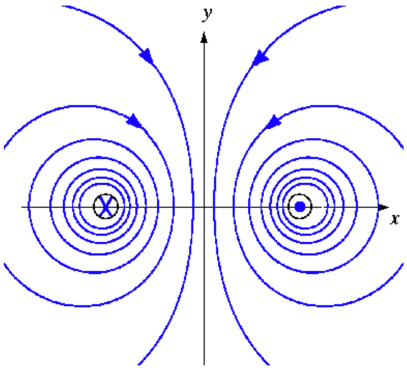


Two metal wire contains same/opposite direction of current, will they attract to each or repel?

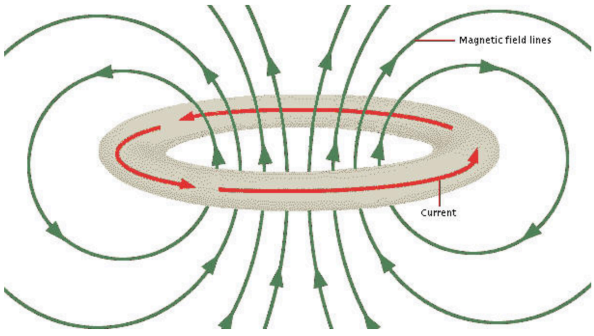


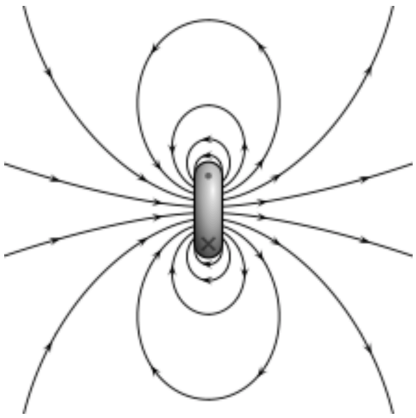




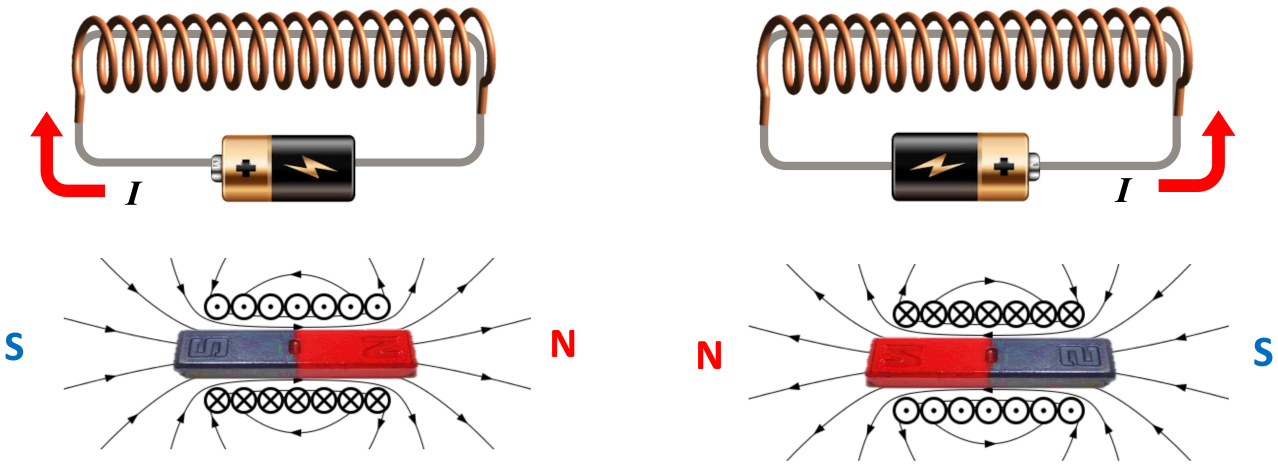


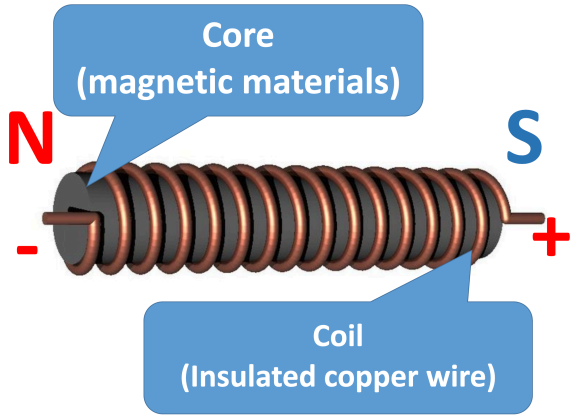
Can you use what you just learned(magnetic field around a straight current) to determine the magnetic field around a circle current?





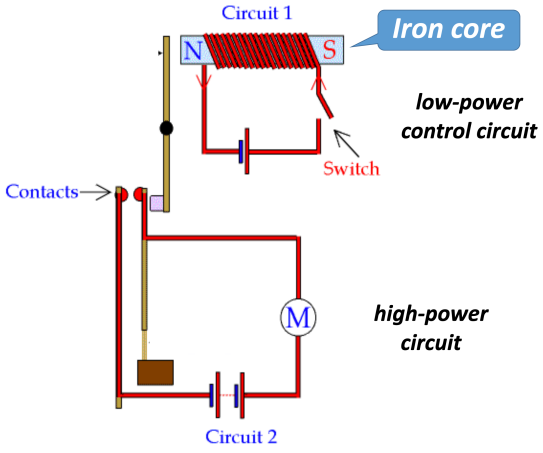
Electromagnet

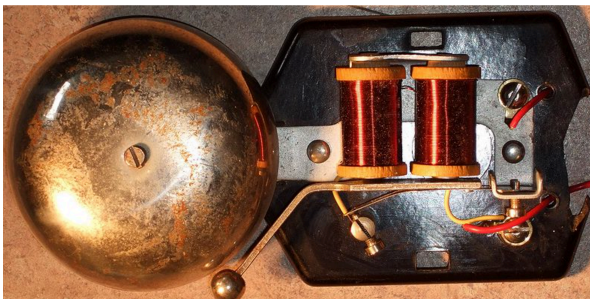


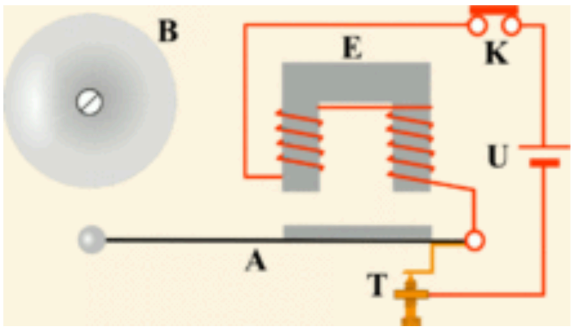


Ways to **increase** the strength of the magnetic field in a solenoid:

Application of electromagnets:



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