

### **TAP 411- 3: Magnetism reminders**

1. What is the difference between a magnetic material and a magnet?
2. How might you magnetise and demagnetise a bar of steel?
3. How might you investigate the magnetic field around a magnet?
4. Draw the magnetic field pattern you might expect to find if a north pole is brought up to a north pole.
5. Draw the magnetic field pattern you might expect to find if a north pole is brought up to a south pole.
6. What forces act in each of the previous cases?
7. How is a stronger magnetic field represented with field lines?



### Practical advice

These questions are intended to be a link to pre-16 level, as revision and reminders. They should be a quick homework at the start of the topic whilst the experiments are happening in class.

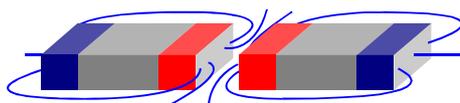
### Alternative approaches

The use of in-school pre-16 level revision guides or past papers would serve the same function. It is important to remember that the students do not come to the topic fresh but will have ideas from previous work. Initially it is important to work out how clear these ideas are.

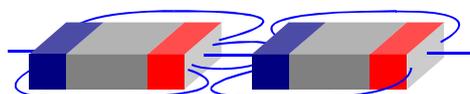
### Answers and worked solutions

1. A magnet is a magnetic material that has been magnetised. A magnetic material can be attracted by a magnet. Only a magnet will be repelled by a magnet.
2. Magnets can be made by being placed in a solenoid, by being stroked by a magnet, or by hitting when aligned with Earth's field. The point is that the random arrangement of magnetic moments and domains needs to be aligned. The magnetised steel can be demagnetised by repeated hitting, by heating or by slowly pulling it out of a coil carrying an alternating current.
3. Either sprinkle iron filings in a plane around the magnet and tap the surface gently, or use one or more plotting compasses to investigate the field.

4.



5.



6. The like poles repel, the unlike poles attract. There will be a distance over which the force acts.
7. The field lines are more closely spaced

### External reference

This activity is taken from Advancing Physics chapter 15, 10W

