Practical 3 – Topic 5

The dependence of magnetic force between two identical bar magnets on the distance between the magnets

Criteria assessed

- DCP
- CE

Depending on the information given, this can be a very good design experiment as well.

Materials needed

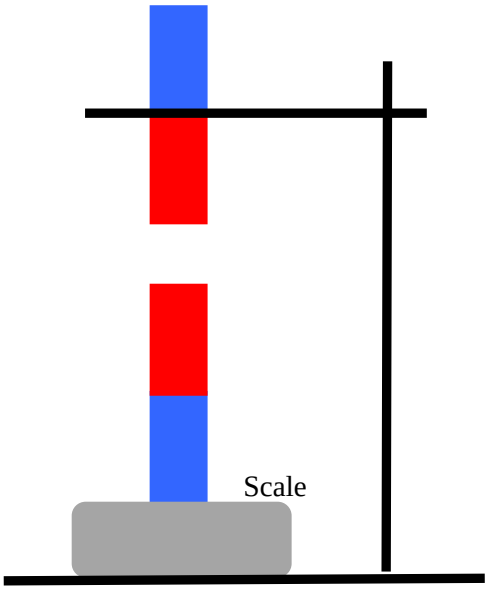
- Vertical stand with clamps
- Ruler
- Two identical bar magnets (the strongest you can get)
- Electronic scale

What to do

- Attach one of the magnets to a plastic container using sticky tape.
- Place the container on the scale so that the magnet is vertical.
- Zero the scale reading.
- Clamp the second magnet on a rod and place it so that the magnets are vertically aligned.
- Record the distance *d* between the poles of the magnets and the reading *R* on the scale.
- Vary the distance *d* and measure the new reading of the scale.

Results

- How is *R* related to *d*?
- Do you get the same result if the polarity of the top magnet is changed?



If you manage to get good data you may want to try a more difficult version of this experiment in which the magnets are *not* aligned.

- For fixed *d*, what is the dependence of *R* on *x*?
- For fixed *d*, is the dependence of *R* on *x* the same for positive as well as negative values of *x*?