Magnetic Muscle

Like people, magnets come in all shapes and sizes, and these differences are easy to see. But magnetic strength is not so obvious. Is there some way to test and create a scale of relative magnetic strength? Let's test some magnets to find out.

Materials
- A bunch of metal paper clips
- A wooden or plastic ruler
- A piece of 1-foot-long (30 cm) string
- A stack of books
- A variety of magnets

To Do
Cut a length of string about 1 foot (30 cm) long. Tie one end of the string to the center of a magnet. Tape the other end to the end of a ruler. Position the ruler so that the magnet extends beyond the edge of the desk and hangs free. Secure the ruler with a small stack of books.

Place a paper clip in your palm. Raise the clip so that it touches one pole of the hanging magnet. Gently lower your hand. Is the magnet strong enough to hold onto the clip?

Slip together the loops of two paper clips to form a chain. Repeat the magnet test. Can the magnet support two clips? Next, try three. Keep going until you reach the limit that this magnet can support.

Repeat this experiment with all the magnets.

The Science
Magnets vary in strength. You can determine their relative strength by comparing how many paperclips each magnet can support.

Keep in mind that over time, magnets lose some of their power. The magnetic fields of individual atoms start "pointing" in different directions. As more atoms begin to point randomly, the magnet loses strength.

Check It Out! Do you wear an electric wristwatch? If so, you should be careful when with powerful magnets. Some magnets can produce a magnetic field strong enough to ruin watches and other electronic devices.