Separation by Magnet

Okay, who did it? Who mixed the iron filings with the salt? Got any bright ideas about how to separate these two substances?

Materials
- A sealable plastic bag
- A magnet
- 1 teaspoon (5mL) salt
- 1/4 teaspoon (1.25 mL) iron filings
- Plate

To Do
Add about 1/4 teaspoon (1.25 mL) of iron filings to 1 teaspoon (5 mL) of salt. Mix well and pour this blend on to a plate.
Seal the magnet in the plastic bag. Predict what will happen when you move the magnet through the mixture - After you make your prediction, try it and see what happens.

The Science
The iron filings are attracted to the magnet and stick to the plastic bag's outer surface. The salt (which isn't a magnetic material) remains behind.

Another Solution
Add the salt and iron mixture to a large container of warm (not hot) water. Stir vigorously. The salt crystals will dissolve in the water, breaking down into invisible atomic-sized particles. These particles mix so thoroughly in water that they won't sink or accumulate at the bottom. This type of mixture is called a solution.
In contrast, iron won't dissolve in water. Its particles remain unchanged. The filings merely fall and accumulate at the bottom of the container.
If this solution is poured through filter paper, the dissolved salt flows through with the water. The iron filings, however, will be trapped by the paper.