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Chemistry

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## Separation of a Mixture Lab Report

### Research Question

How can we separate a mixture into its original parts?

### Introduction

We were given a small mixture of iron filings, small rocks, salt, and sand. We knew that iron is attracted to magnets; rocks are big enough to pick up by hand; salt will dissolve in water; and that sand will not dissolve in water.

### Procedure

First, we used a magnet to remove the iron filings from the mixture. To prevent the iron filings from sticking directly to the magnet, we wrapped the magnet in a coffee filter. Secondly, we used tweezers to pick out the rocks. After that, we were left with just salt and sand. We added the salt and sand mixture to approximately 150 mL of distilled water in a beaker and stirred until the salt had dissolved. After that, we put a coffee filter over a second beaker in a cone shape, and poured the mixture through, separating the sand from it. Since we were left with just salt water, we poured it into a pot, and boiled it over a stove to evaporate the water.

### Observations

When we put the magnet in the mixture, the iron filings were the only thing that stuck to it. They formed spiky shapes on the magnet.

The rocks were the only thing big enough to easily pick out of the mixture.

When we boiled the water, we could see the salt forming on the bottom of the pot; when it was done boiling, the salt had caked onto the entire bottom of the pan in a thin layer.

### Conclusion

We were able to successfully separate the mixture into its original components by looking at the qualities of each ingredient. We knew that iron was magnetic, so we could get it out with a magnet; we knew that rocks were big, so we could pick them out with tweezers; we knew that salt would dissolve in water, so we could dissolve it in water then evaporate the water; and we knew that sand would not dissolve in water, so we could filter it out. When separating mixtures, you must look at all of the relationships between each component and the tools that you have at hand.