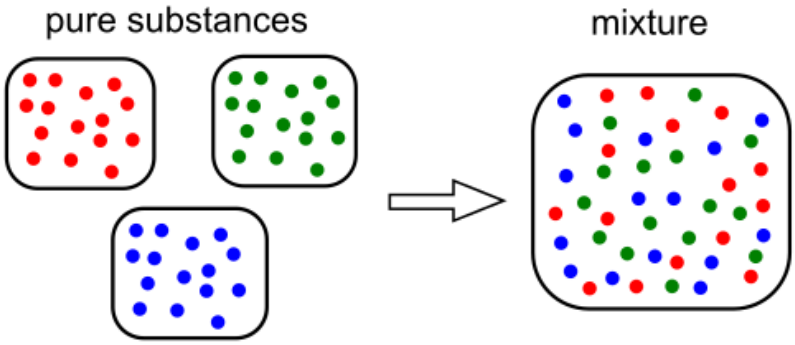
Separating Mixtures



- A **mixture** contains several materials whose molecules are not bound together.
- Mixtures can be separated by physical processes: filtering, dissolving, evaporating, without any chemical reaction needed.
- The amount of a substance can be measured by mass (how heavy it is, in grams) or by volume (how much space it takes up, in milliliters).

Part 1: Make a Mixture

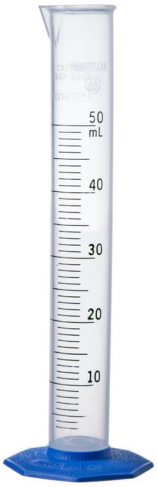
1. Pour the iron filings into the left tray on your scale.
2. Use standard masses and the slider to find the **mass** of the iron filings.

Starting **mass of iron filings**: _____ g
Then pour the filings into your bowl.

3. Now measure the **mass** of rice in your baggie. Add the rice to the bowl.

Starting **mass of rice**: _____ g

4. Use the graduated cylinder to measure the **volume** of salt in your baggie. Then add the salt to the bowl.



Starting **volume of salt**: _____ mL

5. Use the graduated cylinder to measure the **volume** of sand you have. Then add it to the bowl.

Starting **volume of sand**: _____ mL

6. Mix up everything in your bowl to create a mixture!

Part 2: Purify Components of a Mixture

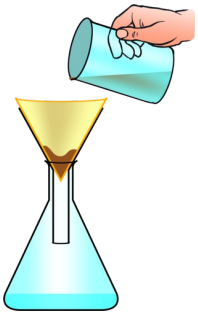
1. Discuss: Which equipment can you use to separate out which components?

Sieve	iron filings
Magnet	rice
Coffee filter	sand

2. Purify out the rice using the sieve. The rest of your mixture should go through the sieve into a large cup. Use the scale to measure how much rice you got out.

Mass of purified rice: _____ g
Did you get out a similar amount to what you put in? Yes / no

3. Keep the magnet in its baggie. Wave it over the mixture to get the iron filings to jump up. Hold them over a separate cup and reach in the baggie to dislodge the magnet and make the filings fall into the cup. The magnet should never directly touch the iron filings!
Mass of purified iron filings: _____ g
If you got more or less than what you put in, discuss why.



What is in the remaining mixture? _____
What volume do you expect the remaining mixture to have? _____ mL

4. Use the graduated cylinder to measure the volume of the remaining mixture.
Measured volume: _____ mL

5. Pour remaining mixture into a single bowl. Add 30mL of water and stir.
The salt **dissolves** in the water, breaking up into individual atoms. Dissolved materials can pass through a paper filter.

6. Put a coffee filter into the funnel and pour your wet mixture through it.

7. Measure the volume of the sand that remains in the filter.
Volume of purified sand: _____ mL. Does this match original sand volume?

Discuss:

- Why do you think finding the mass of the purified sand would not be an accurate way to measure how well your purification worked?
- Where is the salt? If you had lots of time (or access to a stove), can you think of a way to get the purified salt out?