Extraction and Filtration

Extraction, the separation of substances in a mixture by using a solvent, depends on solubility. For example, sand can be separated from salt by adding water to the mixture. The salt dissolves in the water, and the sand settles to the bottom of the container. The sand can be recovered by decanting the water. The salt can then be recovered by evaporating the water.

Filtration separates substances based on differences in their physical states or in the size of their particles. For example, a liquid can be separated from a solid by pouring the mixture through a paper-lined funnel, or if the solid is denser than the liquid, the solid will settle to the bottom of the container, which will leave the liquid on top. The liquid can then be decanted, which will leave the solid.

SETTLING AND DECANTING

1. Fill an appropriate-sized beaker with the solid-liquid mixture provided by your teacher. Allow the beaker to sit until the bottom is covered with solid particles and the liquid is clear.
2. Grasp the beaker with one hand. With the other hand, pick up a stirring rod and hold it along the lip of the beaker. Tilt the beaker slightly so that liquid begins to pour out in a slow, steady stream, as shown in Figure A.

FIGURE A
Settling and decanting

GRAVITY FILTRATION

1. Prepare a piece of filter paper as shown in Figure B. Fold it in half and then in half again. Tear the corner of the filter paper, and open the filter paper into a cone. Place it in the funnel.

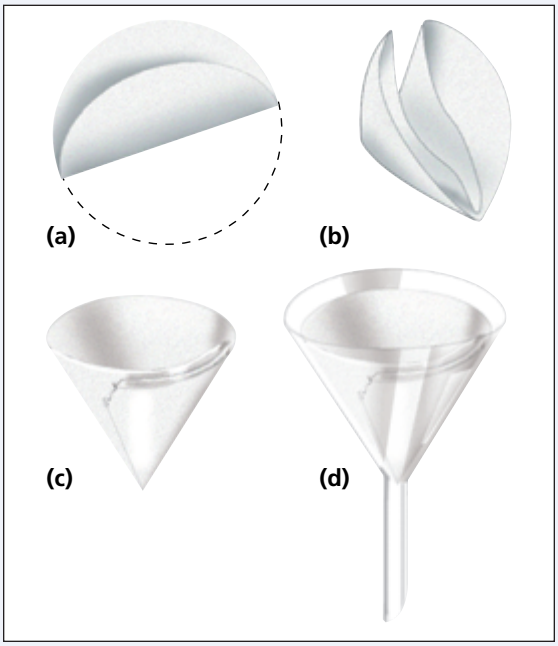

FIGURE B Folding the filter paper