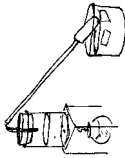


## Week 24 Activity Sheets

11. Describe a method you might use to separate a mixture of... (pp. 114–115)
- ... gravel and water: (let the water stand and allow the gravel to sink to the bottom—or use a strainer to strain off the water)
- ... iron filings and baby powder: (use a magnet to pull out the iron filings)
- ... salt and water: (distill/it boil the mixture—the water will evaporate away from the salt)



12. Why is it possible to separate substances in a mixture? (p. 114–115)  
(because the properties of substances in a mixture stay the same after they have been mixed, so you can use their properties to help you separate them)
13. Briefly describe each separation technique. (pp. 115–117)
- Distillation: (purifying substances using boiling points: since different substances boil at different temperatures, chemists can boil a solution and capture and cool the gas as it condenses, again to separate substances)
- (Paper) Chromatography: (a solvent is absorbed along the length of a piece of paper. Some solutes spread farther apart than others depending on how strongly they stick to the paper)
- Centrifugation: (Chemists will place solutions of substances with different densities in tubes and then into a centrifuge. The centrifuge spins around really fast which forces the densest solutes toward the bottom of the tube.)

14. How does a chemical reaction differ from a mixture? (pp. 105, 114–118)

Chemical Reaction	Mixture
<u>(bonds between atoms are broken and rearranged to form new compounds; chemical compounds have different properties from those of the elements they contain)</u>	<u>(components are still separable; components still have the same properties as they did when they were separate)</u>

Geology, Physics, and Origins | Week 24 | Student Activity Sheets 119



## Week 24 Activity Sheets

15. Briefly describe the electrolysis process. (p. 118) (a compound is melted or dissolved in a solvent to make an electrolyte. Then, chemists pass an electric current through it, causing the compound to break apart)



### 5-Day: Cool Stuff 2.0 and How it Works

16. Why are the designs on printed money changed regularly? (p. 208)  
(to make them harder to counterfeit)
17. What features of genuine currency make it harder to photocopy if a counterfeiter tries to make duplicates? (p. 209)  
(ink is raised on real money—photocopiers don't print this way; swirling patterns and tiny writing blur when photocopied; holograms and watermarks don't photocopy well; fluorescent inks only show up in ultraviolet light—can't be photocopied)
18. How do data chips embedded in passports help to verify a person's identity? (pp. 210–211)  
(data chips are read wirelessly by a computer and can show if a person's passport information has been altered or if any unauthorized changes have been made to the data chip)
19. Describe how each of the following features can be used to identify someone. (p. 211)
- facial features: (a computer can map the distances between an individual's facial features; this data can be compared to measurements in other photos or in a database)
- finger prints: (since no two people have the same fingerprints, they can be read or scanned by an optical scanner and used for identification)
- irises: (the pattern of colored flecks or lines in your irises are unique to you; a camera can capture this pattern and turn it into a digital code)



Student Activity Sheets | Week 24 | Geology, Physics, and Origins 120