# **Chemistry Everywhere Discussion Guide (for use during or after reading)**

1. Choose and describe one example of chemistry in your suitcase. (Chemistry in Your Suitcase, p. 7-11)
   1. Students’ answers will vary but may include information about the special chemicals that are applied to sunglasses to filter out some light, molecules in sunscreen that block harmful invisible light from the sun, compounds in insect repellent, chemicals in deodorant that kill stinky bacteria, or polymers that make up the fabrics in our clothes.
2. How do chemical reactions relate to baking and cooking? (Chemistry in Cooking, p. 12-15)
   1. Students’ answers will vary but may include information about the irreversible chemical reactions that occur when heat is applied to food. Students may also discuss combustion, the act or process of burning.
3. Choose and describe one example of chemistry in cars. (Chemistry of Cars, p. 16-19)
   1. Students’ answers will vary, but may include information about chemicals in car batteries, combustion, polymers in tires, heat sensors in airbags, or bonded windshield glass.
4. How does chemistry help us smell and taste? (Chemistry of Smell and Taste, p. 20-21)
   1. Chemistry is involved in both smell and taste. In order to smell something, special receptor cells in our nose must be stimulated. Molecules of gas carrying odors stimulate these cells deep in our noses, allowing us to smell. Our tongue works to taste in similar ways! We also have receptor cells on our tongues that identify certain chemical compounds in food which we experience as different flavors.
5. Why is the freezing point of ocean water lower than that of pure water? (Chemistry of Ice, p. 25)
   1. The freezing point of pure water is 32 degrees Fahrenheit, but the freezing point of ocean water is about 28 degrees Fahrenheit. This difference is because ocean water has dissolved sodium chloride as well as other compounds that make it harder for water molecules to bond to one another.
6. How do ocean animals, like corals, rely on chemistry to survive? (Chemistry of the Ocean, p. 26)
   1. Ocean animals, like corals, rely on chemistry in the ocean for survival. For example, small ocean animals and corals absorb calcium, an element, from ocean water to build their skeletons and shells.
7. According to the text, in what two ways do volcanic eruptions affect the chemistry of the living things around them? (Chemistry of Volcanoes, p. 27-29)
   1. Volcanic eruptions have released carbon dioxide into Earth’s atmosphere for millions of years. Over time, this carbon dioxide has built up to keep Earth warm enough to sustain life. Volcanic eruptions also affect the chemistry of living things around them more directly. Ash, tiny particles of lava that solidify in the air, can block sunlight, interrupting the chemical process of photosynthesis.
8. What conditions must be true of the environments in which minerals typically form? (Chemistry in Treasure, p. 30-32)
   1. A mineral is a natural crystal that has the same chemical makeup wherever it is found. Minerals usually form in places with intense temperature and pressure, such as deep under Earth’s surface or at the base of volcanoes.
9. Consider the timeline on pages 36 and 37. What information stood out to you the most and why? (Timeline, p. 36-37)
   1. Students’ answers will vary.
10. What fun fact stood out to you and why? (Can You Believe It?!, p. 38-39)
    1. Students’ answers will vary.