

## Chapter 5, Lesson 5 Activity Sheet Answers

1. More salt was left undissolved in the bottom of the cup. The sugar dissolved better in water than salt.
2. Yes, different substances should have different solubilities because substances are made up of different ions or atoms on the molecular level—they are chemically different. Water molecules will be attracted to and interact with different substances differently.
3. Answers will vary but most students will mention the shape, size, and transparency of the crystals.
4. Answers will vary, but students should conclude that they do not have enough evidence to identify the unknown.
5. They contain the same amount of cereal. The crushed cereal takes up less space, so it has less volume, but the crushed and un-crushed cereal have equal mass, so it is the same amount of cereal.
6. Students should use a scale to weigh equal amounts of the different crystals. Using a device that relies upon volume would give unequal amounts of different crystals due to the fact that they take up different amounts of space.
7. Substances have different solubilities because they have different chemical compositions. Some substances are made up of ions while others are made up of molecules. The extent to which a substance has areas of positive and negative charge which would associate with a water molecule helps determine how soluble in water that substance will be.
8. Because different substances have characteristic solubilities, you can use the extent to which they dissolve in water as a clue to determine an unknown. If an unknown has solubility like another known substance, it is likely that they are the same substance.
9. Dissolving salt and sugar are similar in that both rely on the small areas of positive and negative charge on a water molecule to be attracted to the particles which make up the whole. The main difference is that when an ionic substance dissolves, individual ions are pulled apart by water, while in a molecular substance, whole molecules are pulled apart from one another and NOT the individual atoms which make up the molecules.