Grade 9 - Atoms and Elements - Pre-Assessment

Purpose:
This document is for grade 9 teachers to use as a pre-assessment for the "Atoms and Elements" unit. It assesses students understanding of the of the end of unit knowledge outcomes from the grade 5 "Properties and Changes in Materials" unit.

Curriculum Comparison:

Grade 5 - Properties and Changes in Materials	Grade 9 - Atoms and Elements
300-10 identify properties such as texture, hardness, colour, buoyancy, and solubility that allow materials to be distinguished from one another	307-12 investigate materials and describe them in terms of their physical properties
300-9 group materials as solids, liquids, or gases, based on their properties	307-12 describe changes in the properties of materials that result from some common chemical reactions
301-9 identify changes that can be made to an object without changing the properties of the material of which it is made	307-14 use models in describing the structure and components of atoms and molecules
301-10 identify and describe changes to materials that are reversible and some which are not	307-15 identify examples of common elements, and compare their characteristics and atomic structure
301-12 describe examples of interactions between materials that result in the production of a gas	307-16 identify and write chemical symbol or molecular formula of common elements or compounds
301-11 describe changes that occur in the properties of materials when materials interact with each other	
300-12 identify the source of materials found in an object and describe the changes to the natural materials required to make the object	
300-11 relate the mass of a whole object to the sum of the mass of its parts	

Rubric Coding:
The purpose of an assessment is not to assign a "Mark" or a "Grade". Rather, this document demonstrates to teacher the students previous understanding of the outcome. Each question assesses on specific knowledge outcome from the grade 5 unit that precedes the grade 9 "Atoms and Elements" unit.

Code 0 - Indicates that students do not understand the concept
Code 1 - Indicates that students understand the basic concept but either cannot elaborate in detail or have not considered more information could of been added
Code 2 - Indicates that students have a mastery of the concept.
*Please note that not all outcomes will allow for a Code 2 based on complexity.

Grade 5 Properties and Changes in Materials

Knowledge Outcomes and Curriculum Focus

300-10 identify properties such as texture, hardness, colour, buoyancy, and solubility that allow materials to be distinguished from one another

- Students investigate solids, liquids and gases and describe distinguishing characteristics of each

300-9 group materials as solids, liquids, or gases, based on their properties

- Classify solids as substances with a definite shape and volume
- Classify liquids as substances with a definite shape but no definite volume
- Classify gases as having no definite shape or volume

301-9 identify changes that can be made to an object without changing the properties of the materials of which it is made

- Students should investigate physical changes: that is changes which affect the look, feel, strength, texture of the object but do not actually change the object into different material

301-10 identify and describe changes to materials that are reversible and some which are not

- Students should expire physical changes to a variety of materials and such changes impact other properties of the materials.

Note - Reversibility does not distinguish physical change from chemical change

301-12 describe examples of interactions between materials that result in the production of a gas

- Students should explore chemical changes of different materials

301-11 describe changes that occur in the properties of materials when materials interact with each other

- Students should explore chemical changes of different materials

300-12 identify the source of materials found in an object and describe the changes to the natural materials required to make the object

- Students should focus on the composition of manufactured materials and how the materials have been processed**.**

300-11 relate the mass of the whole object to the sum of the mass of its parts

- Students should recognize the total mass of an object equals the sum of its parts

** Please Note that not all knowledge outcomes from grade 5 have been assessed. Only outcomes with a direct connection to the learning in grade 9 have be included.*

Grade 9 - Atoms and Elements - Pre-Assessment

Name:_____ Teacher/Class:_____

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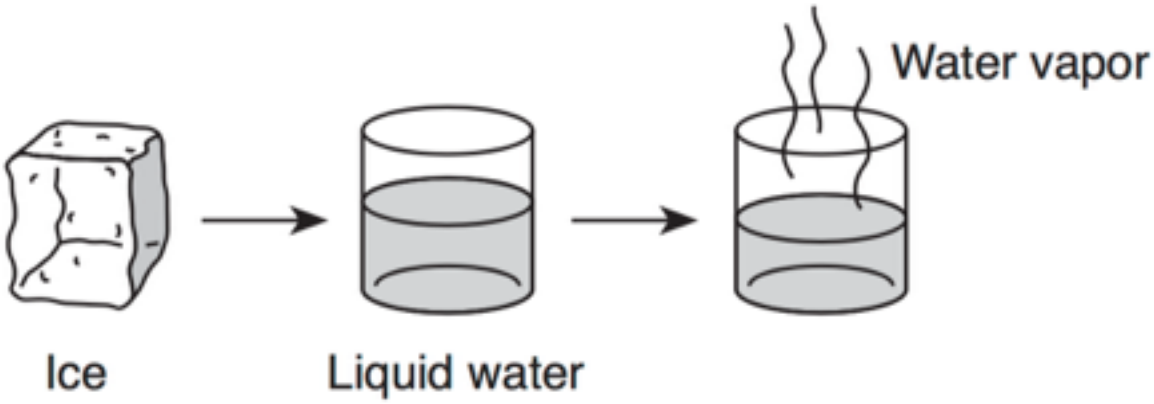
1. In which diagram does water have definite shape and definite volume?



2. Explain how changing the temperature (heating up and cooling down) of molasses can be made without changing the the properties of molasses.

3. Some physical changes can be reversed: some physical changes can not easily be reversed. Give an example of each and describe the changes based on reversibility.

4. Baking soda is placed in a Ziploc bag. Vinegar is poured into the bag with the baking soda, and the bag is sealed quickly. Immediately, the baking soda begins to dissolve in the vinegar, the baking soda and vinegar mixture begins to bubble, and the Ziploc bag begins to expand. Are these evidence of a chemical or physical change?

Grade 9 - Atoms and Elements - Pre-Assessment

Coding Rubric

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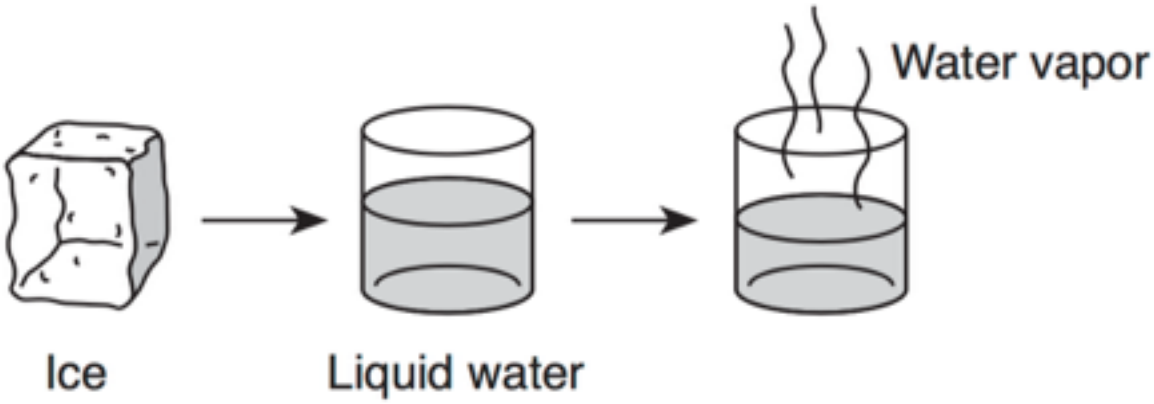
1. In which diagram does water have definite shape and definite volume? **(300-9)**



0 - Any other answer
1 - Ice

2. Explain how changing the temperature (heating up and cooling down) of molasses can be made without changing the the properties of molasses.

(301-9)

0 - Any other answer
1 - Adding heat will allow the molasses to move faster because the particles are spread further apart, while reducing heat will slow the flow rate because particles move slower and are more tightly packed together
2 - Relating the previous explanation to the concept that properties of molasses have not changed

3. Some physical changes can be reversed: some physical changes can not easily be reversed. Give an example of each and describe the changes based on reversibility.
(301-10)

0 - Any other answer
1 - Proper example of physical change that can be reversed and that cannot be reversed
2 - Proper explanation of reason why they either can or cannot be reversed

4. Baking soda is placed in a Ziploc bag. Vinegar is poured into the bag with the baking soda, and the bag is sealed quickly. Immediately, the baking soda begins to dissolve in the vinegar, the baking soda and vinegar mixture begins to bubble, and the Ziploc bag begins to expand. Are these evidence of a chemical or physical change?
(301-11/12)

0 - Any other answer
1 – Chemical Change
2 – Explaining why it is a chemical change. Two or more substances combining to create a new substance (in this case a gas is being formed). Other clues of chemical change is the dissolving, foaming.