

## GRADE 8

### Evaluation Checkpoint #1

Activity: Students are to create a comic strip that takes a real life example and demonstrates the particle theory of solids, liquids and gases. The comic must include:

1. An explanation of the difference between solids, liquids, and gases in terms of density, using the particle theory of matter.
2. The various states of water on the earth's surface, their distribution, circulation, and the conditions under which they exist.
3. The processes that each state undertakes in order to physically change, as well as
4. What happens to the particles themselves (how heat affects the motion of particles and the effects of heat on volume in solids).

Overall Expectation 3. Demonstrate an understanding of the properties and uses of fluids (8s41)

	Level 4	Level 3	Level 2	Level 1
<p>3.1 identify the various <b>states of water</b> on the earth's surface, their <b>distribution, circulation, and the conditions</b> under which they exist (8s73)</p>	<p>All states of water on the earth's surface are comprehensive and included. For each state of water, the distribution, circulation, and conditions under which they exist are comprehensive and included</p>	<p>All states of water on the earth's surface are included. For each state of water, the distribution, circulation, and conditions under which they exist are included</p>	<p>Two states of water on the earth's surface are included. Most information is included about their distribution, circulation, and conditions under which they exist</p>	<p>One state of water on the earth's surface is included. The minority information is included about their distribution, circulation, and conditions under which they exist</p>
<p>3.3 explain the difference between <b>solids, liquids, and gases</b> in terms of <b>density</b>, using the particle theory of matter (8s54)</p>	<p>Several ideas are incorporated to explain the difference between the states of matter using all postulates of the particle theory</p>	<p>Many ideas are incorporated to explain the difference between the states of matter using most postulates of the particle theory</p>	<p>Some ideas are incorporated to explain the difference between the states of matter using some postulates of the particle theory</p>	<p>Few ideas are incorporated to explain the difference between the states of matter using few postulates of the particle theory</p>

$$\text{density} = \frac{\text{mass}}{\text{volume}}$$

## Evaluation Checkpoint #2

Challenge: Take a real recipe (with several liquids) and modify it to include the following concepts and terms:

- identify all of the ingredients and describe the relationship between their mass, volume, and density
- explain the difference between solids, liquids, and gases in terms of density, using the particle theory of matter
- describe the viscosity all of the ingredients and compare the viscosity of various ingredients
- explain factors that affect the flow rates of various ingredients
- explain and compare the density of a variety of liquid ingredients
- explain in qualitative terms the relationship between pressure, volume, and temperature when a liquid ingredient is compressed or heated
- explain how Pascal’s law relates to your recipe (forces are transferred in all directions in fluids)

	Level 4	Level 3	Level 2	Level 1
3.2 describe the relationship between <b>mass, volume, and density</b> as a property of matter (8s53) and 3.3 explain the difference between <b>solids, liquids, and gases</b> in terms of <b>density</b> , using the particle theory of matter (e.g., in general, solids are more dense than liquids, which are more dense than gases) (8s54)	All ingredients are described in terms of their relationship between mass, volume, and density and there is an explanation of the difference between solids, liquids, and gases in terms of density using the particle theory of matter	Most ingredients are described in terms of their relationship between mass, volume, and density and there is an explanation of the difference between solids, liquids, and gases in terms of density using the particle theory of matter	Some ingredients are described in terms of their relationship between mass, volume, and density and there is an explanation of solids, liquids, or gases in terms of density using the particle theory of matter	Few ingredients are described in terms of their relationship between mass, volume, and density and there is an explanation of solids, liquids, or gases in terms of density
3.1 demonstrate an understanding of <b>viscosity</b> and compare the viscosity of <b>various liquids</b> (e.g., water, syrup, oil, shampoo, ketchup) (8s52) and explain factors that affect the flow rates of various ingredients	The viscosity of all ingredients is incorporated and the viscosity of various liquids compared. More than one factor that affects the flow rates of various ingredients is included	The viscosity of most ingredients is incorporated and the viscosity of various liquids compared. At least one factor that affect the flow rates of various ingredients is included	The viscosity of some ingredients is incorporated and the viscosity of two liquids is compared. No factors that affect the flow rates of various ingredients are included	The viscosity of few/no ingredients is incorporated. There is no comparison or factors that affect the flow rates
2.3 investigate and compare the <b>density</b> of a variety of <b>liquids</b> (e.g., water, salt water, corn syrup, liquid soap).	There is a comparison of various liquids in terms of density	There is a comparison of two liquids in terms of density	There is an explanation of density for two liquids	There is an explanation of density for one liquid
3.6 explain in <b>qualitative</b> terms the relationship between <b>pressure, volume, and temperature</b> when a <b>liquid</b> (e.g., water) or a <b>gas</b> (e.g., air) is <b>compressed or heated</b> (8s57)	There is an detailed explanation in qualitative terms of the relationship between pressure, volume, and temperature when a liquid or a gas is compressed or heated	There is an explanation in qualitative terms of the relationship between pressure, volume, and temperature when a liquid or a gas is compressed or heated	There is an explanation of the relationship between pressure, volume, and temperature when a liquid or a gas is compressed or heated	There is no explanation of the relationship between pressure, volume, and temperature when a liquid or a gas is compressed or heated
3.7 explain how <b>forces</b> are transferred in all directions in <b>fluids</b> (Pascal’s law) (8s58)	A detailed explanation of how Pascal’s law relates to the recipe is included	An explanation of how Pascal’s law relates to the recipe is included	It is identified how Pascal’s law relates to the recipe	It is not identified how Pascal’s law relates to the recipe