7

DepED
DEPARTMENT OF EDUCATION

Lesson Exemplar for Science

Quarter 1
Week
2

DepED MATATAG
BAGONG PILIPINAS
ONE NCR STRONGER TOGETHER

Learning Activity Sheet for Science Grade 7
Quarter 1: Week 2

This material is intended exclusively for the use of teachers in the implementation of the MATATAG K to 10 Curriculum. It aims to assist in delivering the curriculum content, standards, and lesson competencies.

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MATATAG K to 10 Curriculum Weekly Lesson Log	School		Grade Level	7
	Name of Teacher		Learning Area	Science
	Teaching Dates and Time		Quarter	1 Week 2

	DAY 1	DAY 2	DAY 3	DAY 4
I. CURRICULUM CONTENT, STANDARDS, AND LESSON COMPETENCIES				
A. *Content Standards*	The learners shall learn that there are specific processes for planning, conducting, and recording scientific investigations.			
B. *Performance Standards*	By the end of the quarter, the learners shall recognize that scientists use models to describe the particle model of matter. They use diagrams and illustrations to explain the motion and arrangement of particles during changes of state. They demonstrate an understanding of the role of solute and solvent in solutions and the factors that affect solubility. They demonstrate skills to plan and conduct a scientific investigation making accurate measurements and using standard units.			
C. *Learning Competencies*	Describe that particles are constantly in motion, have spaces between them, attract each other, and move faster as the temperature increases (or with the addition of heat.)	Describe that particles are constantly in motion, have spaces between them, attract each other, and move faster as the temperature increases (or with the addition of heat.)	Describe that particles are constantly in motion, have spaces between them, attract each other, and move faster as the temperature increases (or with the addition of heat.)	The learners shall be able to use diagrams and illustrations to describe the arrangement, spacing, and relative motion of the particles in each of the three states (phases) of matter.
D. *Learning Objectives*	At the end of the lesson, the learner shall be able to: a. show how particles of solids, liquids, and gases move with an increase/	At the end of the lesson, the learners shall be able to: a. describe phenomena of how particles of solids, liquids, and gases move with	At the end of the lesson, the learners shall be able to: a. explain one phenomenon in our community/ environment on how particles of	At the end of the lesson, the learners shall be able to: a. compare the arrangement, spacing, and movement of particles in

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	decrease in temperature. b. infer the movement of solids, liquids, and gases. c. recognize and appreciate the scientific values of curiosity, observation, and critical thinking in how solid, liquid, and gas particles behave with temperature changes.	increase/decrease in temperature. b. observe the motion of states of matter in response to temperature. c. maintain curiosity when observing and describing how particles of solids, liquids, and gases move with an increase/decrease in temperature.	solids, liquids and gases move with increase/decrease in temperature. b. compare and contrast the movement of particles in the solid, liquid, and gas states. c. engage in critical thinking to analyze and interpret the observed phenomena, considering the underlying scientific principles that govern particle movement.	solids, liquids, and gas ; b. explain the relationship between the arrangement of particles and the observable properties of solids, liquids, and gases; c. engage in critical thinking to analyze and interpret the relationships between the arrangement of atoms and the observable properties of different states of matter.
E. Instructional Design Framework (IDF) Features	Context Collaboration Ideational Engage	Context Collaboration Ideational Engage	Collaboration Ideational Explore	Context Collaboration Ideational Explore
F. 21st Century Skills	Critical thinking	Critical Thinking Collaborative	Critical thinking	Critical Thinking Collaborative
II. CONTENT	Effect of temperature on the movement of particles in the 3 States of Matter	Phenomena of how particles of solid, liquid, and gases move	The phenomenon in the community/environment on how particles of solids, liquids, and gases move	Arrangement of particles in the 3 States of Matter

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III. LEARNING RESOURCES				
A. References	Bayquen, Aristea V., et.al. (2022) Exploring Life Through Science: General Chemistry. Quezon City, Philippines: Phoneix Publishing, Inc	Bayquen,Aristea V., et.al. (2022) Exploring Life Through Science: General Chemistry. Quezon City, Philippines: Phoneix Publishing, Inc	Bayquen,Aristea V., et.al. (2022) Exploring Life Through Science: General Chemistry. Quezon City, Philippines: Phoneix Publishing, Inc	Bayquen,Aristea V., et.al. (2022) Exploring Life Through Science: General Chemistry. Quezon City, Philippines: Phoneix Publishing, Inc
	Jez, Joseph , et. al (2021). Encyclopedia of Biological Chemistry Armsderman, Netherlands: Elsevier	Jez, Joseph , et. al (2021). Encyclopedia of Biological Chemistry Armsderman, Netherlands: Elsevier	Jez, Joseph , et. al (2021). Encyclopedia of Biological Chemistry Armsderman, Netherlands: Elsevier	Jez, Joseph , et. al (2021). Encyclopedia of Biological Chemistry Armsderman, Netherlands: Elsevier
B. Other Learning Resources	https://sciencing.com/effect-temperature-states-matter-8601348.html https://www.toppr.com/ask/question/explain-the-effect-of-temperature-on-the-state-of-matter/	https://www.youtube.com/watch?v=ixNoDpDD02WU		
IV. TEACHING AND LEARNING PROCEDURES				
Before/Pre-Lesson Proper				
Activating Prior Knowledge	**CLASSIFYING TASK** Learners will classify each statement as a substance or mixture.	**DRAW IT!** Draw and explain the behavior of colored ink in the water.	**ARRANGE ME!** Learners will arrange and explain the molecules of solid, liquid, and gas in the	**LARAWAN KO... SURIIN MO!!!** (Picture Analysis) The teacher will present pictures,

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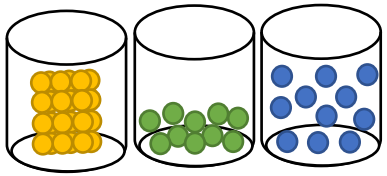
	Write **S** for substance **M f**or mixture and 1. A form of matter that has a constant composition and properties ***Answer: S*** 2. there is no chemical force between the constituent component ***Answer: M*** 3. A physical combination of two or more different kinds of particles ***Answer: M*** 4. It is composed of one kind of atom or particle. ***Answer: S*** 5. It is made up of a particular combination of atoms that are chemically bonded. ***Answer: S***		container using the colored cut-outs circles.  **solid liquid gas**	and the learners will identify the type of phase change that took place in the following samples and explain how it happened. **Phases Change** a. Melting b. Freezing c. Evaporating d. Condensation e. Sublimation  Icicles in plant Type: _____ Explanation: _____  The ice cube melts. Type: _____ Explanation: _____

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				 Steam from boiling water. Type: _____ Explanation: _____  Dry ice in a spoon Type: _____ Explanation: _____
Lesson Purpose/Intention	The teacher will demonstrate in the class how ice cubes melt at different temperatures. **Guide Question:** 1. What happens to the movement of particles of ice cubes as they melt at different temperatures?	**WHERE DO I BELONG?** The teacher will place clear containers labeled as solid, liquid, and gas on a table and show the objects to the students, and ask them to categorize each object into the correct container	The teacher will show an image of a typhoon. 	Based on the picture analysis the teacher will ask the learners what differences they can identify between solid, liquid, and gas

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	NOTE TO TEACHER: This video can serve as an alternative. The teacher will show a video clip about ice cubes melting at different temperatures. https://www.youtube.com/watch?v=c4KRwOyrNPw	based on its state of matter. **Guide Question:** 1. Why does each object belong to a specific state of matter?	**Guide Question:** 1. How do dust particles, ocean water, and air movement interact to contribute to the formation and intensification of a typhoon in the Philippines? ***Answer:*** *(answers may vary)* This question prompts students to consider the role of solid particles (dust), liquid (ocean water vapor condensing into droplets), and gas (air movement creating low-pressure systems and winds) in the complex process of typhoon development. It encourages critical thinking about the interactions between different states of matter in the atmosphere during the formation of a typhoon.	
Lesson Language Practice	Learners shall read and remember the following	The teacher presents to learners some science	The teacher presents to learners some science	The teacher presents to

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	words and their meanings and the way they are used in the lesson. **compound** is a substance composed of different kinds of particles **matter** refers to any object, big or small. **particle** tiny piece of matter **vapor** refers to gas.	terms and descriptions to help them understand today's lesson. **temperature-** the measure of hotness or coldness expressed in terms of any of several scales, including Fahrenheit and Celsius. **thermometer**- an instrument that measures temperature. **molecule –** a group of two or more atoms.	terms and descriptions to help them understand today's lesson. **solids (dust particles):** particles in the atmosphere can serve as nuclei for cloud formation, where water vapor condenses around these particles to form clouds. **liquids (ocean water):** the movement of liquid water in the form of droplets. **gases (air particles):** the moving particles, in the form of gases, contribute to the development and intensity of the typhoon.	learners some science terms and their descriptions to understand some properties of solids, liquids, and gases. *Compressibility *Arrangement and movement of particles **adhesive force** is a force present between two molecules of different kinds. **capillarity** is the rise of liquid on the walls of a thin tube. **cohesive Force** is the force between molecules of the same kind. **intermolecular force** is the force between molecules.
During/Lesson Proper				
Reading the Key Idea/ Stem	The learners will be asked to read the material below.	The learners will be asked to read the material below.	**Formation of a Typhoon**	**Particle Attraction** Particle attraction is a fundamental concept in the study

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	Important Matters Matter is composed of particles. These particles are in constant random motion. Particles in liquids and gases move from one place to another in an object while particles in solids vibrate from their position. When particles absorb heat, they become "excited" such that they move faster and farther. As they move faster and farther, the size of the object increases. The increase in size due to absorption of heat is called Thermal Expansion. Different objects expand in different amounts. **Guide Questions:** 1. Explain the behavior of particles in solid, liquid, and gas. ***Answer:*** Particles in liquids and gases move from one	**Maria's Melting Mystery** In the heart of a bustling Filipino market, there was a young science enthusiast named Maria who loved to observe the world around her. One sweltering afternoon, Maria noticed something intriguing as she watched the street vendors at work. As the sun beat down on the pavement, Maria saw a block of ice slowly melting in a nearby vendor's cart. Curious, she approached the vendor and asked why the ice was turning into water. The vendor, Mang Juan, smiled and began to explain. "Ah, Maria," Mang Juan began, "you see, everything around us is made up of particles. When the ice is exposed to the heat from the sun, the particles start to gain	In a Philippine setting, the formation of a typhoon showcases the intricate dance of particles in different states of matter - solid, liquid, and gas - coming together to create a powerful tropical storm that impacts the region. The process begins as warm ocean waters off the Philippine coast evaporate into water vapor, transitioning from a liquid to a gas state. This water vapor rises into the atmosphere, where it cools and condenses back into liquid droplets, forming the signature dense clouds associated with typhoons. As these clouds continue to grow and merge, the water droplets within them further condense, releasing heat energy into the atmosphere. This released heat fuels the storm, leading to the rapid upward movement of warm, moist air that generates an area of low pressure at the surface.	of matter, highlighting the forces that exist between particles at the microscopic level. In all states of matter - solid, liquid, and gas - particles interact with each other through various types of attractions. In solids, particles are closely packed together, held in a fixed position by strong intermolecular forces, leading to a stable and rigid structure. In liquids, particles have more freedom to move past each other, with weaker forces allowing for fluidity and the ability to take the shape of their container. In gases, particles are far apart and move freely, experiencing minimal attraction to each other due to the significant distance between them.

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	place to another in an object while particles in solids vibrate from their position. 2. How does the absorption of heat lead to an increase in the size of an object? ***Answer:*** When particles absorb heat, they become "excited" such that they move faster and farther. As they move faster and farther, the size of the object increases.	energy and move faster. This increase in energy causes the ice to melt and turn into water." Maria's eyes widened in fascination as she watched the ice transform before her eyes. Mang Juan continued, "Similarly, when we heat a pot of water to make our favorite Filipino dishes, the particles of water absorb energy and move more rapidly, eventually turning into steam." Maria was captivated by this explanation and decided to conduct her own experiments at home, observing how different materials behaved with temperature changes. Through her observations and experiments, Maria deepened her understanding of how particles in solids, liquids, and gases moved with increases	As the typhoon gains strength, the air starts to circulate counterclockwise in the Northern Hemisphere (clockwise in the Southern Hemisphere) due to the Coriolis effect, intensifying the storm's structure. The swirling winds pick up speed, and at the center of the typhoon, an eye forms, characterized by calm weather. In essence, the formation of a typhoon in the Philippine setting illustrates the intricate interplay of particles transitioning between states of matter - from liquid water to gaseous water vapor and back to liquid in the form of clouds. This dynamic interaction, coupled with various atmospheric conditions, contributes to the genesis and escalation of a typhoon that impacts the local community and environment.	Understanding the nature of particle attraction provides insights into the behavior and properties of different states of matter, shaping our comprehension of the physical world at a molecular level. **Guide Questions:** 1. How does the strength of particle attraction differ among the three states of matter - solid, liquid, and gas? ***Answer:*** In solids, particle attraction is strongest, keeping particles in fixed positions. In liquids, particle attraction is moderate, allowing particles to move past each other while remaining close. In gases, particle attraction is weakest, allowing particles to move freely and be far

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		and decreases in temperature. Inspired by the wonders of science she discovered in her everyday surroundings, Maria shared her newfound knowledge with her friends and family, sparking a sense of curiosity and exploration in others in their Filipino community. And so, under the warm Philippine sun, Maria's passion for science and discovery continued to grow, illuminating the path for others to marvel at the beauty of the natural world and the phenomena of particle movement with temperature changes. **Guide Questions:** 1. What happens to the particles of a solid when it is heated? ***Answer:*** When a solid is heated, the particles gain energy and begin to vibrate more	**Guide Questions:** 1. What is the initial states of water particles in the formation of a typhoon over warm ocean waters? ***Answer:*** The initial state of water particles in the formation of a typhoon is in the liquid state as warm ocean water evaporates into water vapor. 2. How does the heat energy released during the condensation of water vapor contribute to the intensification of a typhoon? ***Answer:*** The heat energy released during the condensation of water vapor fuels the storm by causing warm, moist air to rise rapidly, creating an area of low pressure that intensifies the typhoon's strength	apart. 2. What role does particle attraction play in determining the properties and behavior of substances in different states of matter? ***Answer:*** In solids, strong attractions keep particles in fixed positions, giving solids a definite shape and volume. In liquids, moderate attractions allow particles to move past each other, giving liquids a definite volume but no fixed shape. In gases, weak attractions allow particles to move freely, resulting in no fixed shape or volume.

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		vigorously. This increased energy causes the particles to overcome the forces holding them in a fixed position, leading to a phase change from a solid to a liquid. 2. How does the movement of particles in a gas change with a decrease in temperature? ***Answer:*** As the temperature of the gas decreases, the particles lose energy and move more slowly. This reduction in kinetic energy causes the gas particles to come closer together, eventually leading to a phase change from gas to a liquid through a process known as condensation.		

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Developing Understanding of the Key Idea/Stem	The students will perform two activities showing how particles of solids, liquids, and gases move with an increase/decrease in temperature. *Station A*: **The Tiny Mighty One**! The learners will observe the movement of colored ink in the water. Guide Questions: 1. Why does the water change in color? 2. Did the color spread faster in water? 3. What does the color change suggest about the behavior of particles? ***Station B*: Inspired!** The learners will observe the different movements of particles in Set Up A and Set Up B. Guide Questions: 1. What do the mongo seeds represent?	The learners will perform a simple activity. Objectives: To observe how the motion of particles changes in response to temperature variations. Materials: - Clear container - Water - Food coloring (optional) - Thermometer - Hot water - Cold water Procedure: 1. Fill the clear container with water. 2. Add a few drops of food coloring to make it easier to observe the motion of particles. (optional) 3. Use the thermometer to measure the initial temperature	The Learners will perform a simple activity **Exploring Particle Movement** *Objective:* To observe the movement of particles in different states of matter Materials: ●3 clear containers (cups or glass jar) ●50 mL Water ●1 tablespoon of food coloring ● 3 tablespoons of cornstarch ● balloon **Procedure: Solid (Cornstarch)** 1. Fill one container with water. 2. Slowly add cornstarch or flour to the water while stirring until you get a mixture with a thick, solid-like consistency. 3. Observe the behavior of the particles in the cornstarch-water mixture when you stir it quickly and when you let it	The learners will be asked to read out and answer the question. While in class, a peer sprayed perfume, and you quickly detected its fragrance in the air. **Guide Questions:** 1. Explain the process by which the fragrance of the sprayed perfume reached your nose in the air, considering the movement of particles involved. 2. Discuss how the dispersion of the perfume's fragrance in the classroom relates to the concept of diffusion and the behavior of particles in the air. Fill out the table to compare the

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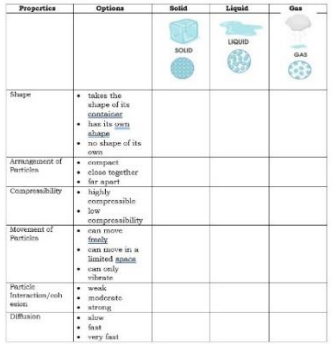
	2. In which set-up do particles move faster and farther? 3. What makes the mongo seeds move faster and farther? 4. Do the particles of a solid also move constantly? How about in gases? 5. What happens to the volume of matter when heated? cooled? *NOTE TO THE TEACHER* **Important Reminder:** a. Stations must be prepared before classes start. Improvise the materials if they are not available in school. b. Make sure the teacher performs the activity prior to her class. c. Use lukewarm water in Station A to hasten the process.	of the water and record it. 4. Measure the temperature of the water again after adding the hot water. 5. Observe and note changes in the motion of the particles in the water. 6. Measure the temperature of the water again after adding the hot water. 7. Repeat the process, but this time add cold water to decrease the temperature of the water. 8. Observe and record any changes in the motion of particles as the temperature.	settle. Q1. What happened to the substance after stirring? **Liquid (Water)** 1. Fill another container with water. 2. Add a few drops of food coloring to the water to make it visible. 3. Gently stir the water and observe how the food coloring particles move and mix within the liquid. Q1. How does food coloring move when it is mixed with liquid? **Gas (Balloon Inflation):** 1. Inflate a balloon by blowing air into it. 2. Tie the balloon to prevent air from escaping. Discuss with students how the movement of air particles inside the balloon represents the gas state of matter.	three states of matter based on their properties. 

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	d. Make 3 set-ups in Station A and two set-ups in Station B to avoid overcrowding. Remind the learners to be careful and not be playful since some materials are made from glass while some are hot.			
Deepening Understanding of the Key Idea/ Stem	The learners will be asked to answer the questions and/or explain their responses through a group presentation. *Group 1* – Vlogging Why is it not advisable to fill the kettle to the brim when boiling water? *Group 2* – News Casting Why do particles in a solid, liquid, and gas behave differently with changes in temperature?	The learners will be asked to read out and answer the following questions: **Guide Questions:** 1. How did the motion of particles in the water change when the temperature increased? 2. Compare the movement of particles in the water when the temperature was initially measured and after adding hot water. What do you notice? 3. What happened to the motion of particles in the water when cold	The learners will be asked the following questions: ***Guide Questions:*** 1. How did the movement of particles in the cornstarch-water mixture differ from the movement of particles in the water with food coloring? 2. What properties of solids and liquids were demonstrated through the observations of the cornstarch-water mixture and the water with food coloring? 3. In the gas state, as represented by the inflated balloon, how	The teacher asks students to read out and answer the following questions: 1. Regarding the insect walking on the surface of water, how would you compare the adhesive force between the insect's feet and water and the cohesive force between water particles?

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		water was added? Describe any changes you observed.	did the movement of air particles inside the balloon compare to the movements observed in the cornstarch-water mixture and the water with food coloring? 4. What characteristics of gases were exemplified by the behavior of the air particles inside the inflated balloon during the experiment?	
After/Post-Lesson Proper				
Making Generalizations and Abstractions	Directions: The learners will pick the question inside a box and answer the question picked. Q. What role does temperature play in influencing the behavior of particles in different states of matter? ***Answer:*** Temperature influences the energy and movement of particles in matter. It can alter the	The teacher will ask the learner to describe how the particles of solids, liquids, and gases move with an increase or decrease in temperature.	How does the formation of a typhoon exemplify the intricate interplay between different states of matter?	The teacher will ask learners to give examples or proof that the particles of matter are moving.  Learners will be encouraged to add related concept(s) even after the discussion of the lesson.

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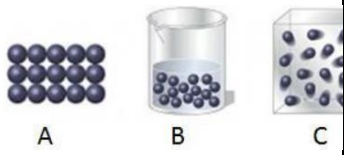
	arrangement of particles, affect their interactions, and lead to phase changes between solids, liquids, and gas states.			
Evaluating Learning	Direction: Write the letter of the correct answer: 1. Which of the following about particles of matter is TRUE? I Particles move all the time. II Particles of the same kind move in the same direction. III Particles move in no particular direction. IV Particles in a solid move back and forth in their position. A. Statement I is true and statement II is false. B. Statements I, III, and IV are true, and Statement II is false. C. Statements II, III, and IV is true and statement I is false. D. Statements III and IV are correct and Statements I and II are false.	Directions: Write the letter of the correct answer. 1. If the temperature increases rapidly, what happens to the particles  2. What would cause a liquid to turn into a solid? A. Pouring it into a container B. Heating it until it boils C. Cooling it until it freezes D. Keeping its temperature, the same 3. What happens to the heat during the process of melting?	Directions: Write the letter of the correct answer. 1. How does the formation of a typhoon typically begin? A. With snowfall in the Atmosphere B. With warm ocean water evaporating into water vapor C. With the formation of ice crystals in the clouds **Answer: B** 2. What state of matter does warm ocean water primarily transform into during the formation of a typhoon? A. Solid B. Liquid C. Gas **Answer: C**	Directions: Compare the aspect of solid, liquid, and gas. | ASPECT	SOLID	LIQUID | |---|---|---| | Arrangement of Atoms | | | | Spacing | | | | Movement | | |

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	Answer: B 2. When particles absorb heat they_____. I. move faster and farther II. die of heat exhaustion III. are not affected IV. move slower because they collide with other particles A. Statement I is correct. B. Statements I and IV are correct. C. Statements II and IV are correct. D. Statements II and IV are correct. **Answer: A** 3. Concrete roads have narrow gaps filled with black asphalt as shown in the picture below. What is the reason for this?	A. The heat is released. B. The heat is absorbed. C. The heat stayed. D. The heat is removed. 4.Why does liquid water take the shape of a cup it is poured into, but solid ice cubes do not? A. Because the particles of liquid water can easily move fast to one another, but the particles of solid ice cannot B. Because the particles of liquid water are moving but the particles of solid ice are not. C. Because the particles of liquid water are smaller than the particles of solid ice D. Because the particles of liquid water are softer than the particles of solid ice	3.How do clouds form during the formation of a typhoon? A. By freezing water vapor into ice crystals B. By condensing water vapor into liquid droplets C. By condensing water vapor into liquid droplets **Answer: B** 4. What atmospheric factor fuels the storm and causes the air to rise rapidly in a typhoon? A. Decreasing wind speeds B. Cooling temperatures C. Release of heat energy from condensing water droplets **Answer: C**	

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	 A. To make the road look safer and more pleasing to see B. To make the sizes of the blocks of concrete equal C. To help sleepy drivers become more alert D. To allow expansion during a hot climate **Answer: D** 4. A scientist in a space laboratory drops a drop of red ink on a glass of water. Which illustrates the motion of ink in the water? A.  B.  C. D. **Answer : D**	5. In a cup of liquid water, when would the water molecules move slowly? A. The particles would move slowly if the liquid water in the cup became a gas. B. The particles would move slowly if the liquid water in the cup became solid. C. The particles would move slowly if the liquid water in the cup became still. D. The particles would not move slowly in the cup of liquid water.		

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Additional Activities for Application or Remediation (if applicable)	Creating a pamphlet illustrating the movement of particles in solids, liquids, and gases with changes in temperature.	Learners can research and present additional examples of how temperature affects particle movement in specific materials. Expected output: 1. Materials 2. Specific examples 3. Observation 4. Conclusion	• Ask learners to research the impact of climate change on the role of technology in predicting and tracking typhoons. Expected output: 1. Materials 2. Specific examples 3. Observation 4. Conclusion	The learners will give examples from everyday life where they encounter solids, liquids, and gases? Watch the video clip from the link. *https://www.youtube.com/watch?v=zMzqiAuOSz0* Write one or two ideas that either support or go against our discussion today.
Remarks				
Reflection	How did creating the pamphlet illustrating the movement of particles in solids, liquids, and gases with changes in temperature deepen your understanding of the behavior of particles in different states of matter?			**Reflection:** Write your insights about the lesson using the prompts below. I understand that….. I realized that……..

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