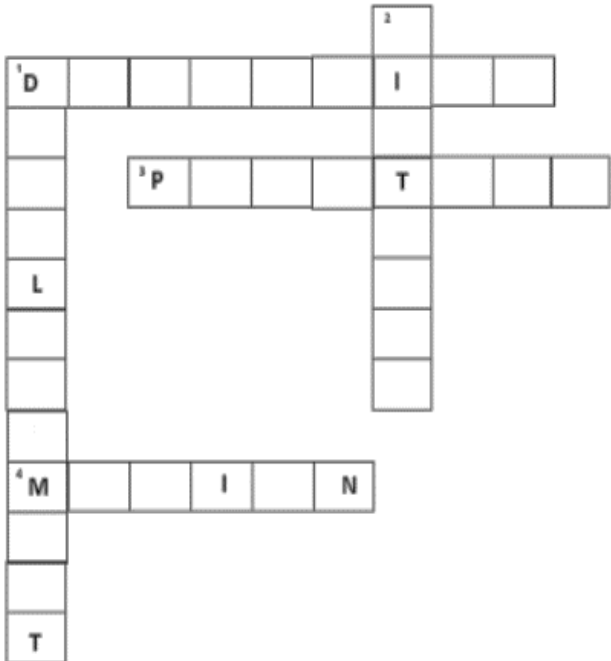
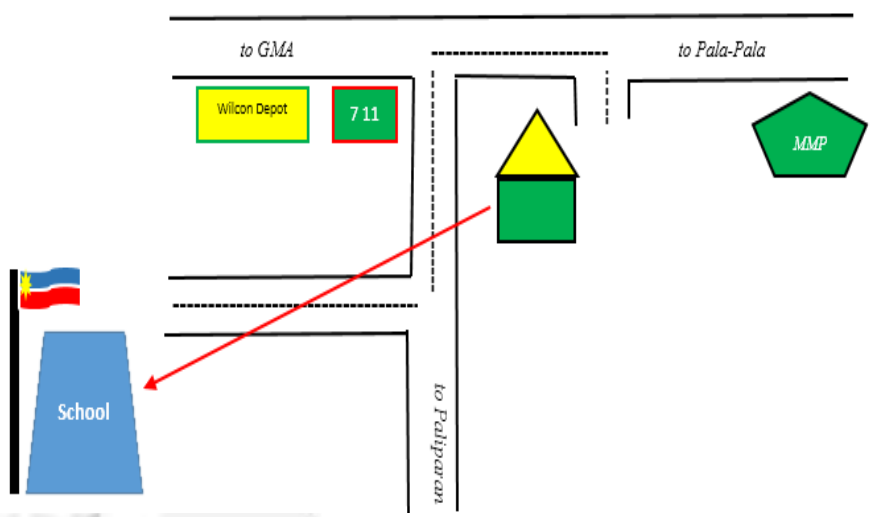
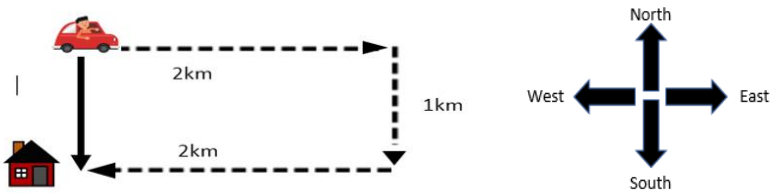
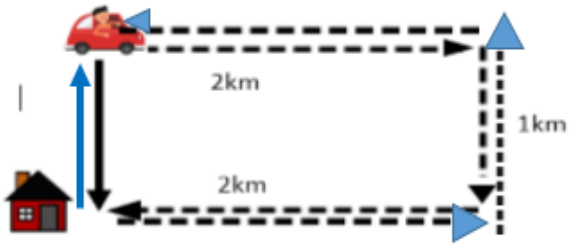


<b>W1</b>	<b>Learning Area</b>	Science	<b>Grade Level</b>	7
	<b>Quarter</b>	Third	<b>Date</b>	March 1-4, 2021

<b>I. LESSON TITLE</b>	Motion in One Dimension: Distance & Displacement
<b>II. MOST ESSENTIAL LEARNING COMPETENCIES (MELCs)</b>	Describe the motion of an object in terms of distance and displacement <b>(S7FE - IIIa - 1)</b>
<b>III. CONTENT/CORE CONTENT</b>	Motion

<b>IV. LEARNING PHASES</b>	<b>Suggested Timeframe</b>	<b>Learning Activities</b>
<b>A. Introduction</b> <i>Panimula</i>	Day 1	<p>Everything around us moves. Some can move so fast like rabbits while others move slowly like turtles. For each day, we do a lot of movements. A simple wave of a hand and a blink of an eye demonstrates movement. In Science, movement is referred as <b>motion</b>.</p> <p>Motion covers a wide range of definitions. It does not just explain how far the object moves but also describes how fast and to what direction it goes.</p> <p>This module will provide you with the knowledge necessary to describe motion in one dimension.</p> <p><b>Unlock the Keywords!</b>                      Complete the crossword puzzle by supplying the accurate letters to form the word. Use the clues below.</p>  <p><b>ACROSS</b>                      1 Tells which way the object is moving.                      3 A place where an object is located.                      4 The change in position of an object</p> <p><b>DOWN</b>                      1 The shortest distance                      2 The length of the path travelled by an object.</p>
<b>B. Development</b> <i>Pagpapaunlad</i>	Day 2	<p>Motion is a change of position over a particular time interval with respect to a point and frame of reference. When an object moves, it changes position. As it changes position, a distance is covered, and a direction is taken. How</p>

IV. LEARNING PHASES	Suggested Timeframe	Learning Activities
		<p>far did the object travel? And to what direction it moves? Distance and displacement answer these questions.</p> <p><b>“My Road Map”</b></p> <p>Supposed you are to invite your new classmates in your house for your birthday party. But sadly, your friends are not familiar with your location.</p> <p>To help them locate your home, draw a map from your home to school. Include labels and landmarks and apply colors for easy reading and tracking. Use <b>black broken lines</b> to trace the path from home to the destination. Draw a <b>red straight arrow</b> to trace the direction from the house to the school. Consider figure 1 below as a guide.</p>  <p><b>Figure 1. Sample Road map</b></p> <p><b>Guide Questions:</b></p> <ol style="list-style-type: none"> <li>1. On the map you have drawn, what does the black broken line indicates? What about the red straight line?</li> <li>2. Which line is shorter? Which is longer?</li> <li>3. How is distance demonstrated in the map you have drawn?</li> <li>4. What do you think is the difference between distance and displacement?</li> </ol> <p>Both distance and displacement are quantities. Physical quantities are characterized as either scalar or vector. <b>Scalar quantity</b> has only magnitude but no direction. On the other hand, <b>vector quantity</b> has both magnitude and direction.</p> <p><b>Distance</b> is a scalar quantity that refers to the total length of path travelled by an object.</p> <p><b>Displacement</b> is a vector quantity that describes the shortest distance between the initial position and the final position of an object, plus the direction to where the object is moving to.</p>

IV. LEARNING PHASES	Suggested Timeframe	Learning Activities
<p><b>C. Engagement</b> <i>Pakikipagpalihan</i></p>	<p>Day 3</p>	<p>To further understand the difference between distance and displacement, let us look in the example below.</p> <p>Richard drove to the east at 2 kilometers, then 1 kilometer south, and 1 kilometer west to reach home. How long is the total distance he travelled?</p>  <p><b>Figure 2. Sample illustration</b></p> <p>Richard travelled a total distance of 5 kilometer (2km east + 1km south + 2km west) to reach home. The measurement of displacement shows that the shortest distance between the starting point and the final position is 1km, South.</p> <p><i>Distance = 5km, Displacement = 1km, South</i></p> <p>What if Richard went back to his initial position? Will the distance change? What about displacement? Is there a chance to get zero displacement? Let us trace his path once more!</p>  <p><i>Distance = 10km      Displacement = 0km, North</i></p> <p><b>Figure 3. Sample illustration</b></p> <p>In this sense, Richard will cover a total distance of 10km since he went back to his initial position (5km+5km). The displacement will be equal to zero because Richard started and ended at the same position.</p> <p>Let us see how well you learned about motion in terms of distance and displacement.</p> <p><b>Learning Task 3. Quiz</b></p> <ol style="list-style-type: none"> <li>Raf rides a boat for a fishing trip at 6 kilometer south. After half hour of waiting, no fishes were caught, so he goes 2 kilometer west. Then he follows a school of fish 1 kilometer north.</li> </ol>

IV. LEARNING PHASES	Suggested Timeframe	Learning Activities
		<p>A. How long did he travel? _____</p> <p>B. Is the boat's displacement equal to zero? _____</p> <p>2. The ball rolls from point A (left) to point B (right) at 1.5 meters, as it reached point B, it rolls back to the starting position.</p> <p>A. How far did the ball roll? _____</p> <p>B. What is the displacement? _____</p> <p>To further enrich your understanding about the lesson, please refer to Science 7 Learner's Material, pp. 169-177, Activity 1: Where Is It?</p>
<b>D. Assimilation</b> <b>Paglalapat</b>	Day 4	<p><b>Let us recall some important concepts:</b></p> <ul style="list-style-type: none"> <li>• Motion is a change of position over a particular period of time.</li> <li>• Distance is a scalar quantity that refers to the total length the object travels.</li> <li>• Displacement is a vector quantity that refers to the shortest distance from the point of origin to the point of destination.</li> </ul> <p><b>Reflection:</b></p> <p>An American soprano, Beverly Sills once said, "There are no shortcuts to any place worth going".</p> <p>How could this quotation relate to the concepts of distance and displacement? Explain your answer.</p>
<b>V. ASSESSMENT</b>		
<b>VI. REFLECTION</b>	Day 5	<ul style="list-style-type: none"> <li>• The learner communicates the explanation of their personal assessment as indicated in the Learner's Assessment Card.</li> <li>• The learner, in their notebook, will write their personal insights about the lesson using the prompts below.</li> </ul> <p>I understand that _____.</p> <p>I realize that _____.</p> <p>I need to learn more about _____.</p>

<b>Prepared by:</b>	<b>Chonalyn V. Castro</b> <b>Paliparan II Integrated HS</b>	<b>Checked By:</b>	<b>Antonio A. Petilos</b> <b>Rea C. Bunan</b> <b>Marife A. Sioson</b>
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**REFERENCES:** Asuncion, Alvie et al. (2012). Science Learner's Material, Department of Education

### Personal Assessment on Learner's Level of Performance

Using the symbols below, choose one which best describes your experience in working on each given task. Draw it in the column for Level of Performance (LP). Be guided by the descriptions below.



★ - I was able to do/perform the task without any difficulty. The task helped me in understanding the target content/lesson.

✓ - I was able to do/perform the task. It was quite challenging but it still helped me in understanding the target content/lesson.

? - I was not able to do/perform the task. It was extremely difficult. I need additional enrichment activities to be able to do/perform this task.


Learning Task	LP	Learning Task	LP	Learning Task	LP	Learning Task	LP
Number 1		Number 3		Number 5		Number 7	
Number 2		Number 4		Number 6		Number 8	

<b>W2</b>	<b>Learning Area</b>	Science	<b>Grade Level</b>	7
	<b>Quarter</b>	Third	<b>Date</b>	March 8-11

<b>I. LESSON TITLE</b>	Motion in One Dimension: Speed, Velocity and Acceleration
<b>II. MOST ESSENTIAL LEARNING COMPETENCIES (MELCs)</b>	Describe the motion of an object in terms of speed, velocity, and acceleration (S7FE - IIIa – 1)
<b>III. CONTENT/CORE CONTENT</b>	Motion

IV. LEARNING PHASES	Suggested Timeframe	Learning Activities				
A. Introduction Panimula	Day 1	<p>The cheetah, scientifically known as <i>Acinonyx jubatus</i> is the fastest animal in the land. It can reach a speed between 112 and 120 kilometers per hour. From a standing start, a cheetah can cover a distance of 460 meters or 1500 feet in 3 seconds. Its fast speed is an advantage as predator.</p> <p>Answer the following questions:</p> <ol style="list-style-type: none"><li>1. What is the fastest animal in land?</li><li>2. How far does it cover for 3 seconds?</li><li>3. What is the advantage of cheetah as predator?</li></ol> <p>Just as displacement and distance have distinctively different meanings, so do speed and velocity. The previous module has described motion by distance and displacement. In this lesson, you will answer how fast the object moves by describing speed, velocity, and acceleration.</p>				
B. Development Pagpapaunlad	Day 2	<p><b>Speed</b> is a scalar quantity that measures how fast an object is moving with respect to the distance travelled and the time. <b>Velocity</b> on the other hand, is a vector quantity that measures speed in a given direction. Velocity always indicates the speed and the direction of travel. Speed is measured in the units of distance and time. Kilometer per hour (kph), miles per hour (mph), or meter per second (m/s) are the units of speed. The speed of an object may change.</p> <p>Think of a man riding a bicycle. The man's speed may change during his ride. He runs slower when uphill or in rocky areas, while faster when in flat and downhill. When he stops, the time still runs but no distance was covered, then his speed is zero.</p> <p>Read each statement carefully. Determine if it is describing speed or velocity by writing the statement inside its corresponding classification.</p> <div><div><div><div>1. Tropical storm travelling 88 kph, eastward.</div><div>2. Jacob ran 10 meters in 10 seconds.</div><div>3. Jean moved the plate 50 centimeters to the right in 3 seconds.</div><div>4. Rafael swims 120 meters towards the shore in 60 seconds</div><div>5. A ship cruising 34 miles per hour</div></div></div></div> <table><tr><th>SPEED</th><th>VELOCITY</th></tr><tr><td></td><td></td></tr></table>	SPEED	VELOCITY		
SPEED	VELOCITY					



IV. LEARNING PHASES	Suggested Timeframe	Learning Activities																												
		<p>To understand how speed and velocity are computed, it is important to record the time and the distance travelled.</p> $Speed = \frac{Distance}{Time}$ <p>Let us take a look at the examples below</p> <p>A car is moving at uniform speed of 30 miles north in 0.5 hour. What is the speed of the car?</p> <p>Given: distance = 30 miles, time = 0.5 hour, speed =?</p> $Speed = \frac{Distance}{Time} \quad Speed = \frac{30 miles}{0.5 hour} = 60 \text{ mph}$ <p>The car's speed is 60mph. </p> <p>Velocity is expressed as, 60mph, North. <i>Indicating the direction.</i></p> <p>In some examples, distance or time is not given. In this case, the equation below could help. Be sure to cancel the same unit to get the corresponding unit.</p> $Distance = Speed \times Time \quad Time = \frac{Distance}{Speed}$ <p><b>Acceleration</b> on the other hand, is expressed when speed or direction both change. Speeding up is acceleration and slowing down is <b>deceleration</b>.</p> <p>To further enrich your understanding about the lesson, please refer to Science 7 Learner's Material, pp. 175, Activity 3: Fun Walk</p>																												
C. Engagement Pakikipagpalihan	Day 3	<p><b>Learning Task.</b> The cat runs toward the mouse for food at different speed. Given the data below, calculate the speed of the cat.</p> <table border="1"><thead><tr><th>Position</th><th>Time (s)</th><th>Distance (m)</th><th>Speed (m/s)</th></tr></thead><tbody><tr><td>A</td><td>0</td><td>0</td><td>(1)</td></tr><tr><td>B</td><td>1</td><td>1</td><td>(2)</td></tr><tr><td>C</td><td>2</td><td>1</td><td>(3)</td></tr><tr><td>D</td><td>3</td><td>1.5</td><td>(4)</td></tr><tr><td>E</td><td>4</td><td>4</td><td>(5)</td></tr><tr><td>F</td><td>5</td><td>2</td><td>(6)</td></tr></tbody></table> <p>Guide Questions:</p> <p>1. From the speed you have calculated above, tell which position corresponds to the situation below:</p> <p>Stationary: _____</p> <p>Constant speed: _____</p> <p>Speeding Up: _____</p> <p>Slowing down: _____</p>	Position	Time (s)	Distance (m)	Speed (m/s)	A	0	0	(1)	B	1	1	(2)	C	2	1	(3)	D	3	1.5	(4)	E	4	4	(5)	F	5	2	(6)
Position	Time (s)	Distance (m)	Speed (m/s)																											
A	0	0	(1)																											
B	1	1	(2)																											
C	2	1	(3)																											
D	3	1.5	(4)																											
E	4	4	(5)																											
F	5	2	(6)																											

IV. LEARNING PHASES	Suggested Timeframe	Learning Activities
		2. When is the object at rest? In constant speed? Accelerating?
<b>D. Assimilation</b> <i>Paglalapat</i>	Day 4	<p><b>Let us recall some important concepts:</b></p> <ul style="list-style-type: none"> <li>Speed &amp; Velocity tell how fast an object travels and to what direction it moves</li> <li>If the object is at the rest, its speed is equal to zero.</li> <li>If the object is moving at equal distance at equal interval of time, the motion said to be constant.</li> <li>If the object covers varying distances at equal interval of time, the object is changing speed, and is therefore accelerating.</li> </ul> <p><b>Reflection</b></p> <p>Whenever you are on the road, you see a lot of traffic signs and symbols like the one in the picture. Why do you think it is important to follow speed limit? What could possibly happen if it were not followed? Does obeying a simple traffic sign make sense for being a good citizen? Why? Why not? Write your answer in your notebook.</p>
<b>V. ASSESSMENT</b>		
<b>VI. REFLECTION</b>		<ul style="list-style-type: none"> <li>The learner communicates the explanation of their personal assessment as indicated in the Learner's Assessment Card.</li> <li>The learner, in their notebook, will write their personal insights about the lesson using the prompts below.</li> </ul> <p>I understand that _____.</p> <p>I realize that _____.</p> <p>I need to learn more about _____.</p>

<b>Prepared by:</b>	<b>CHONALYN V. CASTRO</b> Paliparan II Integrated HS	<b>Checked by:</b>	<b>ANTONIO A. PETILOS</b> <b>REA C. BUNAN</b> <b>MARIFE A. SIOSON</b>
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**REFERENCE:** Asuncion, Alvie et al. (2012). Science Learner's Material, Department of Education

### Personal Assessment on Learner's Level of Performance

Using the symbols below, choose one which best describes your experience in working on each given task. Draw it in the column for Level of Performance (LP). Be guided by the descriptions below.

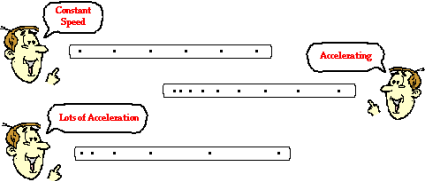
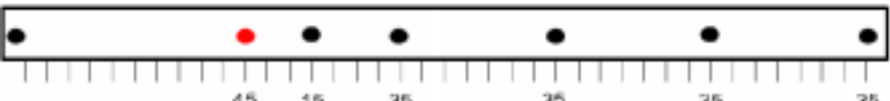


- I was able to do/perform the task without any difficulty. The task helped me in understanding the target content/lesson.
- I was able to do/perform the task. It was quite challenging but it still helped me in understanding the target content/lesson.
- I was not able to do/perform the task. It was extremely difficult. I need additional enrichment activities to be able to do/perform this task.

Learning Task	LP	Learning Task	LP	Learning Task	LP	Learning Task	LP
Number 1		Number 3		Number 5		Number 7	
Number 2		Number 4		Number 6		Number 8	

<b>W3</b>	Learning Area	SCIENCE	Grade Level	7
	Quarter	THIRD	Date	

<b>I. LESSON TITLE</b>	Motion and Graphs
<b>II. MOST ESSENTIAL LEARNING COMPETENCIES (MELCs)</b>	Create and interpret visual representation of the motion of objects such as tape charts and motion graphs.
<b>III. CONTENT/CORE CONTENT</b>	Unit 3 Energy in Motion: Module 1 – Motion in One Dimension

IV. LEARNING PHASES	Suggested Timeframe	Learning Activities
<b>A. Introduction</b> <i>Panimula</i>	<b>Day 1</b>	<p>Last time, you have learned how to determine if an object is moving or not. For this module, you will learn how motion can be visualized or illustrated using <b>tape charts</b> and <b>motion graphs</b>. To help you get ready, perform the task below:</p> <p><b>Learning Task 1: Read and analyze the following statements and get ready to answer the questions listed below:</b></p> <p>A jeepney is moving at a rate of 45 kilometers within 0.50 hour before it stops at a red light. After 5 minutes the vehicle moves again, but this time it initially moves at a rate of 15 kilometers for 15 minutes which then increased to 35 kilometers after another 15 minutes. The jeepney then continued to move at the same speed until it reaches another stop.</p> <ol style="list-style-type: none"> <li>How would you describe the motion of the vehicle?</li> <li>Did the speed of the vehicle change? How did you know?</li> <li>Did the speed of the vehicle remain the same? How did you know?</li> <li>At which point of the ride did you think the vehicle moved fastest? How about slowest? Or at uniform or constant rate?</li> </ol>
<b>B. Development</b> <i>Pagpapaunlad</i>	<b>Day 1</b>	<p>Offentimes, when describing motion, we find it hard to understand just like the one presented in the previous section. These kinds of motion would be easier to understand and visualize (imagine) if we use <b>tape charts</b> and <b>graphs</b>.</p> <div style="display: flex; align-items: center;">  <div style="margin-left: 20px;"> <p><b>Tape Charts</b> or ticker-tape diagram is used to represent motion in diagrams. This method uses dots and or "ticker" marks. Each diagram shows an object moving at different pace or speed. Where the dots represent the object and the distance between each dot represent the change in its speed.</p> </div> </div> <p>If you use <b>Tape Chart</b> to represent the motion of the jeepney described above, it will look like this:</p>  <p style="text-align: center;"><b>Figure 1. Tape Chart for motion in "The Wandering Vehicle"</b></p> <p>You will notice that the distance between each dot is not the same for it represents the speed of the object. The first two dots have the greatest distance, while the distance between the red dot and the third dot (black) is</p>



considered the shortest. The red dot represents the moment at which the object stops. If an object moves fast, the distance between each dot increases. If the object moves slow, the distance between the dots decreases.

On the other hand, **graphs** are visual representation of data (information). In physics, we use **line graphs** also called **motion graphs** to represent changes and patterns in an object's motion. One example of this graph is called **displacement vs time graph**, examples of this are shown below:

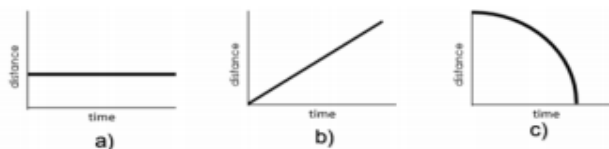


Figure 2. Motion Graphs for Displacement and Time (Slopes)

The **slopes** or lines/curve in a graph represents the manner at which the object moves. For *graph A*, the object is considered stationary motion or **at rest**. This graph tells us that the object stays at the same location (position) even as time goes by. For *graph B*, the slope is straight and move upwards indicating the object is **speeding up** or **accelerating**. This could happen when an object's speed continues to increase. And lastly, *graph C* has a line that is curved downward indicating that the object's speed is decreasing or is **decelerating**.

Sometimes, we also use **DOTS** to indicate (signify) a certain point in the motion graph where the motion suddenly change. Check out the examples below:



Figure 3. Motion Graphs (Dots and Slopes)

Looking at each graph, how will you describe each motion? At which points does the object moves or stops moving at Graphs A and B? At which points does the object gains speed? At which points does the object decrease in speed?

If you answered the following, then you are right: (a) Graph A, points 1 and 3 represents the moments at which the object's speed decreases. While at points 2 and 4 the object's speed increases. (b) For graph B, point 1 represents the moment the object stopped moving while at point 2, the object moves again.

## C. Engagement Pakikipagpalihan

## Day 2

### Learning Task 2A: Analyzing Motion Graphs

Match each description to its appropriate graph. Write your answer on a piece of paper.

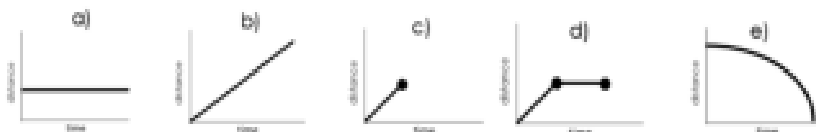


Figure 4. Sample Graphs

1. A boy running for 20 minutes then stops to rest.
2. A rock placed on top of a table.
3. A car moving uphill (upward).
4. A child sliding down the slide.
5. A moving vehicle suddenly stops and remain at rest for some time.

**Day 3**
**Learning Task 2B: Illustrating and Analyzing a Motion Graph**

A cat runs towards a mouse at different speeds. Given the data below, illustrate the motion of the cat using a motion graph and a tape chart.

Position	Speed (m/s)
A	0
B	1
C	2
D	2
E	1
F	2.5
G	4
H	0

**Answer the following questions:**

1. Based on the motion graphs and tape charts you created, at which points correspond to the following situation:

- Stationary or motion at rest.
- Constant speed.
- Speeding up.
- Slowing down.

**Learning Task 3. Doing Detective Work**

**Read the passage below and answer the guide questions that follows:**

Supposed that you are an on-the-job trainee in a private investigating company tasked to investigate a "hit and run" case. The alleged suspect was captured by a CCTV camera driving a road leading to the place of incident. The suspect denied the allegation, saying that he was driving very slowly with a constant speed. Because of the short time difference when he was caught by the camera and when the accident happened, he insisted that it was impossible that he would already be at the place when the crime took place. But when you are viewing the CCTV footage, you noticed that his car has left oil spots on the road. When you checked the spots on the site of the accident, you found out that they are still evident. So, you began to wonder if the spots can be used to investigate the motion of the car driven by the suspect and check whether he was telling the truth or not.

Examine the distances between the dots in the tape chart presented below:

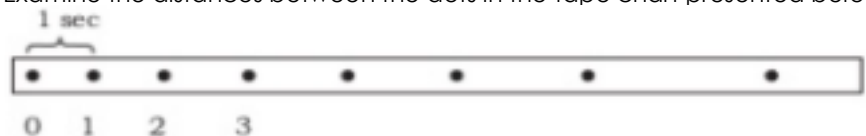


Figure 5. Tape Chart of the Oil Spots Left by the Car

**Guide Questions:**

- How will you compare the distances between the dots?
- What does the tape chart tell you about the speed of the car?
- Create a motion graph based on the tape chart.
- Analyze the motion graph and compare it to the information presented in the tape chart.
- Based on your investigation (tape chart and motion graph), prove whether the suspect is telling the truth or not?

**D. Assimilation  
Paglalapat**
**Day 4**

In this module, you have learned how to illustrate or represent the changes and patterns in an object's motion using "**Tape Charts**" and "**Motion Graphs**".

You have also learned that the distance between the dots on a tape chart represents how fast or slow an object moves. The big space between the dots represents faster motion while the smaller space between the dots represents slower motion. On the other hand, the slope or line on the motion graph may represent the rate of motion such as: a) A straight line represents an object that has a speed is equal to zero. b) A slanting line moving upward represents an object that is accelerating or speeding up. c) A straight vertically moving

		<p>downward line represents an object that is decelerating or slowing down. d) A line that ends at one point indicates motion has stopped from moving.</p> <p><b>Stop and Take Time to Reflect:</b></p> <p>We live in a world full of information. We deal with it every day. And the ability to understand graphs can be useful to us when analyzing data or information. List down at least 5 situations where information can be drawn into graphs or tape diagrams and explain the advantage of using graphs or diagrams in each situation.</p>
<b>V. ASSESSMENT</b> (Learning Activity Sheets for Enrichment, Remediation or Assessment to be given on Weeks 3 and 6)		
<b>VI. REFLECTION</b>		<ul style="list-style-type: none"> <li>The learner communicates the explanation of their personal assessment as indicated in the <b>Learner's Assessment Card</b>.</li> <li>The learner, in their notebook, will write their personal insights about the lesson using the prompts below.                          I understand that _____.                          I realize that _____.                          I need to learn more about _____.                     </li> </ul>

<b>Prepared by:</b>	MARILYN A. ONGKIKO	<b>Checked by:</b>	ANTONIO A. PETILOS REA C. BUNAN MARIFE A. SIOSON SHIRLEY FERRERA
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### REFERENCES:

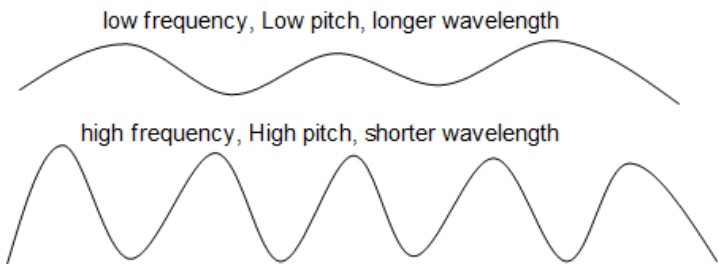
Science 7 Learner's Material (2017). Department of Education, pp. 178 – 181.  
 Castro, Chonalyn V., Science 7 FREED Module (2020). School Divisions of Dasmariñas City.

<b>W4-5</b>	<b>Learning Area</b>	SCIENCE	<b>Grade Level</b>	7
	<b>Quarter</b>	THIRD	<b>Date</b>	

<b>I. LESSON TITLE</b>		WAVES AS A CARRIER OF ENERGY
<b>II. MOST ESSENTIAL LEARNING COMPETENCIES (MELCs)</b>		Infer that waves carry energy Describe the characteristics of sound using the concepts of wavelength, velocity, and amplitude
<b>III. CONTENT/CORE CONTENT</b>		Unit 3 Module 2- Waves Around You
<b>IV. LEARNING PHASES</b>	<b>Suggested Timeframe</b>	<b>Learning Activities</b>
<b>A. Introduction</b> <i>Panimula</i>		<p>Waves around us come in different form; it can be water waves, sound waves and light waves. When you dip you finger in a basin with water, waves are formed. Playing musical instruments such as guitar, sound waves are produced, and when you lit a candle during power interruption at night, light waves brighten the room.</p> <p>A wave is a periodic disturbance that moves away from a source and carries energy with it. Waves that propagate through solid, liquid and gas are mechanical waves and can be classified as transverse and longitudinal waves.</p> <p>Anatomy of a wave</p> <ul style="list-style-type: none"> <li>❖ Crest - the highest point of a wave</li> <li>❖ Trough - the lowest point of a wave</li> <li>❖ Amplitude- the height of a wave</li> <li>❖ Frequency- the number of waves passing a given point</li> <li>❖ Wavelength- the distance between adjacent crest or troughs</li> </ul> <p><b>Copy the illustration in a separate sheet of paper and label the parts of a wave.</b></p> <div data-bbox="691 1030 1465 1534" data-label="Image"> </div>
		<p><b>Sound</b> is a <b>longitudinal wave</b> created by object that vibrates and appeal to our auditory system. Humans just like us can hear sounds with frequency of 20 Hertz to 20 000 Hz.</p> <p>Sounds with frequencies beyond 20 000 Hz are described as <b>ultrasonic</b>, while <b>infrasonic</b> sounds refer to those with frequencies of lower than 20 Hz.</p> <p>Dogs, cats, and bats are some of the animals that can hear sounds that range from 45 Hz to 120 000 Hz.</p>

IV. LEARNING PHASES	Suggested Timeframe	Learning Activities
		<div data-bbox="699 257 1433 600" data-label="Image"> </div> <p data-bbox="742 638 1417 667">Fig. 1. Illustration of sound propagation using a tuning fork</p> <p data-bbox="608 698 1506 828">In given figure above, a tuning fork is used to demonstrate the propagation of sound. The vibration produced by the tuning fork determined the movement of the molecules of air to the right creating compression, the molecules</p> <p data-bbox="608 860 1506 958">As the prongs of the tuning fork vibrates, the air molecules moved closer to each other creating <b>compression</b>. As the air molecules moved apart, thus making up the <b>rarefaction</b>.</p> <p data-bbox="608 990 1506 1120">Sound is a <b>mechanical wave</b>. It requires a medium to propagate. Without the state of matter, it could not transmit energy. Sound travels faster in solid than liquid or gas. Look at the figure below, the particles of solid are packed tighter together thus allowing fast collision of particles and transmission of sounds.</p> <div data-bbox="758 1160 1444 1444" data-label="Image"> </div> <p data-bbox="863 1473 1342 1503">Nature of Particles in different States of Matter</p> <p data-bbox="608 1534 979 1563"><b>Answer the following Questions.</b></p> <ol data-bbox="659 1594 1437 1977" style="list-style-type: none"> <li>How do we hear sounds? _____</li> <li>What is an ultrasonic sound? Infrasonic sound? Audible sound? _____</li> <li>Do sound waves travel fastest in solids? Prove your answer. _____</li> </ol>



IV. LEARNING PHASES	Suggested Timeframe	Learning Activities
<b>C. Engagement</b> <b>Pakikipagpalihan</b>		<p>Characteristics of Sound</p> <p>Sound is described by three characteristics:</p> <ul style="list-style-type: none"> <li>❖ Pitch</li> <li>❖ Loudness</li> <li>❖ Intensity</li> </ul> <p><b>Pitch</b> is the highness or lowness of sound.  Males have low-pitched voice because their vocal cords are typically massive and longer than females. Can you name some popular Filipino singers with high-pitched voice?  Loudness and Intensity are closely related.</p> <p><b>Intensity</b> of sound refers to the amount of energy of a sound wave. It is measured in decibel.</p> <p><b>Loudness</b> on the other hand is subjective. It is a sensation acquired by hearing which depends on how people perceived sounds. Usually, a high intensity sound produces a louder sound, and a low intensity sound creates a softer sound. As the intensity becomes higher, the frequency and energy also become high.</p>  <p><b>Figure4.</b> Relationship among frequency, pitch and wavelength  Source: Author</p> <p><b>Read the questions carefully and write your answer in a separate sheet of paper.</b></p> <ol style="list-style-type: none"> <li>Differentiate pitch, intensity and loudness.  _____</li> <li>How is pitch and wavelength of soundwave related to each other?  _____</li> <li>How loudness differs with the person?  _____</li> <li>As an ambulance approaches and passes you, how can you explain the sound it produced?  _____</li> <li>Suggest ways on how to protect human ear from noise pollution.  _____</li> </ol>
<b>D. Assimilation</b> <b>Paglalatap</b>		<p><b>Fill in the blanks by identifying the appropriate word for each blank. Write the answers on a separate sheet of paper.</b></p>


IV. LEARNING PHASES	Suggested Timeframe	Learning Activities
		A _____ is a periodic disturbance that moves away from a source and carries energy with it. Waves that propagate through solid, liquid and gas are _____ and can be classified as transvers and longitudinal waves. _____ is the highness or lowness of sound. _____ of sound refers to the amount of energy of a sound wave. _____ is a sensation acquired by hearing which depends on how people perceived sounds.
<b>V. ASSESSMENT</b> (Learning Activity Sheets for Enrichment, Remediation or Assessment to be given on Weeks 3 and 6)		
<b>VI. REFLECTION</b>		<ul style="list-style-type: none"> <li>The learner communicates the explanation of their personal assessment as indicated in the Learner's Assessment Card.</li> <li>The learner, in their notebook, will write their personal insights about the lesson using the prompts below. I understand that _____. I realize that _____. I need to learn more about _____.</li> </ul>
<b>Prepared by:</b>	Lerma L. Dayrit	<b>Checked by:</b> ANTONIO A. PETILOS MARIFE S. SIOSON REA c. BUNAN SHIRLEY FERRERA

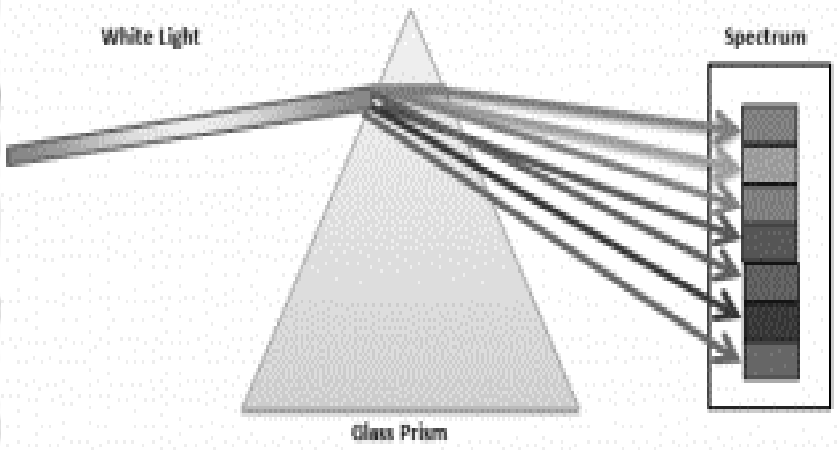
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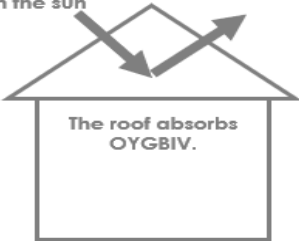

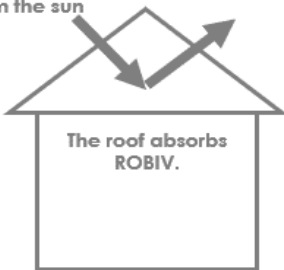
Villanueva, Chonalyn M., Freed Module, Grade 7 Quarter 3 Module 3

<b>W6</b>	<b>Learning Area</b>	Science	<b>Grade Level</b>	7
	<b>Quarter</b>	Third	<b>Date</b>	

<b>I. LESSON TITLE</b>	Light
<b>II. MOST ESSENTIAL LEARNING COMPETENCIES (MELCs)</b>	Explain the color and intensity of light in terms of its wave characteristics.
<b>III. CONTENT/CORE CONTENT</b>	Unit 3 Energy in Motion: Module 4: Light

IV. LEARNING PHASES	Suggested Timeframe	Learning Activities
<b>A. Introduction</b> <b>Panimula</b>	Day 1	<p>Read the context and answer the questions listed on your paper. Light is very important. For without light, the plants can't be able to produce foods for us through photosynthesis. Light comes from two different sources: natural and artificial. Natural source includes the sun. The sun does not just give us heat but also light. Other sources include bulb, lamp, and candles - the artificial sources. During the Christmas season, people from different places love to visit different light shows. One of the gorgeous light attractions is the Giant Christmas Tree found in Kartilya ng Katipunan Monument in Manila. The Giant Christmas lights are so attractive that people take selfies in the park. The spectacular- colored Christmas lights that move and change aimed to ignite Christmas spirits and these brought so much joy and relaxation to many tourists.</p>  <p>Figure 1: Giant Christmas Light in Kartilya ng Katipunan Monument Photo credit by the author</p> <p><b>Learning Task 1</b></p> <ol style="list-style-type: none"> <li>1. Is the light from the Christmas Tree natural or artificial?</li> <li>2. If it happens that you are watching the light show and a group of people taller than you stand before or in front of you, would you still see the lights? Why?</li> </ol>
<b>B. Development</b> <b>Pagpapaunlad</b>	Day 2	<p><b>LIGHT</b></p> <p>Light as a wave is both transverse and electromagnetic. Unlike sound, light, like all electromagnetic waves can travel in vacuum. It travels in straight lines as evidenced by shadows and eclipses. Light as transverse wave vibrates perpendicular to the direction of propagation.</p> <p><b>Characteristics of Light</b></p> <p><b>Intensity</b> is the amount of light produced by a light source. It is often interchanged with brightness. But it is objectively measurable as the rate at which energy is delivered to a surface. <b>Brightness</b> is the subjective quality of light. It depends on how someone is viewing light. However, in</p>

IV. LEARNING PHASES	Suggested Timeframe	Learning Activities
		<p>the quantitative aspect, brightness is expressed in a unit called <i>candela</i>.</p> <p>White light undergoes dispersion through a prism. <b>Dispersion</b> is a phenomenon in which white light separates into its component colors. It was discovered by Sir Isaac Newton during 1666. Christian Huygens postulated that the more light was "bent" or refracted by a "substance" or material, the slower it would move while traversing across that material. Max Planck postulated that electromagnetic radiation is a form of energy with both wave-like and particle like properties. Visible light is part of this radiation and can be described in terms of its frequency and wavelength. The theory of electromagnetic radiation was demonstrated by James Clerk Maxwell that electric and magnetic fields travel through space as waves moving at the speed of light.</p>  <p>Figure 2: Dispersion of Light in a Prism</p> <p><i>Photo credit by the author</i></p> <p>The seven colors include red, orange, yellow, green, blue, indigo and violet which are also known as <b>ROYGBIV</b> or the colors of the rainbow. Among the seven colors, violet has the highest frequency but the shortest wavelength. While red has the lowest frequency but the longest wavelength. It is obvious here that the frequency of light is indirectly related to the wavelength. As the frequency increases, the wavelength decreases. These are the reasons why red colors have been used mainly as color in various commercial logos.</p> <p>The color of the object we see depends on the light reflected (in the case of opaque materials) or transmitted (in the case of transparent materials) that reaches our eyes. Recall that the visible spectrum consists of different frequencies, each corresponding to a particular color. For example, a green leaf appears green because when light from the sun shines upon it, the leaf absorbs all the frequencies of the visible light spectrum except for the green. Thus, a "green" leaf will be seen.</p>
<b>C. Engagement</b> <b>Pakikipagpalihan</b>	Day 3	<b>Learning Task 2:</b> Determine which frequency of light will be reflected and what color will be seen by the observer.

IV. LEARNING PHASES	Suggested Timeframe	Learning Activities
		<div data-bbox="655 293 788 360">  </div> <div data-bbox="619 389 836 412"> <p>light ray from the sun</p> </div> <div data-bbox="751 400 1051 640">  </div> <div data-bbox="1075 344 1466 371"> <p>The roof reflects _____.</p> </div> <div data-bbox="655 703 788 770">  </div> <div data-bbox="619 808 836 831"> <p>light ray from the sun</p> </div> <div data-bbox="746 819 1031 1088">  </div> <div data-bbox="1075 781 1466 808"> <p>The roof reflects _____.</p> </div>
<p><b>D. Assimilation</b> <b>Paglalapad</b></p>	<p>Day 4</p>	<p><b>Learning Task 3:</b> Complete the statement by writing the appropriate word in the blank.</p> <p>Max Planck explained that light can be a particle and a wave. Light exhibits various characteristics. As a wave, it is a _____ wave in terms of direction of vibration and propagation.</p> <p>_____ of light depends on the source and the distance from the source. This is expressed in the unit of _____. The electromagnetic waves are arranged in the electromagnetic spectrum according to increasing _____. Among the waves, the perceptible wave is the visible light. Visible light is composed of different colors abbreviated as _____, also known as the colors of the rainbow. This has been proved by Sir Isaac Newton in which he used a prism to separate white light into its component colors. This phenomenon is called _____. The color of an object we see depends on light _____ or _____.</p> <p><b>Learning Task 4</b></p> <p>Light has proven its integral part in our life. For without light, everything will be pure darkness. In the book of Genesis, the Lord noticed that everything was dark and he said, "Let there be light.", and there was light. In the book of Matthew, it is stated that "You are the light."</p> <p>What does it mean to be a light in the world?</p>
<p><b>V. ASSESSMENT</b> (Learning Activity Sheets for Enrichment, Remediation or</p>		





IV. LEARNING PHASES	Suggested Timeframe	Learning Activities
Assessment to be given on Weeks 3 and 6)		
VI. REFLECTION		<ul style="list-style-type: none"> <li>The learner communicates the explanation of their personal assessment as indicated in the <b>Learner's Assessment Card</b>.</li> <li>The learner, in their notebook, will write their personal insights about the lesson using the prompts below.                      I understand that _____.                      I realize that _____.                      I need to learn more about _____.                 </li> </ul>
Prepared by:	WENDY P. VILLANUEVA	Checked by: ANTONIO A. PETILOS REA C. BUNAN MARIFE A. SIOSON SHIRLEY FERRERA

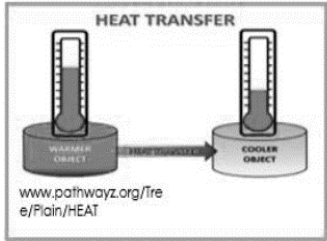






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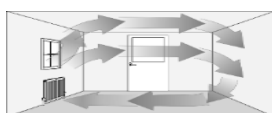



Castro, Chonalyn V., Freed Module, Grade 7 Quarter 3 Module 4  
 Asuncion, Alvie et al. 2012. Science Learner's Material, Department of Education

<b>W7</b>	<b>Learning Area</b>	Science	<b>Grade Level</b>	7
	<b>Quarter</b>	Third	<b>Date</b>	

<b>I. LESSON TITLE</b>	HEAT TRANSFER
<b>II. MOST ESSENTIAL LEARNING COMPETENCIES (MELCs)</b>	Infer the conditions necessary for heat transfer to occur
<b>III. CONTENT/CORE CONTENT</b>	Unit 3 Energy in Motion: Module 5 – Heat Heat and temperature, and the effects of heat on the body.

IV. LEARNING PHASES	Suggested Timeframe	Learning Activities
<b>A. Introduction</b>	<b>Day 1</b>	<p><b>Activity 1: Think Out Loud</b> Have you ever wondered how objects become colder or warmer? Analyze the picture below and answer the questions that follows after it on your paper:</p>  <ol style="list-style-type: none"> <li>1. What do you think will happen to the pan on top of the stove?</li> <li>2. What do you think will happen to the metal spoon if the boy leaves it in the pan? Why do you think it happened?</li> </ol>
<b>B. Development</b>	<b>Day 1</b>	<p> <b>All objects possess energy</b> which exists in different forms. Although we cannot hold or touch it, energy could help us explain how and why things behave the way they do.</p> <p>We often classify objects as cool or warm, oftentimes by using our sense of touch (<i>hand, skin</i>) or with the help of a thermometer. This phenomenon is a result of a process known as "<b>heat transfer</b>". To fully understand this concept, study the terms listed below:</p> <div style="border: 1px solid black; padding: 5px;"> <ul style="list-style-type: none"> <li>• <b>Thermal energy (heat energy)</b> is a type of <b>energy stored</b> in an object or system that depends on the motion of particles or atom. When the particles of matter move fast, it increases the thermal energy inside it. But when the particles of matter move slow, it decreases its thermal energy.</li> <li>• <b>Temperature</b> measures the <b>amount of thermal energy</b> or degree of <i>hotness and coldness</i> of an object or system.</li> <li>• <b>Heat</b> is the <b>transfer of thermal energy</b> from a body with a higher temperature to a body with lower temperature.</li> <li>• <b>Heat transfer</b> is the <b>transfer of heat</b> to different medium or forms of matter.</li> </ul> </div> <p>Using the following terms, let us go back and explain our previous example: All objects contain energy. The fire possesses <b>thermal energy</b>. As the fire touches the pot, its energy makes the atoms (inside the pot) move faster, increasing its <i>thermal energy</i>. As particles move from slow to active, the <b>temperature</b> of the pot increases (from cool to hot). The transfer of the thermal energy from the fire to the pot is called <b>heat</b> and the overall process is known as <b>heat transfer</b>. This process also explains why the soup inside the pot becomes hot, as well the spoon that is left sitting in the soup.</p> <p>When thermal energy is transferred, the warmer object cools down and the cooler object warms up until both objects attain the same temperature,</p>

IV. LEARNING PHASES	Suggested Timeframe	Learning Activities
		<p>then heat transfer stops. Heat, just like all forms of energy is measured in a unit called, <b>Joules</b>.</p> <div data-bbox="703 327 1031 566">  </div> <div data-bbox="1059 327 1386 566"> <p><b>Take Note:</b> Energy is not lost but <u>only</u> changes in form (<i>First Law of Thermodynamics</i>). This makes it possible for the energy from the fire to be transferred into the pot, towards the soup and into the spoon.</p>  </div>
	Day 2	<p>The <b>process of heat transfer</b> can happen in <b>three ways</b>, these are:</p> <p> <b>Radiation</b> is the heat transfer by electromagnetic waves through space. It does not require the interaction between matter. <b>Example:</b></p> <ul style="list-style-type: none"> <li>The heat from the Sun warms the different parts of the Earth.</li> <li>You can feel the heat from the sun even if you cannot touch it.</li> </ul> <p> <b>Conduction</b> is the heat transfer between objects (usually solids) or particles that are directly in contact of each other where one object's temperature rises. <b>Example:</b></p> <ul style="list-style-type: none"> <li>The heat from the fire is transferred to the pot. The heat from the pot is transferred into the soup. The heat from the soup is transferred to the spoon. The heat from the spoon is transferred to your hand as you touch it.</li> <li>Metals and water are good conductor (easily absorbs or allow transfer) of heat, while paper, cloth and wood are not.</li> </ul> <p> <b>Convection</b> is the heat transfer through fluids (liquids and gases) like water and air. <b>Example:</b></p> <ul style="list-style-type: none"> <li>When air is heated it become less dense (lighter) and float. But when air is cooled it become denser (heavier) and sinks to the bottom. This is useful for the hot air balloon. The flame heats the air inside the hot air balloon allowing it to float. And when heat is reduced, the balloon starts to sink or move downward.</li> </ul> <p>Going back to our previous example, let us try to identify the type of heat transfer that occurred in the process.</p> <div data-bbox="611 1424 1505 1720" style="border: 1px solid black; padding: 5px;"> <p>The heat from the fire is transferred into the pot by <b>radiation</b>, where the heat travels through waves. The heat from the pot is then transferred into the soup in the process of <b>conduction</b>, where heat is transferred by direct contact between materials. When we stir the soup with a spoon or a ladle, the heat from the soup is transferred into the spoon with the help of <b>convection</b>, where heat is transferred through the help of fluids. And when we touch the spoon, we feel the heat from the spoon to our hands by <b>conduction</b>. But the heat coming from the boiling pot of soup can be felt even if we do not touch it because of <b>radiation</b>. So, you see, a simple activity like this involves a lot of process to happen. Isn't it amazing?</p> </div> <p><b>Activity 2: ANALYSIS.</b> Observe each picture or image and classify the type of heat transfer that happens in each example.</p> <p>Write the word <b>CONDUCTION</b>, <b>CONVECTION</b> or <b>RADIATION</b> on your paper.</p> <div style="display: flex; justify-content: space-around; align-items: flex-end;"> <div style="text-align: center;"> <p>1. You feel the heat from the flame without touching it.</p>  </div> <div style="text-align: center;"> <p>2. You prepared a cup of tea and the cup feels warm when touched.</p>  </div> </div>

IV. LEARNING PHASES	Suggested Timeframe	Learning Activities																					
		<div><p>3. A raw egg begins to fry as it hits the pan.</p></div> <div><p>5. The food gets warm when placed in the microwave oven.</p></div> <div><p>7. Aircons are placed on high places because warm air rises and cool air sinks.</p></div>	<div><p>4. The warmth from the sun can make the sand and the water hot.</p></div> <div><p>6. The clothes become flat and warm when we iron it</p></div>																				
C. Engagement	Day 3	<p>Different materials have different ways of absorbing heat. Some objects can absorb heat fast, some do not. In this task, you will explore different methods by which heat can be transferred from one material to another.</p> <p><b>Activity 3: All at Once</b> Study the illustration on the right. Identify the different examples of situations that involves the different methods of heat transfer. Take note that in your chosen situation, there could be more than one form of heat transfer involved. Choose at least 3 examples and accomplish this task by filling up the table below.</p>  <p><b>Copy and complete the table below based on your analysis of the illustration above.</b></p> <p>Table 3: Examples of Heat Transfer</p> <table><tr><th colspan="2">Description of the chosen situation.</th><th>Which object/s release heat?</th><th>Which object/s absorbs heat?</th><th>What is the method of heat transfer?</th></tr><tr><td>1</td><td></td><td></td><td></td><td></td></tr><tr><td>2</td><td></td><td></td><td></td><td></td></tr><tr><td>3</td><td></td><td></td><td></td><td></td></tr></table> <p><b>Activity 4: Look Around You</b> Choose two questions from the given samples and answer it based on what you have learned about heat transfer.</p> <ol style="list-style-type: none"><li>1. Explain the reason/s why we use cloth for "potholders" or "oven gloves" when handling pots inside the kitchen?</li><li>2. Explain the reason/s why we can feel the heat from sun even we are inside the house?</li><li>3. Explain the reason/s why the water in the beach feels warm during the night and feels cool during the day?</li><li>4. Explain the reason/s why paper burns when touched by fire? Explain the reason/s why ice melts when we hold it?</li></ol>		Description of the chosen situation.		Which object/s release heat?	Which object/s absorbs heat?	What is the method of heat transfer?	1					2					3				
Description of the chosen situation.		Which object/s release heat?	Which object/s absorbs heat?	What is the method of heat transfer?																			
1																							
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C. Assimilation	Day 4	<p>At this point, you have learned that <b>heat</b> is the transfer of thermal energy. This energy is possessed by an object due to the motion of its particles. When object's thermal energy increase, its temperature changes from cool to warmer. When <i>heat is absorbed from one material to another</i>, <b>heat transfer</b> occurs. This process can happen in <b>three ways</b>: (a) <b>conduction</b>, where heat is transferred between materials that are in direct contact with each other. While (b) <b>radiation</b>, occurs when heat is transferred by electromagnetic waves (through space). And lastly, (c) <b>convection</b>, where heat is transferred in fluids (like gases and liquids) which making the hot fluids to rise and cold</p>																					

IV. LEARNING PHASES	Suggested Timeframe	Learning Activities
		<p>fluids to sink. When <i>heat</i> is absorbed from one material to another, <b>heat transfer</b> occurs.</p> <p><b>REFLECTIVE ACTIVITY</b>  <b>"The Transfer of Heat Energy"</b>                      Humans have made great progress with the help of heat. Starting from the sun, our major source of thermal energy which helps in the regulation of temperature on Earth, for without it, we will freeze over and life on Earth may not be possible. Likewise, it is important to understand how heat is transferred when dealing with materials such as metal, wood, or liquids to prevent accidents, especially when you work in the kitchen. Knowing the basics of heat transfer, explain why it is faster to cook a fish using a pan?</p>
<b>V. ASSESSMENT</b> (Learning Activity Sheets for Enrichment, Remediation or Assessment to be given on Weeks 3 and 6)		
<b>VI. REFLECTION</b>		<ul style="list-style-type: none"> <li>The learner communicates the explanation of their personal assessment as indicated in the Learner's Assessment Card.</li> <li>The learner, in their notebook, will write their personal insights about the lesson using the prompts below.                      I understand that _____.                      I realize that _____.                      I need to learn more about _____.                 </li> </ul>

<b>Prepared by:</b>	MARILYN A. ONGKIKO	<b>Checked by:</b>	ANTONIO A. PETILOS REA C. BUNAN MARIFE A. SIOSON SHIRLEY FERRERA
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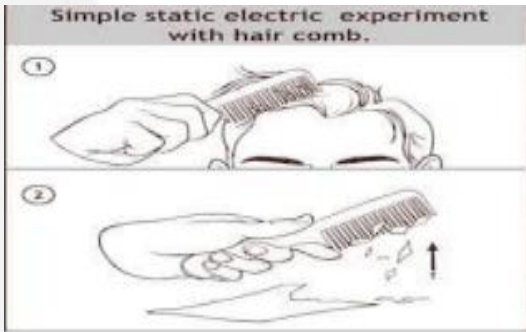
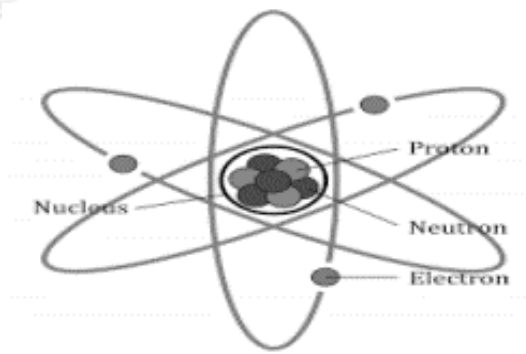
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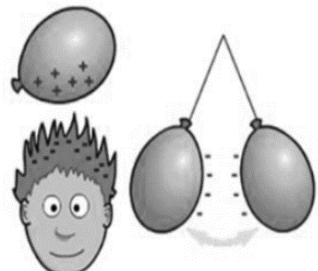
Science 7 Learner's Material published by Department of Education, First Edition 2017. pp. 246 - 256  
 Dayrit, Lerma L., Science 7 FREED Module. School Divisions of Dasmariñas City, First Edition 2020

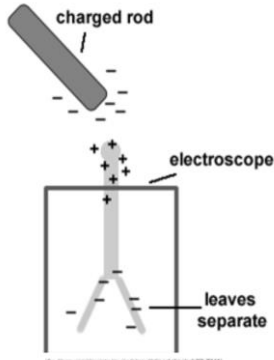
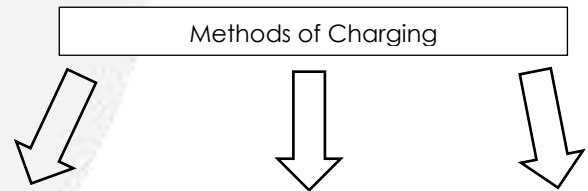


<b>W8</b>	<b>Learning Area</b>	Science	<b>Grade Level</b>	7
	<b>Quarter</b>	Third	<b>Date</b>	

<b>I. LESSON TITLE</b>	DIFFERENT TYPES OF CHARGING PROCESSES
<b>II. MOST ESSENTIAL LEARNING COMPETENCIES (MELCs)</b>	Describe the different types of charging processes
<b>III. CONTENT/CORE CONTENT</b>	Unit 3 Module 6- Electricity

IV. LEARNING PHASES	Suggested Timeframe	Learning Activities
<b>A. Introduction</b> <i>Panimula</i>	Day 1	<p><b>How is electricity produced?</b></p> <p>Appliances at home like T.V., radio, washing machine are powered by electricity. It makes our daily activities easier. Let us discuss how electricity is produced in terms of electric charges at rest and the different ways of transferring charges according to the findings of Thales using rubbed fossilized tree sap with a piece of cloth, William Gilbert found out the other materials can also be charged, and Benjamin Franklin performed his famous experiment of flying a kite during a thunderstorm.</p> <p><b>Learning Task 1.</b> Refer at the given illustration below.</p>  <p>Figure1. A boy combing his hair</p> <p>1. What happened to the bits of paper place near the comb after using it? Why do you say so?</p>
<b>B. Development</b> <i>Pagpapaunlad</i>	Day 1	<p>Study the given figure and answer the questions that follows:</p>  <p>Figure2. An atom</p> <p><b>Learning Task 2</b></p> <p>1. What do you call the positively charged particles?</p>

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		<p>2. What are the negatively charged particles?</p> <p>3. If an atom has equal number of positively charged particles and negatively charged particles, what will be the charged of the atom?</p> <p>An atom is electrically neutral because they have an equal number of protons and electrons. When do we say that an object is positively charged or negatively charged? Have you experienced placing your arm near a switched-on television screen, what happened to the hair on your arm? The standing of the hair of your arm is the result of static electricity. Electric charges can be transferred using different ways. How do objects get charged?</p> <p><b>Example:</b>  <math>++++----- = 4+ -6 = -2</math> ( negatively charged )            4 protons (+) and 6 electrons (-) = 2 electrons  <math>++++++----- = 8+ -5 = 3</math> protons ( positively charged )            8 protons (+) and 5 electrons (-) = 3 protons            4 protons (+ ) and 4 electrons (-) = 0  <math>++++---- = 0</math> (neutral )</p> <p>The attraction of charges from the given example above follows the Law of Charges, which states that opposite charges attract and like charges repel.</p>
<p><b>C. Engagement</b> <i>Pakikipagpalihan</i></p>	<p>Day 2</p>	<p>To charge an <b>object</b>, one must alter the charge balance of positive and negative charges. There are three ways to do it: friction, <b>conduction</b>, and induction. The process of supplying the electric charge (electrons) to an object or losing the electric charge (electrons) from an object is called charging. An uncharged object can be charged in different ways. There are three ways to do it: <b>friction</b>, <b>conduction</b>, and induction.</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;">  <p>①</p> <p>②</p> </div> <div> <p>❖ <b>Charging by friction</b> – the process which an object gets charged when it is rubbed against another object or there is a direct contact between the two objects.  <b>Example:</b> Bits of paper is attracted to the comb after using it.</p> </div> </div> <div style="text-align: center; margin-top: 20px;">  </div> <div> <p>❖ <b>Charging by conduction</b>- the process in which an object gets charged by making contact with a charged object.  <b>Example:</b> The two balloons have the same charge causing them to move away from each other.</p> </div>

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	Day 3	 <p>❖ <b>Charging n induction</b> – the process in which an object gets by charged object without direct contact.  <b>Example:</b> The leaves of the electroscope (yellow ) move separately when the charged rod is placed near the electroscope.</p> <p><b>Learning Task 3</b></p> <ol style="list-style-type: none"> <li>Based on the given examples and illustration, how will you differentiate the three methods of charging?</li> </ol> <p><b>Learning Task 4</b></p> <ol style="list-style-type: none"> <li>Explain the importance of practicing safety precaution in handling electrical devices.</li> </ol>
<b>D. Assimilation</b> <i>Paglalapad</i>	Day 4	<p><b>Learning Task 5</b></p> <p>Copy the figure below and complete the graphic organizer with the needed information.</p> <div style="text-align: center;"> <p>Methods of Charging</p>  </div> <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; padding: 5px; width: 30%;"> <p>_____</p> <p>is the process in which the body gets charged when it is rubbed against other body.</p> </div> <div style="border: 1px solid black; padding: 5px; width: 30%;"> <p>Charging by _____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> </div> <div style="border: 1px solid black; padding: 5px; width: 30%;"> <p>_____</p> <p>is the process in which a body gets charged by a charged body without direct contact.</p> </div> </div>
<b>V. ASSESSMENT</b> (Learning Activity Sheets for Enrichment, Remediation or Assessment to be given on Weeks 3 and 6)		
<b>VI. REFLECTION</b>		<ul style="list-style-type: none"> <li>The learner communicates the explanation of their personal assessment as indicated in the <b>Learner's Assessment Card</b>.</li> <li>The learner, in their notebook, will write their personal insights about the lesson using the prompts below. I understand that _____.</li> </ul>

IV. LEARNING PHASES		Suggested Timeframe	Learning Activities
			I realize that _____. I need to learn more about _____.
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**References:**

Science Grade 7 – Learner's Manual  
Science Grade 7 – Teacher's Guide

