DETAILED LESSSON

Teacher		**Learning Area**	Physics
Grade Level	Grade 8	**Date**	May 4, 2021
Quarter	First	**Time Frame**	1 hour

I. OBJECTIVES

A. Content Standard: The learners demonstrate an understanding of Newton's three laws of motion And uniform circular motion.

B. Performance Standard: The learners shall be able to develop a written plan and implement a "Newton's Olympics".

C. Learning Competency:

a. Investigate the relationship between the amount of force applied and the mass of the object to the amount of change in the object's motion;
b. Infer that when a body exerts force on another, an equal amount of force is exerted back on it;
c. Demonstrate how a body responds to changes in motion;

D. Specific Objectives:

By the end of the lesson, the students should be able to:

a. Explain the understanding of the concepts of Newton's three laws of motion.
b. Relate the significance of Newton's laws of motion with respect to force and mass in daily life.
c. Conduct an improvised water rocket launching experiment showing Newton's three laws of motion.

II. SUBJECT MATTER

A. Topic: LAWS OF MOTION

B. Learning Resources:

i. References:
   a. https://www.khanacademy.org/science/physics/forces-newtons-laws/newtons-laws-of- motion/a/what-is-newtons-first-law
   b. https://www.google.com/amp/s/www.livescience.com/amp/46560-newton-second- law.html
   c. https://www.slideshare.net/koniasunset/newtons-3-laws-of-motion-14466651
   d. https://youtu.be/1XSyyjcEHo0
   e. https://youtu.be/AFwbcWIUwLQ

ii. Materials:
   a. PowerPoint and Video (YouTube) presentation, printed instructional materials, box, Newton Law of Motion mobile application, video camera.

iii. Methods; 7E

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III. PROCEDURE	
TEACHER'S ACTIVITY	**STUDENTS ACTIVITY**
A. PRELIMINARY ACTIVITY	
a. Prayer Good morning, class. Let us all rise and have a peace of mind for a minute before we proceed for today's lesson.	(All students stand up and silently bowing heads)
b. Greetings Hello, class! How are you? Have you had your breakfast? Good to know.	So far, so good, Ma'am. Yes, Ma'am.
c. Checking of the Attendance Is everybody here? As I call your name, say "here" if you are present.	(Responding as they call their names)
d. Classroom Management Kindly arrange your chairs, pick up the trash in your area. Thank you.	

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	Teacher's Task	Learner's Task	Materials Needed	Expected Output
ELICIT (access prior knowledge)	A pleasant morning again, class! As you can see there are 2 sets of puzzle pieces on your classmates' desks. I will divide your groups into 2. On my mark, you will start doing your task by fixing the jumbled pieces within 4 minutes and one of your group members will raise his or her hand as a sign that your group is done. Afterwards, everyone will stamp their feet twice and then clap your hands once. It sounds like this. Then, sing the first part intro of *We Will Rock You* by The Queen, as a sign for the upcoming friendly class competition. Are you ready? On my mark, the puzzle assemble begins in 3, 2, 1. Go! [Played the activity] Thank you, class. Who do you think is that person? Excellent! (Short biography of Isaac Newton) The real short story goes like this. [Biography of Isaac Newton] Anybody in this class remembers their Grade 7 physics topic on motion?	Good morning, Ma'am! Copy, Ma'am. Yes, we are ready Ma'am! (Students making guesses and actively answering some questions from the story)	Presentation of revision of lyrics, puzzles of Isaac Newton	Learners' participation and recitation.

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	(Call a name) Thank you. Amazing. It seems like we will be having a smooth session now as you already have background from your 7th grade and early grades. But before we dive into our lesson, let us all settle down. (The class behaves and listen)	(Students have different responses) On what I have remember, motion is a change in position with respect to time acceleration, distance, and speed. Yes, Ma'am! (Students are responding)		
ENGAGE (Get the students' mind focused on the topic)	Have you heard of Newton's Olympics? Not yet? This is an exciting game for you guys. However, let us all see these terms that we will be encountering in this lesson by singing along with me even though your teacher is not good at it. Are you familiar with Eraserheads song entitled "Alapaap?" I revised parts of the song lyrics to help you memorize these. I'll be flashing the text along with explanations and images so we could sing together. Let's do it! (Singing) MOTION- a change with time of the position or orientation of the body. MASS- a measure of the amount of matter in an object.	(Students reply) Yes, Ma'am. (Listening and Singing)	Ukulele, PowerPoint presentation of lyrics, video presentation of the Newton 's Olympics	Learners' participation and recitation.

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	INERTIA- the tendency of an object to resist changes in its state of motion. ACCELERATION- a change in velocity, a measurement of how quickly an object changes speed, and direction. VELOCITY- The range of change of a position along a straight line with respect to time. FORCE- push or pull (strength or energy) NEWTON'S FIRST LAW- "if a body is at rest or moving at constant speed in a straight line, it will remain at rest or keep moving in a straight line at constant speed unless it is acted upon by a force". NEWTON'S SECOND LAW- "the Acceleration of an object is directly proportional to the net force and inversely proportional to its mass." NEWTON'S THIRD LAW- "If an object A exerts a force on object B, then object B must exert a force of equal magnitude and opposite direction back on object A. The end of the song. Thank you! Let's clap our hands. These terms pertain to Newton's laws of motion that will be our topic today. Now, let's get back to Newton's Olympics to get to understand more the laws of motion. Here is the mechanics of the activity: 1.The game consists of 7 stations. 2. Each station corresponds to Newton's laws of motion. 3. The class will be divided into two (2) groups. Each group must have selected representative/s per station and shall do the work being asked. The stations have different games to be played so there will be changes in number of participant/s and instructions.	(Students give a round of applause)		

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	4. After the representative/s finish one station, they shall move to the next round and the member will continue playing the game based on the instruction given in a specific station. 5. Once finished, raise your hands to call out the attention of the mediator. 6. Answer the questions in the worksheet given and discuss it to the class.	(Students are actively listening)		
EXPLORE (Provide students with a common experience)	Listen carefully, class. We will fully understand our lesson in this game. But, I would like to know if you are fully prepared to play? I can't hear you. Are you ready? Let's get going! (Playing along each round)	Okay ma'am! Yes, Ma'am. Yes, we are all ready! (Students are actively participating)		Student's cooperation and active participation The students will acquire relevant knowledge about the topic while Having fun playing.
EXPLAIN (Teach the concept)	To furtherly understand the concepts in the activity, here are the questions in your worksheet and ask each of your members the laws of motion present in every round of the game. Collaborate to comprehend and answer the questions being asked. (Teacher will allow students to formulate answers based on their own observation and interpretation.) Alright, class. I guess you are finished and ready. First, I will explain to you Newton' first law of motion called the Law of Inertia. Would you please read and explain this [Student name] (Insert infographics presentation) Second, the second law which is the Law of Acceleration. Who will volunteer to read? Yes, [Student name] Lastly, the Law of Interaction as the third law of motion. Read and explain [Student Name]	(Students are thinking, sharing, writing and presenting the concepts of Newton's laws of motion with regards to games played) (Class are listening and participating) Amazed.	PowerPoint presentation, Newton Law of Motion application	The students will be able to learn how the clip relates to the concept of capacitance and learn things about the subject matter.

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ELABORATE (Students applied the information learned)	Let me hear the answers from you. (Students answered several questions) (Worksheet answers and explain the concepts furtherly) Did you enjoy the game? Good to hear! Expect to have more of it in our next meetings	Active participation and recitation. Yes and thank you, Ma'am!	Worksheet presentation	Learners will be able to acquire some relevant and significant information and broaden their perspective with regard to the subject matter.
EVALUATE (How student learned the concept)	Let's have a quick review on our lesson. Give me Newton's laws of motion. [Namedrop] What does the first law mean? [Student name] How about the second? [Student name] What is the last? [Student name] Could you name some human movements, machines, or samples that execute/perform with the presence of these laws in motion and how it functions as well as its relation? [Name dropping] Very good! This class is absolutely attentive in our lesson. Give yourselves a round of applause. For our last activity, I will show you another example of an object showing Newton's laws of motion. Afterwards, I'll let you do it in our next meeting. Understood? This is an improvised water rocket that you could make at your houses. The video from YouTube has instructions, steps and final output explaining how to construct it. Let's all watch. (Insert info video)	Ma'am! Students will raise hands and recite. Students will raise hands and recite. The called names will recite. Yes, Ma'am!	PowerPoint presentation	Teachers will be able to determine how the students learned the topic and find out if they really having fun during the game relating it to the subject matter. Teachers will be able to know what more to do in approaching the students in terms of this type of lesson. Learners will be able to assess themselves on how they have learned and summarize all context of the lesson as a whole.

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EXTEND (Deepen conceptual understanding through use in new context)	We're already done! We hope you've learned something as well as had fun while gaining some knowledge. But before we dismiss this class, this will serve as your quiz or evaluation. Create a water rocket in accordance with the video you've watched with your groupmates. Make sure your safety while conducting the activity. You may ask for assistance from your elder siblings, friends or family. Afterwards, you may bring it to our next meeting and launch it in an open field with me. Any questions? No more questions. Ok, class. That's it! That will be all for today. Thank you for the cooperation. The class is dismissed. GOODBYE CLASS!	Yehey! Thankyou Ma'am! Okay ma'am! None. Thank you, Ma'am! Goodbye!	PowerPoint presentation	Teacher and Learners will be able to evaluate themselves all throughout the lesson.

Prepared by: