**EMERALD ROYAL INT’L SCHOOL**

**LESSON PLAN/NOTE FOR WEEK 5 ENDING: 2ND JUNE, 2023**

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| **Term** | 3rd |
| **Week** | 5 |
| **Date** | 02/06/2023 |
| **Class** | SSS 1 |
| **Subject** | Physics |
| **Topic** | Circular Motion |
| **Sub-topic** | The motion of a body in a circle |
| **Period** | 3 |
| **Time** | 10:30-11:50 |
| **Duration** | 35minutes |
| **Number in class** | 8 |
| **Average age** | 13years |
| **Sex** | Mixed |
| **Specific objectives** | By the end of the lesson, the students should be able to:   1. Explain the concept of Angular Velocity 2. Derive the relationship between angular and linear velocity 3. Solve simple problems on angular velocity. |
| **Rationale** | To enable the students understand circular motion |
| **Previous knowledge** | Students should have been taught the different types of motion |
| **Instructional aid** | One guide sheet for each student, science notebook and a science textbook. |
| **Reference** | * M.W. Anyakoha. New school physics for secondary schools. Africana first publishers PLC. page 24-28 * P.N. Okeke. Macmillan Senior Secondary Physics. Pearson. Page 16-18 |

**LESSON DEVELOPMENT**

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| **STEPS** | **TEACHER’S ACTIVITIES** | **STUDENTS’ ACTIVITIES** | **LEARNING POINTS** |
| **Introduction** | The teacher introduces the lesson by stating that when an object moves with a constant speed in a circular path, we call the object’s motion uniform circular motion. In this type of motion the speed of the object remains constant, but its direction is continuously changing, so that its velocity is changing.  It can be that a body following a circular path has an acceleration which is acting towards the center of the circle and which is responsible for making the body move in a circle. | The students listen attentively. | To give the students a proper understanding circular motion. |
| **Step I** | *Angular Velocity (ɷ)*  Angular velocity (*ɷ*) is defined as the angle turned through, divided by time. I.e. **ɷ = ---------(1)** | The students begin to develop an understanding of angular velocity. | To ensure proper understanding of the lesson. |
| **Step II** | *Deriving the mathematical relationship between linear and angular relationship*  We can compare angular velocity with the corresponding definition of linear velocity, **V**, which is given by V = **---------(2)**  But from definition,  **-----------------(3)**  Making **s**, subject of formula from equation 3, we have that **s = -------------------(4)**  Substitute equation 4 into equation 2, we have that;  V = -------------(5)  But  Therefore, V = ------------(6)  Equation 6 is the relationship between linear and angular velocity.  Where; **,** is linear velocity    **,** is the radius  **,** is time  is the angle of rotation. And  **s,** is the distance | The students listen attentively to the teacher’s explanation. | To ensure that all the students are carried along. |
| **Step III** | *Example*  A stone is whirled at the end of a rope 30m long, and makes 10 complete revolutions in 2 seconds. Find the angular velocity.  *Solution*  Using **ɷ =**  Substituting, we have that **ɷ = =** 1800o/s | The students listen attentively to the teacher’s explanation. | To ensure that all the students are carried along. |
| **Summary** | In a circular motion, there is always a force directed towards the center of the circular path. This is the centripetal force. This force keeps the body moving in a circular path. A centrifugal force acts in opposite direction to the centripetal force. | The students listen attentively to the teacher’s explanation. | For reference purpose. |
| **Evaluation** | The teacher evaluates the students by giving the students the following class work.  Find the linear velocity of a stone whirled at the end of a rope 4cm long, and makes 4 complete revolutions is 8 seconds. | The students answer the question in their science notebook. | To ascertain the students level of understanding of the lesson. |
| **Conclusion** | The teacher makes correction of the classwork. | The students copy the correction in their exercise books. | For reference purpose |
| **Assignment**  **(Homework)** | The teacher gives the students the following assignment.  What is the distance covered in 5seonds by a body a stone whirled at the end of a rope 9cm long, and makes 2 complete revolutions. | The students copy the questions into their exercise books and take home for solving. | To facilitate critical thinking of the students at home. |



20/7/2023

Principal Head Instuctor