LESSON PLAN ON NATURAL SCIENCE

WEEK 6

Name of Teacher: Mr. Mac-Donald Arinze

Class: Year 7 & 8

Average age of learners: 13years

Gender: Mixed

Topic: Speed and Velocity

Duration: 40mins

Date: Week ending 16th February, 2024.

CONTENT: Concept of Speed and Velocity

RATIONALE: The knowledge acquired will enable the learners to understand the concept of Speed and Velocity and also solve calculation questions involving speed and velocity.

PERFORMANCE OBJECTIVES: By the end of the lesson, the learners should be able to:

1. **Cognitive Domain (Minds-on):**
2. Define correctly Speed and Velocity
3. State correctly the S.I unit for both speed and velocity
4. Solve correctly calculation questions involving speed and velocity
5. **Affective Domain (Hearts-on):**
6. Show willingness in the lesson by attempting to solve calculation questions involving speed and velocity.
7. Appreciate the lesson by answering the teacher’s questions with keen interest.
8. **Psychomotor domain (Hands-on)**
9. Draw the car speedometer.
10. Apply the the understanding of speed to real-world scenarios.
11. **Interpersonal domain:** (Learners’ ability to interact with others and share knowledge):
12. Discuss elaborately in groups and share knowledge and experiences acquired.

**ENTRY/ENTERING BEHAVIOUR:** Learners are familiar with their athletes and cars being tagged as having much or less speed .

**INSTRUCTIONAL MATERIALS:** Laptop/desktop, projector, videos, textbooks, toy cars, stopwatch or timer, meter rule, marker, whiteboard and coloured cardboard paper.

**INSTRUCTIONAL PROCEDURE:** Check table below.

**TABLE: INSTRUCTIONAL PROCEDURE**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Duration** | **Content Development** | **Teaching Strategies** | **Instructional Strategies** | **Specific Instructional Materials in Use** | **Teacher’s Performance Activities** | **Students’ Performance Activity** | **Learning Point** |
| 5 mins | Asking Provocative questions | Set Induction | Brainstorming | Marker, Whiteboard | The teacher divides the learners into groups of three members each to brainstorm and identify the part on a car's dashboard that tells it's speed | Learners carry out the task that the teacher has given them after brainstorming. | Learners have made an attempt to Identify the instrument used to determine the speed of a moving car. |
| 14mins | Definition of Speed and Velocity and their respective S.I units | Use of examples and illustrations, planned repetition, stimulus variation, questioning and reinforcement. | Mind-mapping | Pictures and flash cards of concepts and S.I units. | The teacher uses a flashcard to show an define the concept of Speed and Velocity and also mention their S.I units.. students also illustrates the definition of Speed using a toy car and stopwatch or timer and meter rule | The learners identify the key words in the definitions and also interpret the mathematical expression of speed and velocity. | The learners have learnt the definition of Speed and Velocity. |
| 8mins | Difference between speed and velocity | Use of examples and illustrations, planned repetition, stimulus variation | Mind-mapping | Use of flash cards | The teacher uses various illustrations to distinguishe between scalar quantities (speed) and vector quantities (velocity) | The learners identify the distinction between scalar and vector quantities | The learners have learnt the distinction between scalar and vector quantities |
| 8mins | Calculation involving Speed and Velocity | Use of examples and exercises from text and illustrations | brainstorming, think-pair-share | Textbooks. | The teacher guides the students on how to apply the formula for speed in solving calculation questions.. | The learners identify the application of the formula for speed in calculating the following parameters: speed, distance covered, and time taken. | The learners have learnt how to calculate various parameters captured in the formula of speed |

**EVALUATION:** The teacher evaluates the lesson using the following questions

1. Define the concept Speed and Velocity
2. State the S.I unit for both speed and velocity
3. Calculate the speed of a car, assuming it covers a distance of 4k in 3mins
4. How many seconds will it take an athlete running at a speed of 2m/s cover a distance of 800m

**CLOSURE:** The teacher summarizes the lesson by guiding the learners in going through the main points of the lesson, discussing the formula for calculating speed and emphasizing on the need for the students to always convert the units of quantities given to their respective S.I units. The teacher gives the learners some time to reflect on what they have learnt, ask questions and as well take corrections.

**ASSIGNMENT (HOMEWORK):** the teacher tells the students to solve the following.

1. The velocity of a bullet is 120m/s, if it hits it's target in 2 seconds, calculate the distance of the target.
2. Calculate the distance covered by a car traveling at an average speed of 3m/s assuming it traveled for 2hrs 40mins.

**Actions to carry forward:** the students having learnt the concepts and mathematical formulas for both speed and velocity can now solve other examples from their textbook and other materials.

**Speed**

Speed is defined as the rate at which a distance is covered with time. Mathematically, speed is expressed as the ratio of distance and time.

Speed = Distance/time

The S.I unit of speed is meter per seconds (m/s)

**Velocity**

Velocity is the rate at which a distance is covered in a specified direction. Mathematically, velocity is defined as the ratio of displacement and time.

Velocity = Displacement/time

The S.I unit of velocity is also meter per seconds (m/s)

**Difference between speed and velocity**

|  |  |  |
| --- | --- | --- |
| S/N | **Speed** | **Velocity** |
| 1 | Speed is a scalar quantity. | Velocity is a vector quantity. |
| 2 | Speed only measures the extent or magnitude with no specified direction. | Velocity is a vector quantity and hence measures both magnitude in a specified direction. |

**Calculate questions involving formula for speed**

Procedure:

* Write out the givens (parameters which were given in the question) before solving... thus always use:

Given that:...

* Ensure to convert parameters that are not in their S.I units are converted to ensure accuracy. Example convert distance when given in Kilometer (Km) to meters(m), and time when given in hours or minutes to seconds (s).
* Write down correctly the formula for speed or velocity and substitute the values of the parameters given, and then solve for the unknown.
* Ensure to write correctly the S.I unit of the answer. Speed=m/s, distance=m, time=s.

**Examples and class fun**

1. Calculate the speed of an athlete assuming she covers a distance of 800m in 3minutes.
2. What time will it take a car traveling at an average velocity of 5m/s to cover a distance of 4km
3. Calculate the distance covered by a car traveling at an average velocity of 3m/s assuming it arrives it's destination in 45mins time.