**MODEL LESSON PLAN**

**Name of the student teacher** : XXX **Subject:** Mathematics

**Class/section and session** : IX **Unit** : Mensuration

**Name of the school** : XXX **Topic** : Surface area and Volume of the cube

**Instructional objectives:** The students will be able

1. to identify the different mathematical shapes.
2. to recall the formulae on area and volume of the cube
3. to explain the relationship between the area and the volume of the cube.
4. to compute the problems with speed and accuracy.
5. to formulate the problems on their own.

**Instructional resources:**

1. Model of a cube
2. Solid objects
3. Pictures depicting cube

**Previous knowledge of learners**

List down the mathematical shapes you come across in our daily life.

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| **Concept/Content** | **Specification of behavioural objectives** | **Learning Experiences(Teacher/Learner activities)** | **Evaluation** |
| Two dimension figures | Identifies | The teacher shows some of the geometrical shape pictures such as rectangle, square, circle and triangle. | How many dimensions are there in these pictures? |

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| **Concept/Content** | **Specification of behavioural objectives** | **Learning Experiences(Teacher/Learner activities)** | **Evaluation** |
| Three dimension figures  Image result for cubeImage result for cuboid shape  Image result for sphere shapeRelated image | Recognises | The teacher shows solid objects and models that we see in our daily life. | Which is cube in shape? |
| **Lateral Surface Area of the cube**  The lateral surface of an object is the area of all the sides of an object excluding area of its base and top | Explains | The teacher explains the surfaces that constitute the lateral surface area of the cube by showing the model | How do you find the lateral surface area of the cube? |
| The LSA of the cube is = 4x area of each sides  = 4a2square units  Where ‘a’ is the side of the cube and a2 is the area of each side of a cube. | Generalises  infers | The teacher elicits the steps involved in the derivation of the formula. | What is the formula for LSA of the cube?  What do ‘a’ represents? |
| Find the LSA of the cube if the side is 5 cm?  Given a=5 cm  The LSA of the cube  =4a2  =4x52 =4x25  =100 cm2 | Analyses  Recalls  Substitutes and Computes | The teacher asks one of the student to read the problem  The teacher calls one of the students to say the formula for LSA of the cube.  The teacher ask the value of ‘a’ and substitutes in the formula to find the LSA of the cube. | What is given in the problem?  What is the LSA of the Cube if the side is 6 cm? |

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| **Concept/Content** | **Specification of behavioural objectives** | **Learning Experiences(Teacher/Learner activities)** | **Evaluation** |
| **Total Surface Area of the cube**  TSA of the cube= The sum of the areas of all the six equal faces of the cube.  = 6xa2  =6a2sq. units | Differentiates | The teacher differentiates between the LSA and TSA of the cube by unfolding the cube shape box.  Image result for lateral surface area of a cube | What is the difference between LSA and TSA of the cube? |
| Find the TSA of the cube if the side of the cube is 7 cm?  Given:  a=7,  The TSA of the Cube=6a2  =6x72  =6x49  =294 cm 2 | Simplifies with speed and accuracy  Summarises | The teacher asks one of the students to do the simplification on the black board.  The teacher summarises the steps involved in the derivation. | How do you simplify? |
| **Volume of the cube:**  Volume is defined as the number of unit cubes required to fill the entire cube.  The volume of the cube is a3if the side of the cube is ‘a’ units. | Defines  Compares and demonstrates | The teacher writes the definition of the volume of the cube on the black board.  The teachermakes the students to compare the area and volume of the cube by giving small demonstration. | What is the volume of the cube? |
| Find the volume of the cube if the side of the cube is 6 cm?  Given: a=6,  The volume of the cube is a3  = axaxa  =6x6x6 =216cm3 | Select appropriate formula | The teacher computes the problem by eliciting the steps from the students. | What is the value of ‘a’?  What is the basic unit of volume? |
| **Concept/Content** | **Specification of behavioural objectives** | **Learning Experiences(Teacher/Learner activities)** | **Evaluation** |
| If the T.S.A of the cube is 384 sq.cm. Find its volume?  Given:  TSA of the cube =384 sq.cm  i.e, 6a2 =384 | Discusses and  Predicts | The teacher discuss with the students about the details given in the sum and how far it helps to find the solution of the problem | What is the formula for TSA of the cube? |
| To find the volume of the cube, ‘a’ is needed.  The value of the ‘a’ is obtained from TSA of the cube.  6 a2  =384  a2  =384/6  a2  =64  therefore, a =8 cm  Now by substituting the value of ‘a’  In the volume of the cube.  We get, V=axaxa  V=8x8x8  V=512 cm3 | Draws neatly  Indicates  Calculates  Establishes the relationship  Interprets | The teacher draws the shape of the cube on the black board and marks it side ‘a’ which is needed.  a =?  a =?  The teacher help the students to find the value of ‘a’ from TSA of the cube.  The teacher exhibits the relation between the TSA and volume of the cube.  The teacher asks the students to make use of the obtained ‘a’ value in the TSA of the cube to find its volume. | Why we are finding the value of ‘a’ here?  If a2 =64, what does ‘a’ represents.  What is the formula for volume of the cube? |

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| **Supervised study:** | Examines and  Clarifies  Checks sufficiency of data.  Selects appropriate formula and substitutes.  Computes with speed and accuracy. | The teacher writes the problem on the blackboard to work out under the supervision. And also clarifies the doubts of the students. | Find the LSA,TSA and Volume of the cube if the side is 10 cm? |

**Home work**:

1. Find the Lateral Surface Area (LSA), Total Surface Area (TSA) and volume of the

Cube having their sides as 8 cm.

1. If the Total Surface Area of a cube is 1014 cm2, find the length of its side.
2. A container is in the shape of a cube of side 20 cm. How much sugar can it hold?

**Signature of the Pre service teacher Signature of the supervisor**