

LESSON PLAN - 10

Class: **X**

Subject: **Mathematics**

Name of the teacher:

School:

Name of the chapter	Topic	Number of periods required (14)	Timeline for teaching		Any specific information
			From	To	
10. MENSURATION	10.1.Introduction	4			
	10.2. Surface area of combination of solids	3			
	10.3. Volume of combination of solids	3			
	10.4. Conversion of solid from one shape to another	4			

Prior Concept / Skills:

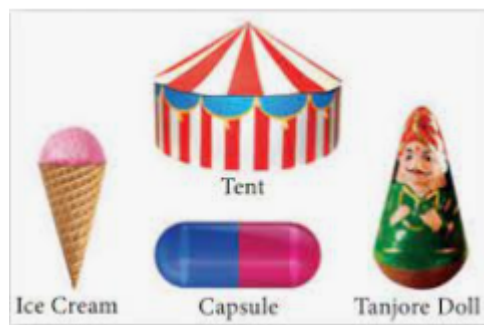
1. Types and Properties of different polygons
2. Area, perimeter of square, rectangle, triangle
3. Circle and semi-circle
4. Cube, Cuboid, Cylinder and their parts
5. Lateral surface area, total surface area and volume of different solid shapes

Learning outcomes	Number of Periods
Students are able to:	4
1. discuss and analyse situations related to surface areas and volumes of different objects	
2. observe shapes in the surroundings that are a combination of shapes studied	3
3. Solves the problems by providing formulas for different aspects of the combined shapes.	3
4. Finds surface areas and volumes of objects in the surroundings by visualizing them as a combination of different solids.	4

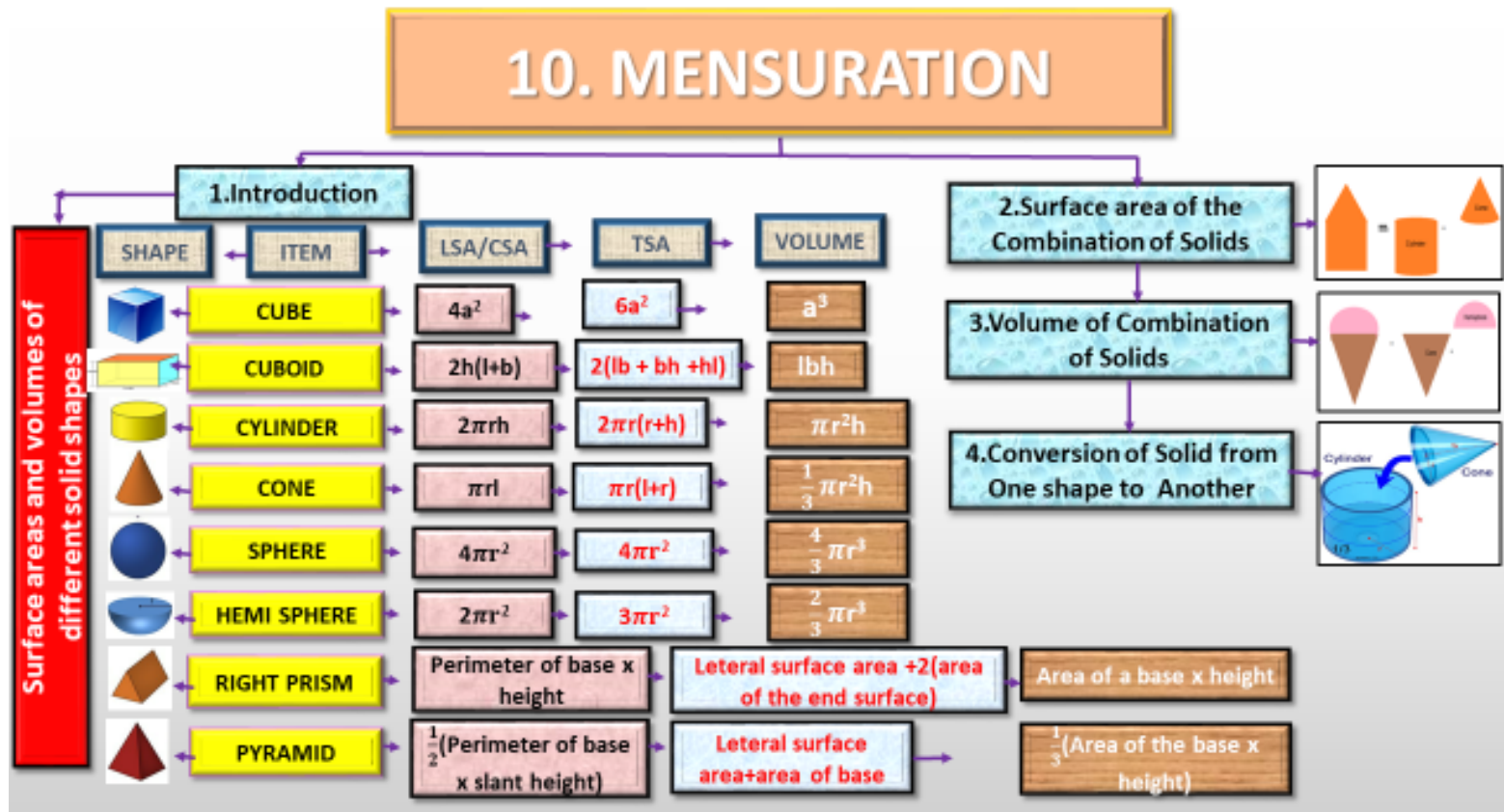
TEACHING LEARNING PROCESS

Induction/Introduction(Generating interest, informing students about the outcomes and expectations for the lesson)

- By considering some real life situations, identify what we needed and what was to be measured or estimated.
Ex: To find quantity of paint we need to paint a wall, we have to find surface area
To find number of boxes that we needed for painting, we have to find volume.
- We come across so many things of different shapes around us. Some of them can be seen as combination of solid shapes. We will learn how to find surface areas and volumes of combination of solids.



Experience and Reflection (Task/question that helps students explore the concept and connect with their life)
 Group Activity: Collect some objects around us in solid shape and write the names of solid shapes in them.
 Draw a flow chart of the chapter :



10.2 SURFACE AREAS OF COMBINATION OF SOLIDS: (3)

We observe that many solids in generally are made up of combination of solids known like sphere, cylinder and cone

Explain the shapes in the solids and give their names

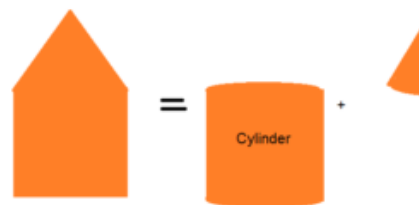
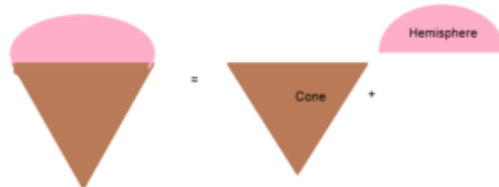
Explain the formula for Total surface area of the solid

For Example:

- TSA of ice-cream = CSA of cone + CSA of hemisphere

- Explain examples 8 and 9 of text book
- Explain problems 5, 6, 7 of Exercise.10.2

Some Examples:



- **Try This (page.252)**
- **Think – Discuss (page.252)**

- Solve problems 2 and 4 of Exercise.10.2 with the help of teacher.

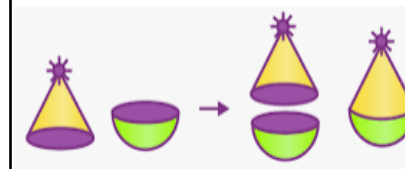
Ice-cream = cone + hemisphere

Hut = cylinder + cone

Tablet = cylinder + 2 hemisphere

Solve problems.1 and 3 of **Exercise.10.2**

Activity: Collect solid shape objects and write the names of solid shapes in it



Activity: Use known solid shapes and make as many objects as possible by combining more than two, as you come across in your daily life.

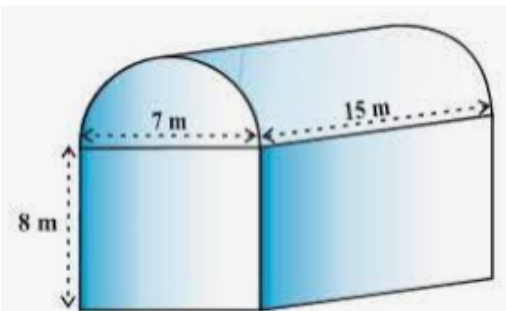
10.3 VOLUME OF COMBINATION OF SOLIDS: (3)

In calculating surface area of combination of solids, we cannot add the surface areas of two solids because some part of the surface area disappears in the process of joining them.

But, when we calculate volume of combination of solids, we can directly take the sum of volumes of the constituents.

- Explain the examples 10 to 13 of text book
- Explain the problems 5, 6, 7 of Exercise.10.3

- Understood the process of finding volume of combination of solids

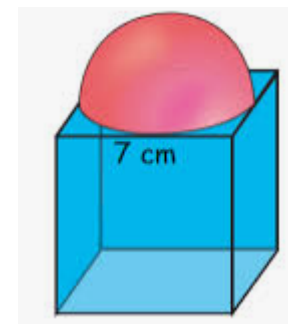
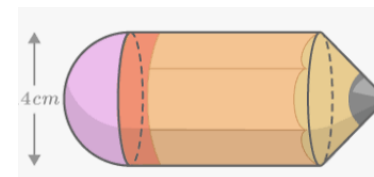


- Try This (page.257)
- Solve the problems 3 and 4 of Exercise.10.3

Tabulate the formulae for volume of different solids.

Solve the problems 1 and 2 of Exercise.10.3

Activity: Collect some objects with combination of solids and find their volume.



10.4 CONVERSION OF SOLID FROM ONE SHAPE TO ANOTHER: (4)

Consider some cases in which shapes of solids are converted into another shape

- Preparing candles by melting cuboid shape wax
- In gun factories, bullets are made by melting cube of lead
- Goldsmith prepare various ornaments by melting cuboid gold biscuits.
- Explain examples 14 to 19 of text book
- Explain problems 6, 7, 8 of Exercise.10.4

Observe that in all these cases volume always remains same.

- **Think – Discuss (page.262)**

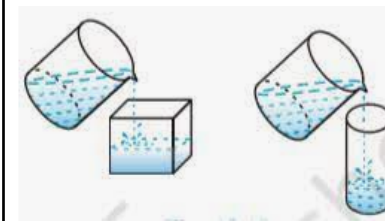
Solve problems 4 and 5 of **Exercise.10.4** with the help of teachers and discus with others.

Do the activity given in text book and check that after conversion, volume always remains same.

Do This (page.263)

Solve the problems 1, 2 and 3 of **Exercise 10.4**

Lab Activity: Take one big candle and melt and pour into different solid shape and find volume of the new solid.



Check For Understanding Questions

1. Factual:

- Draw ant 3 2D and 3D shapes
- Write the formula for fining LSA , TSA and volume of (i) cuboid (ii) cone (iii) cylinder
- To find out quantity of water in a bottle, we measure _____
- Find volume of a hemisphere of radius 5cm
- A shuttle is a combination of _____ and _____
- The volume of a cube of 1 cm side is _____

2. Open Ended / Critical Thinking:

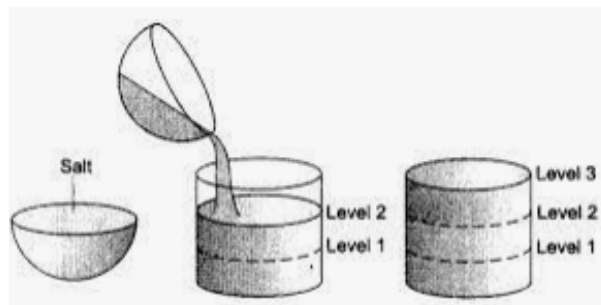
- Think of any 5 things around you that can be seen as combination of shapes. Name the shapes that combine them.
- A cylinder and a cone have bases of equal radii and are of equal heights. Show that their volumes are in the ratio 3:1
- Find the diagonal of square of side 'a' units?
- If the diameter of a sphere is d, then its volume is _____
- Radius, height, slant height of a cone are r, h, l respectively. Then find l in terms of r and h?
- Find the number of cubes of side 2cm which can be cut from a cube of side 6cm?

Student Practice Questions & Activities (Exercises from workbook / textbooks/ blackboard)

- The Lateral surface area of a cube is _____
- If the surface areas of two spheres are in the ratio 1:4, then find their volume ratio?
- If base area of a regular cylinder is 154cm^2 , then find its side?
- Activity: Collect some objects which have combination of solid shapes and write the names of solid shapes that combine them.

Assessment (Think of what children SAY, DO and MAKE while learning that can form the evidence of learning to be used for assessment).

- Project Work: Find the formula for the volume of a sphere with the help of an activity



- Quiz conducted on whole chapter.
- Collect model problems from 8th class Math text book and solve them .
- Exercises in Students Note book

SIGNATURE OF THE TEACHER

SIGNATURE OF THE HEAD MASTER

VISITING OFFICER WITH REMARKS