



## Stem Activities – Term - 1 – June

As the part of STEM project, the school conducted the following activities in Term 1.

All the teachers teaching in classes 6 to 12 coordinated to integrate at least two subjects in STEM activities.

Through these activities the students learnt how to apply all of these to their daily life for building a better understanding of the world around them.

### Class – V I

#### Science

#### Transpiration in Plants

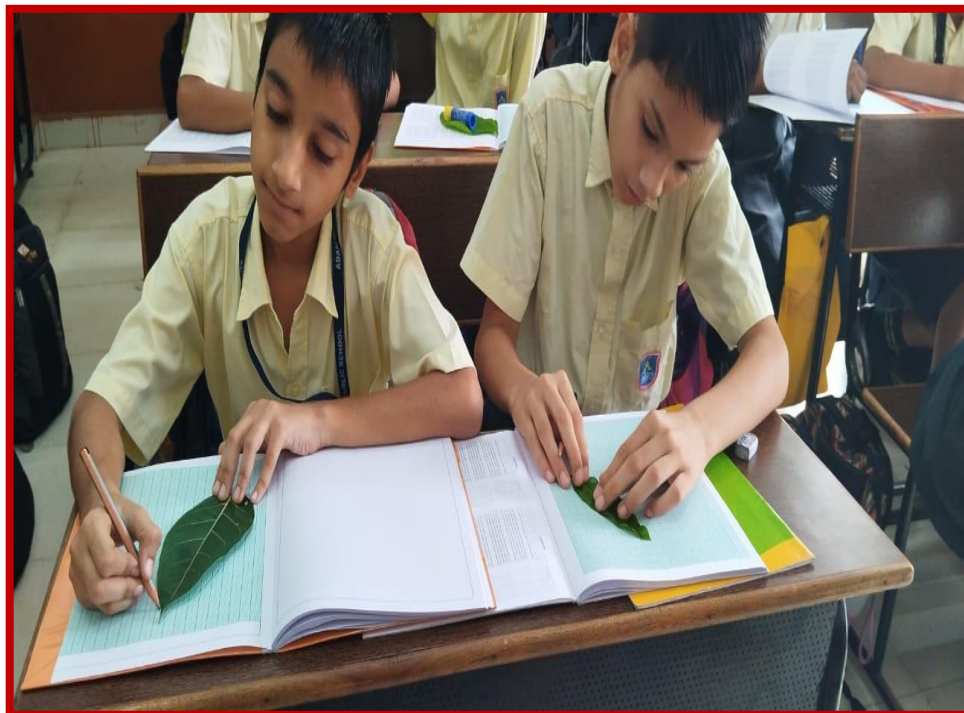
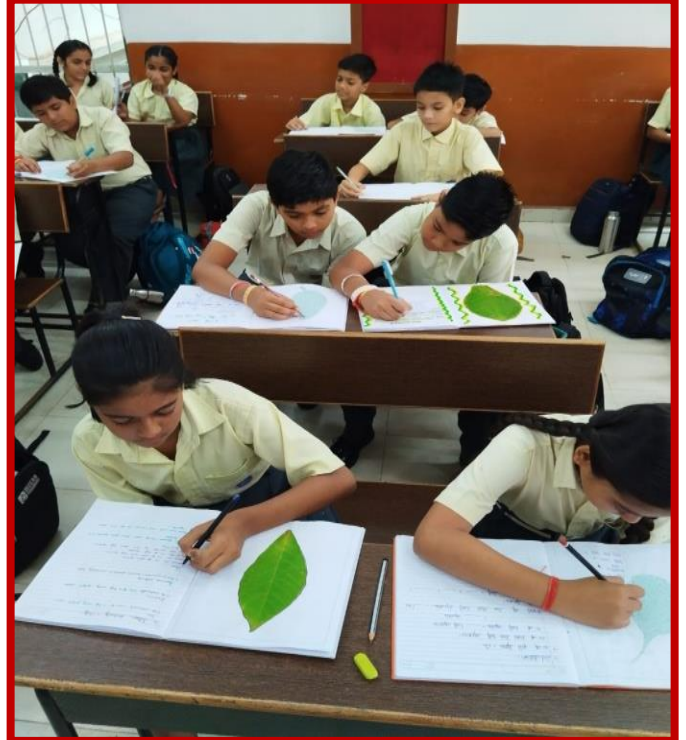
Students of Class – 6 performed this activity. They brought one potted plant from home and covered it with the polythene bag. After that they kept it in sun light for 3 to 4 hours and then observed the plant covered plant. They were able to see water droplets inside the polythene. Here teacher explained that water droplets indicate transpiration.



## Mathematics

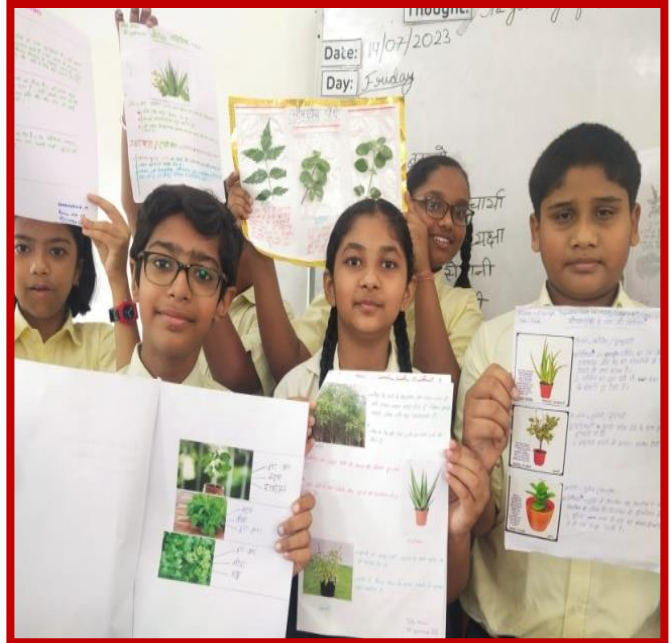
### To Find the Area of Leaf Using Graph Paper

Students calculated Area of the various leaves by tracing the leaf on a graph paper. They calculated Full squares, more than half squares, half squares and found the total to find the area of the leaf.



## Hindi

औषधीय पौधों के चित्र और उनके गुणों की जानकारी प्राप्त करना ।



## Art Integration

- Students traced the leaf on a graph paper.
- They pasted /Draw pictures of the medicinal herbs in a notebook.
- They drew different leaves, flowers, and other parts of the plant in the Art and Craft period.



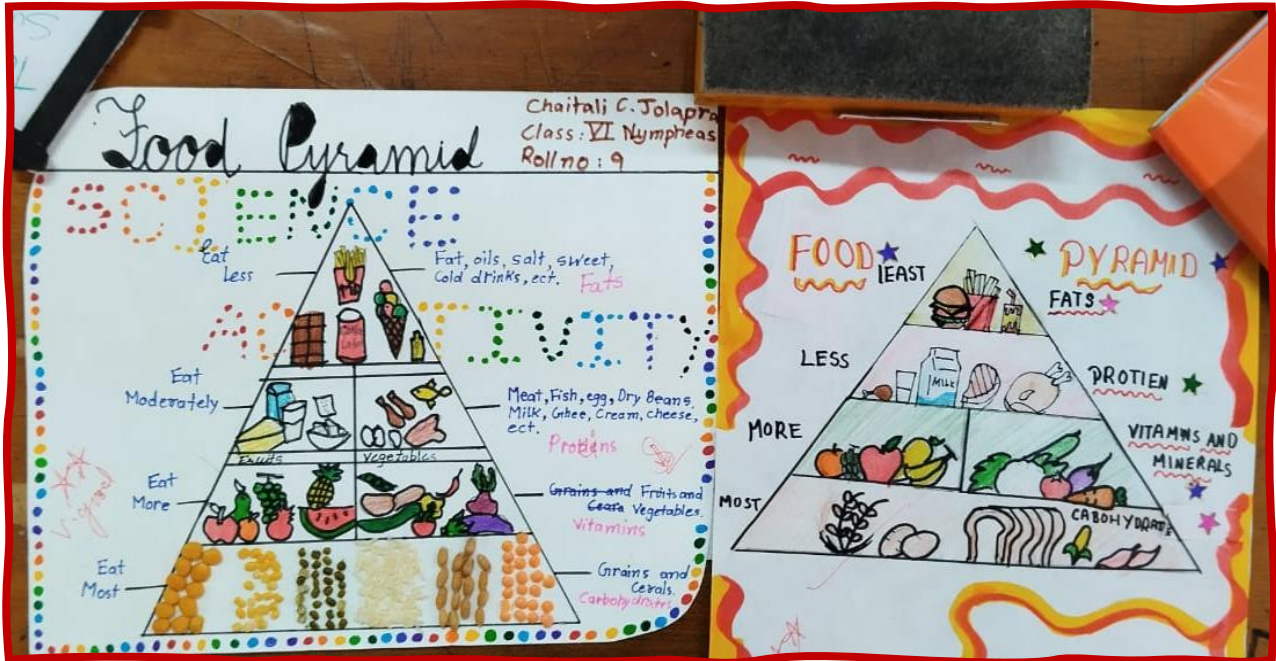
## Class – V I

### Topic - Healthy Living and Healthy Food

#### Science

#### Components of food -Food Pyramid

Translating nutrition advice into a colorful food pyramid is a great way to illustrate what foods make up a healthy diet. The shape immediately suggests that some foods are good and should be eaten often, and that others aren't so good and should be eaten only occasionally. So, the students of Class – 6 understood the importance of food by drawing the food pyramid.



## Mathematics

Whole numbers - To represent the Calories of the given food items on a number line.

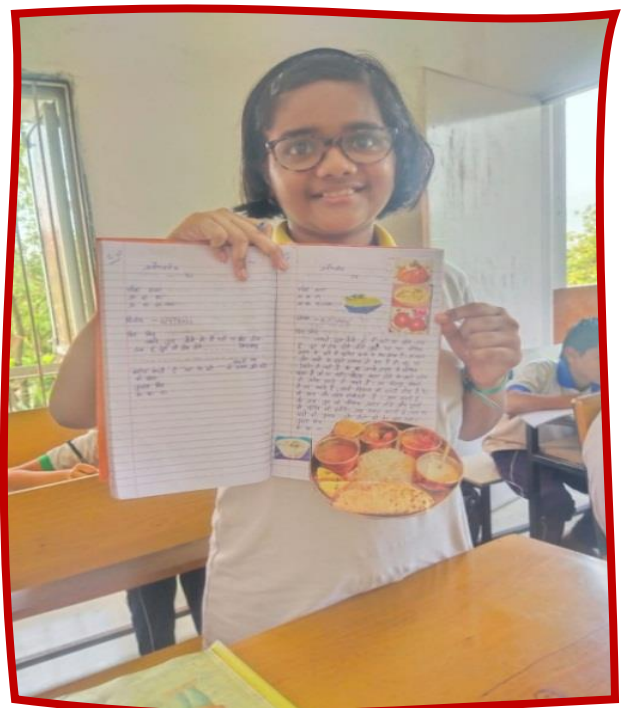
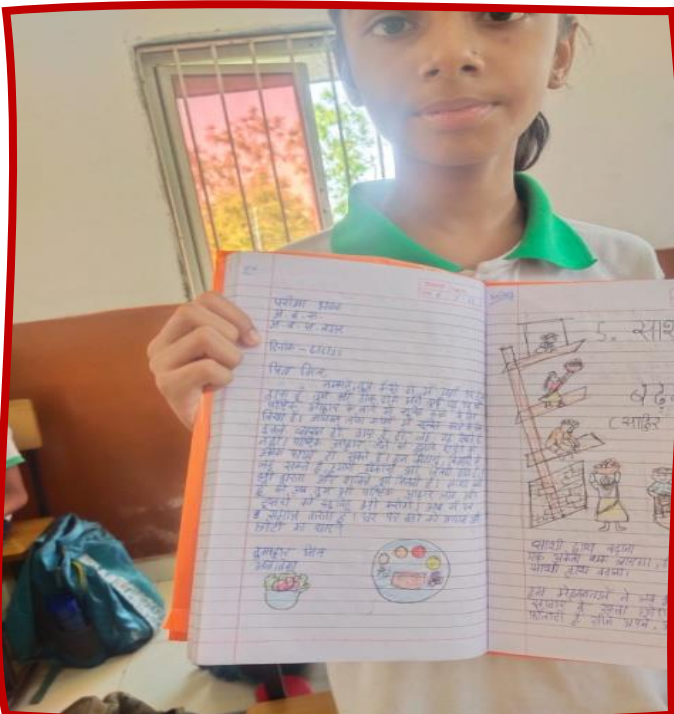
The students represented the calories of the given food items on the number line.



## Hindi

### पौष्टिक आहार - पत्र लेखन

इस गतिविधि द्वारा छात्रों में संतुलित और पौष्टिक आहार को लेकर जागरूकता आई और साथ ही उनके वैज्ञानिक दृष्टिकोण विकास हुआ ।



## Social Science Diversity in Food

Students brought staple food on the given date. They wrote information and pasted the pictures of staple food of different states of India.

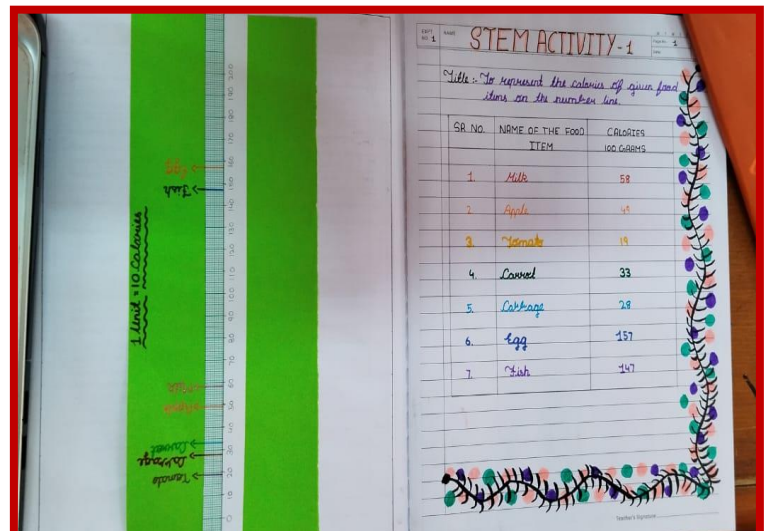
Students presented information about staple food of their state in their mother tongue.

Students brought information and pictures of staple food of three states, and they spoke about their states staple food in their own language. Also, they brought staple food for the break time. They learned about the variety of food items of different states, and they came to know about variety of languages and students are coming from different regions.

Diversity in food

Diversity in region and

Linguistic diversity



## Grade - 7

### Title: Integrated STEM Activity on Nutrition in Plants

#### Introduction:

Class - 7 students participated in an integrated STEM activity focused on the topic of "**Nutrition in Plants.**" The objective was to explore the different nutrients required by plants, their functions, and the importance of plants in nature and for humans. The activity also incorporated mathematics by converting nutrient percentages into decimals and fractions and integrated the concepts with Hindi through a speech and with Sanskrit through *subhashitani*. The following report highlights the key aspects of the activity.

#### Science Integration:

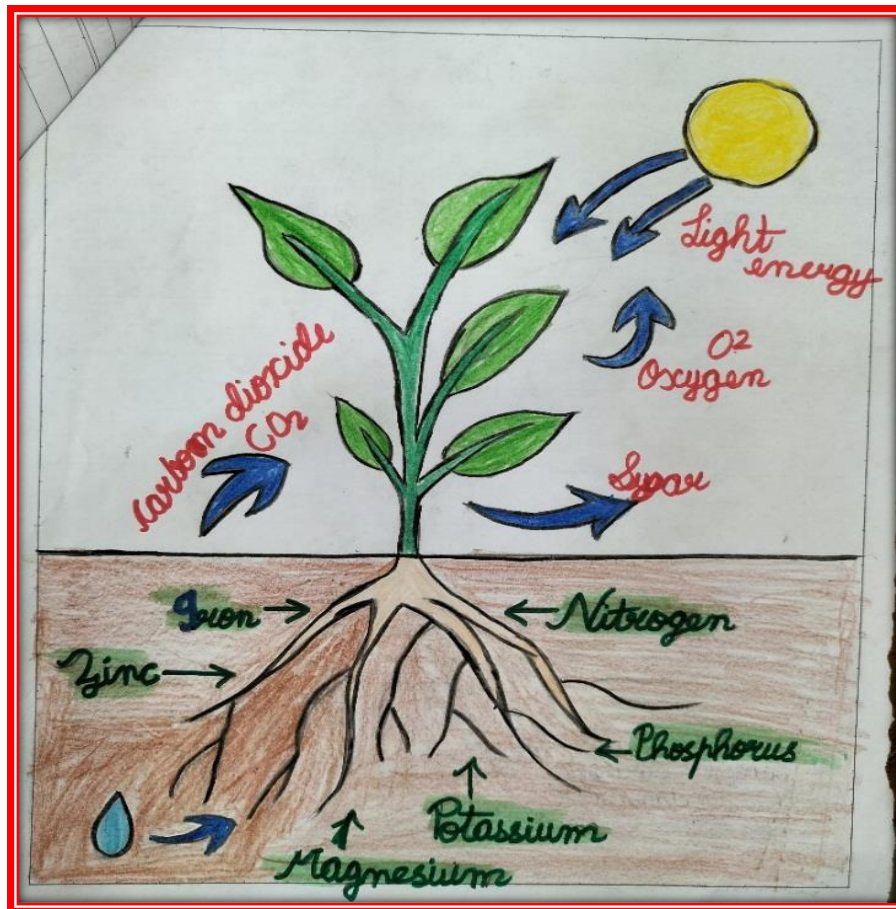
#### Research and Information Gathering:

To start the project, the students conducted research to gather information on various nutrients required by plants. They studied the roles and functions of macronutrients (such as nitrogen, phosphorus, and potassium) and micronutrients (such as iron, zinc, and manganese) in plant growth and development. They also discovered the percentage requirement of each nutrient for healthy plant growth.

| Nutrient       | Approximate Percentage Requirement in Plants |
|----------------|--|
| Nitrogen (N)   | 5 %  |
| Phosphorus (P) | 0.5 %  |
| Potassium (K)  | 3 %  |
| Iron (Fe)      | 0.02 %                                       |
| Zinc (Zn)      | 0.02 %                                       |
| Manganese (Mn) | 0.05 %                                       |

STEM Activity - 1

| Ser. no. | Nutrients req. by Plants | Role of Nutrients  | % req. by Plants |
|----------|--------------------------|--|------------------|
| 1)       | Nitrogen                 | Nitrogen helps to maintain fertility of soil   | 5%               |
| 2)       | Phosphorus               | Phosphorus is found in every living plant cell. It is involved in several key plant function including energy transfer, photosynthesis, etc. | 0.5%             |
| 3)       | Potassium                | Potassium is associated with the movement of water, nutrients and carbohydrates in plant tissue  | 3%               |
| 4)       | Iron                     | In plants, iron is involved in the synthesis of chlorophyll.   | 0.02%            |
| 5)       | Zinc                     | It activates enzymes that are responsible for the synthesis of certain proteins  | 0.02%            |
| 6)       | Magnesium                | Magnesium is responsible for capturing light energy during photosynthesis  | 0.05%            |



# STEM

Activity for the Month of June

| Nutrient required by Plants | Role of Nutrients  | % required by Plants |
|-----------------------------|--|----------------------|
| (N) Nitrogen                | an essential macronutrient for plant function and is a key component of amino acid, which form the building block of plants proteins and enzymes | 5%                   |
| (P) Phosphorus              | Energy transfer, photo-synthesis, transformation of sugar and starches   | 0.5%                 |
| (K) Potassium               | Associated with the movement of water, nutrients and carbohydrate in plant tissues.  | 3%                   |
| (Fe) Iron                   | involved in the synthesis of chlorophyll   | 0.02%                |
| Mn Manganese                | responsible for the synthesis of certain proteins  | 0.02%                |
| Mn Manganese                | responsible for biological system of plant and photosynthesis and respiration  | 0.05%                |



## Mathematics

To integrate mathematics into the activity, students converted the nutrient percentages into decimals and fractions. This exercise allowed them to practice decimal conversion and apply mathematical skills to the context of plant nutrition. By working with decimals, the students developed a better understanding of the proportion and composition of nutrients needed by plants.

| Sr. no. | Name of nutrients | Spss % required by plants | Conversion of % to fractions                              | Conversion of fractions to decimals |
|---------|-------------------|---------------------------|---|-------------------------------------|
| 1.      | Nitrogen          | 5%                        | $5 \times \frac{1}{100} = \frac{5}{100}$                  | $\frac{5}{100} = 0.05$              |
| 2.      | Phosphorus        | 0.5%                      | $\frac{0.5}{10} \times \frac{1}{100} = \frac{5}{1000}$    | $\frac{5}{1000} = 0.005$            |
| 3.      | Potassium         | 5%                        | $5 \times \frac{1}{100} = \frac{5}{100}$                  | $\frac{5}{100} = 0.05$              |
| 4.      | Iron              | 0.02%                     | $\frac{0.02}{100} \times \frac{1}{100} = \frac{2}{10000}$ | $\frac{2}{10000} = 0.0002$          |
| 5.      | Zinc              | 0.02%                     | $\frac{0.02}{100} \times \frac{1}{100} = \frac{2}{10000}$ | $\frac{2}{10000} = 0.0002$          |
| 6.      | Magnesium         | 0.05%                     | $\frac{0.05}{100} \times \frac{1}{100} = \frac{5}{10000}$ | $\frac{5}{10000} = 0.0005$          |

Observation - In above table we have converted nutrient required by plants given in percentage to fractions and decimals

DATE: \_\_\_\_\_  
 PAGE: \_\_\_\_\_  
 CLASS: \_\_\_\_\_

NAME: \_\_\_\_\_

STEM activity (related to science)

**TITLE:** Conversion of percentage to fraction and fraction to decimals

**OBJECTIVE:** To convert the nutrients of plant (given in percentage %) to fractions and decimals.

**PRE-REQUIRED KNOWLEDGE:** (i) Conversion of percentage to fractions  
(ii) Conversion of fractions to decimals

**MATERIALS REQUIRED:** Ruler, Pencil and Data collected from science STEM activity.

**PROCEDURE:** To convert percentage into fractions

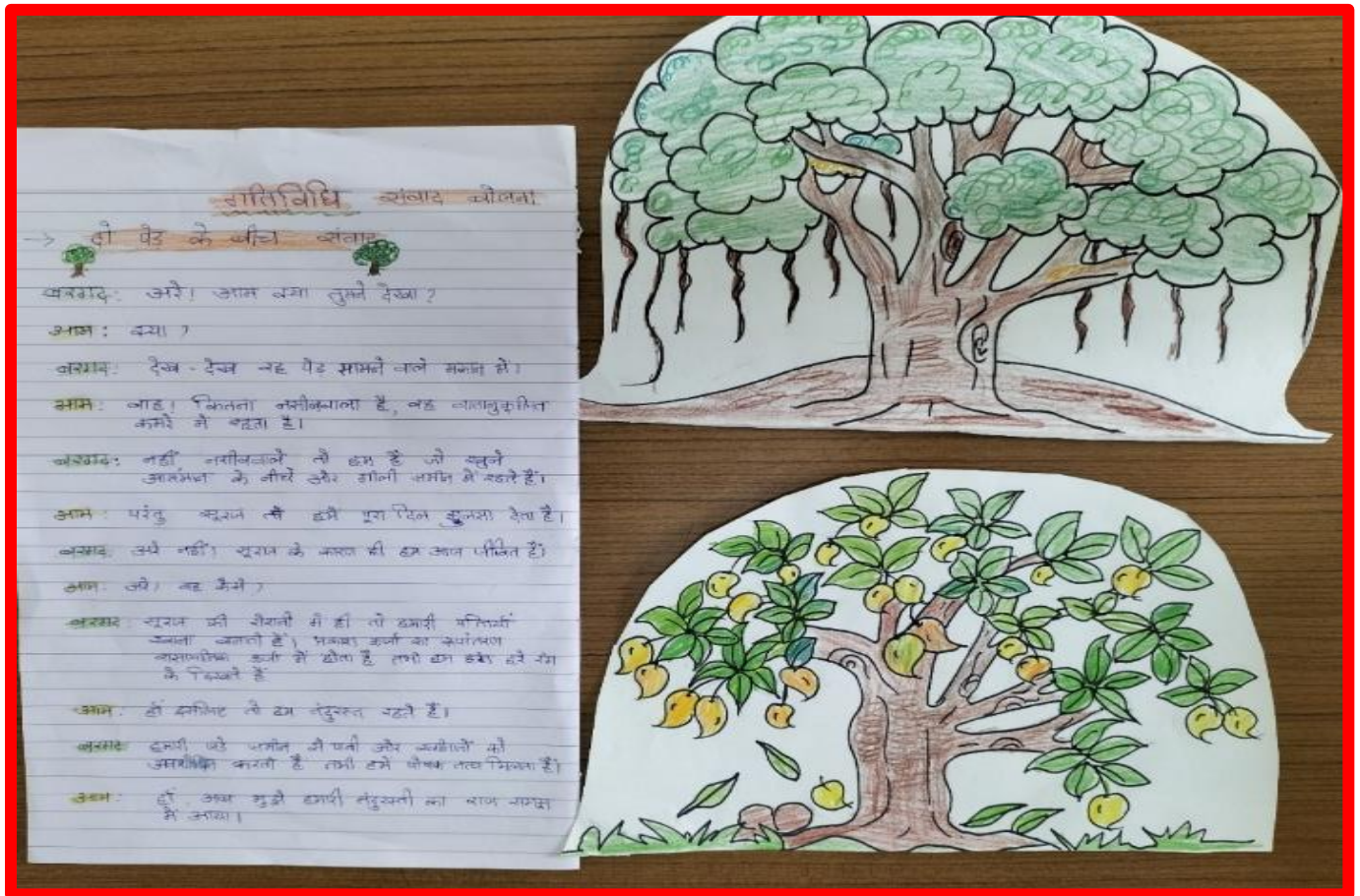
(i) Remove percentage sign and multiply given number by  $\frac{1}{100}$

(ii) Use the concept of division by 10, 100 and 1000 to convert the fractions in decimals

| Sr. no. | Nutrient   | Uses                       | Required percentage |
|---------|------------|----------------------------|---------------------|
| 1.      | Nitrogen   | To make proteins           | 5%                  |
| 2.      | Phosphorus | Energy transfer            | 0.5%                |
| 3.      | Potassium  | Movement of water and food | 5%                  |
| 4.      | Iron       | Maintaining chlorophyll    | 0.02%               |
| 5.      | Zinc       | Production of chlorophyll  | 0.02%               |
| 6.      | Magnesium  | enzyme activation          | 0.05%               |

## Hindi Integration:

The students prepared a samvaad (dialogue or speech) on the importance of plants in nature and for humans. Through the Hindi language, they showcased their understanding of the role of plants in maintaining ecological balance, providing oxygen, and supporting diverse ecosystems. They also emphasized the significance of plants in fulfilling human needs, including food, medicine, shelter, and aesthetic beauty. This integration helped the students strengthen their language skills and express their thoughts effectively in Hindi.

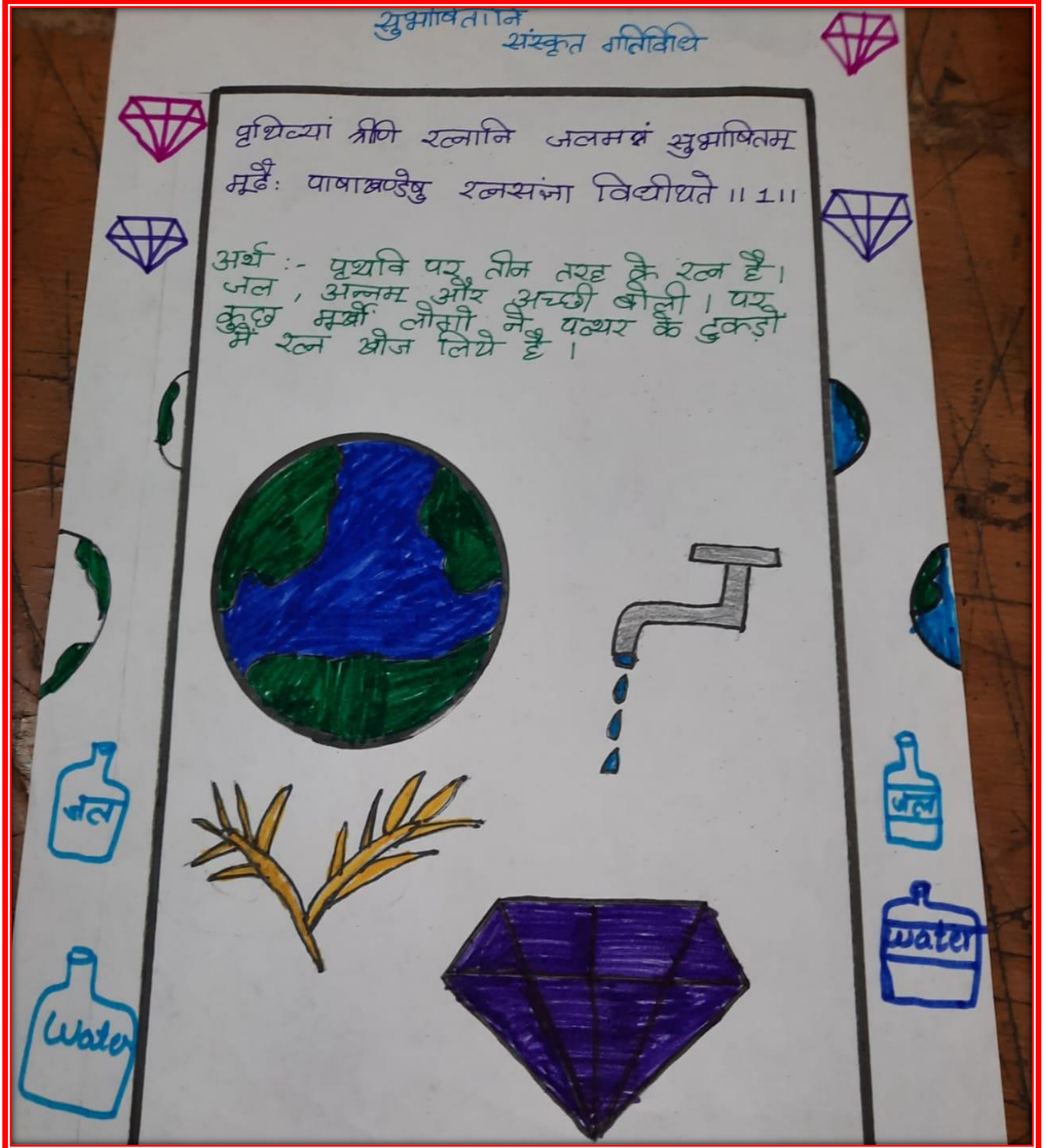


**बसंत:** गमलें मैं देखा पेड़ गमला टूटने से नहीं हो सकता है, पर हमारी जड़े तो जमीन की गहराई तक होती हैं इसलिए हम बहुत सुरक्षित रहते हैं।

**आम:** आज की जानकारी से मैं बहुत धन्य हो गया।

## Sanskrit Integration:

As part of integrating Sanskrit, the students explored subhashitani (wise sayings or proverbs) related to plants. They selected relevant subhashitani that reflected the importance of plants and their connection to various aspects of life. Through this integration, the students not only learned the Sanskrit language but also gained insights into traditional wisdom and cultural values associated with plants.



## Conclusion:

The integrated STEM activity on "Nutrition in Plants" proved to be a comprehensive learning experience for the class 7 students. By researching different plant nutrients and their functions, converting percentages to decimals, delivering speeches in Hindi, and exploring subhashitani in Sanskrit, the students gained a deeper understanding of the topic. This interdisciplinary approach encouraged students to apply their knowledge across multiple subjects and promoted holistic learning. ***The activity successfully met the goals of the science curriculum while also addressing the importance of plants in nature and human life, aligning with the UN's Sustainable Development Goals.***

Overall, the students showcased their enthusiasm, creativity, and interdisciplinary skills, making the project a resounding success. The integration of science, mathematics, Hindi, and Sanskrit helped foster a well-rounded understanding of nutrition in plants while highlighting their significance in a broader context. The students' active participation and the quality of their work reflected their commitment to learning and their ability to apply knowledge across various disciplines.

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## Class VIII

### Science

Teachers showed different types of irrigation system, i.e. Sprinkler and drip irrigation system in school and Shantivan colony premises. Agricultural implements like plough was shown which is used to loosen the soil. Spade , sickle and trowel were shown to students.

### Social Science

Students prepared models of Soil profile. They presented the model before the class. They explained the different layers of soil profile through their models.



## Hindi

Paragraph Writing – Problems faced by the Farmers.

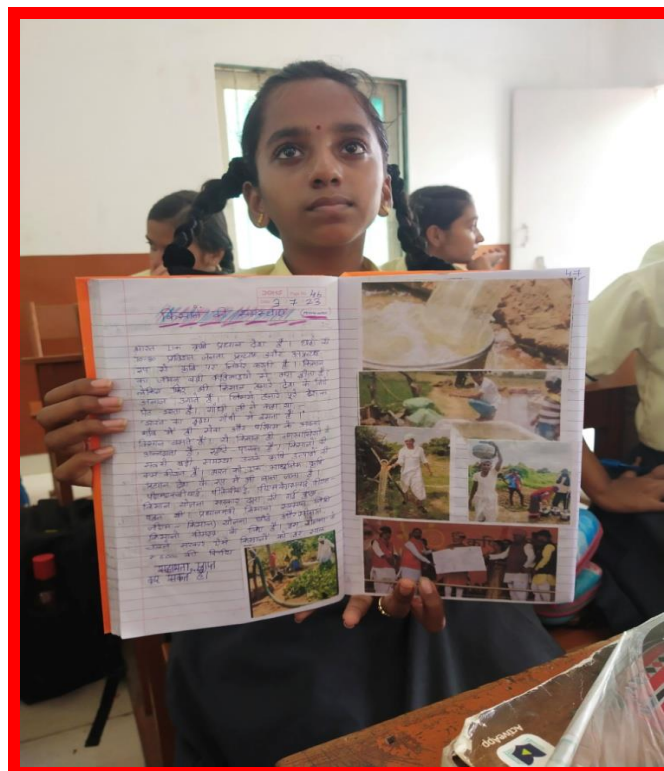
Students wrote a paragraph on the problems faced by the farmers. This helped them to develop their creative writing skills.



## Gujarati

Paragraph Writing – Problems faced by farmers.

Students wrote a paragraph on the problems faced by the farmers.



## Science

Forces and pressure: Students explained the various concepts of force by creating a prototype. This included the presentation skills of English as well.



## Class - IX

### Hindi

एवरेस्ट मेरी शिखर यात्रा -विद्यार्थियों को हिमालय पर्वत के महत्त्व के बारे में बताया गया

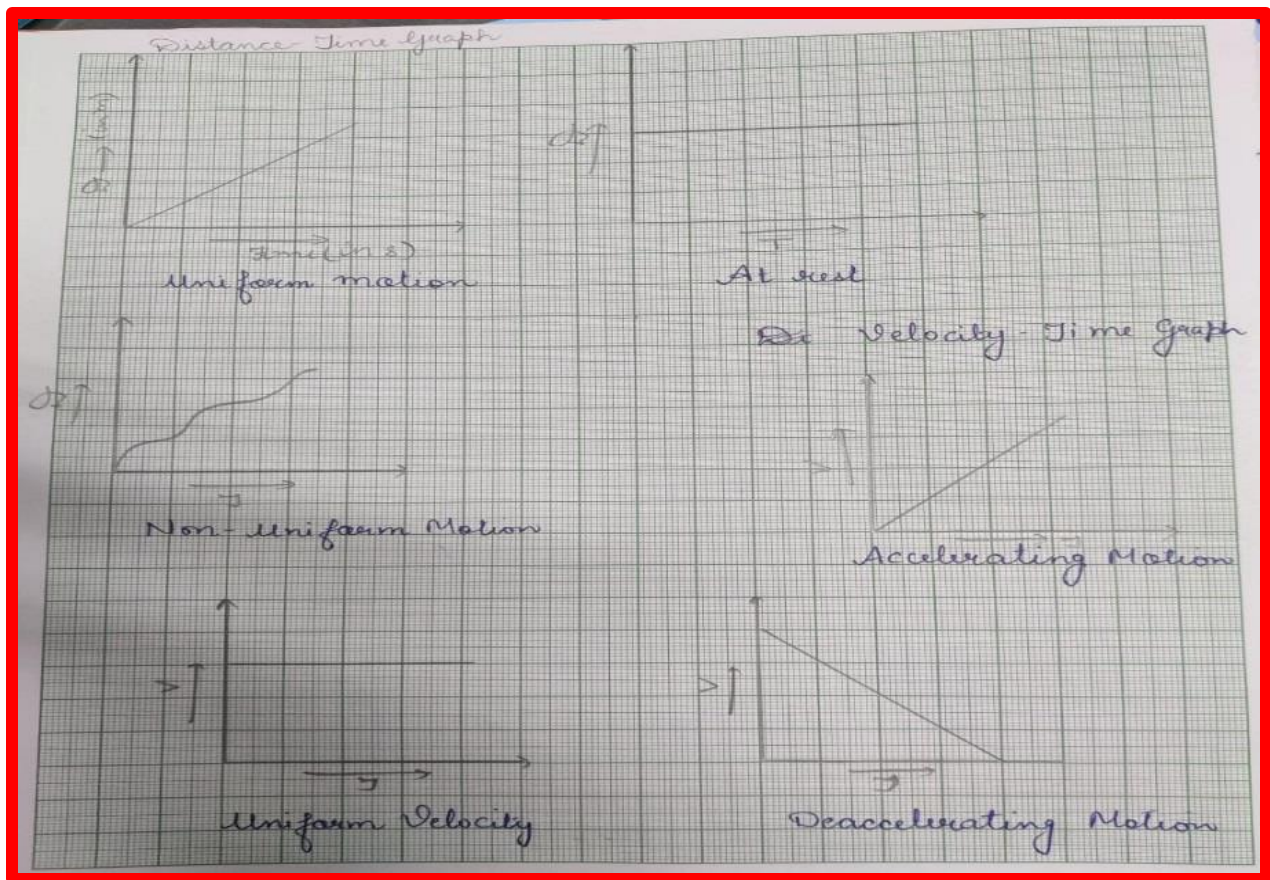
### Science

To study properties of matter

To study the types of motion using graph.

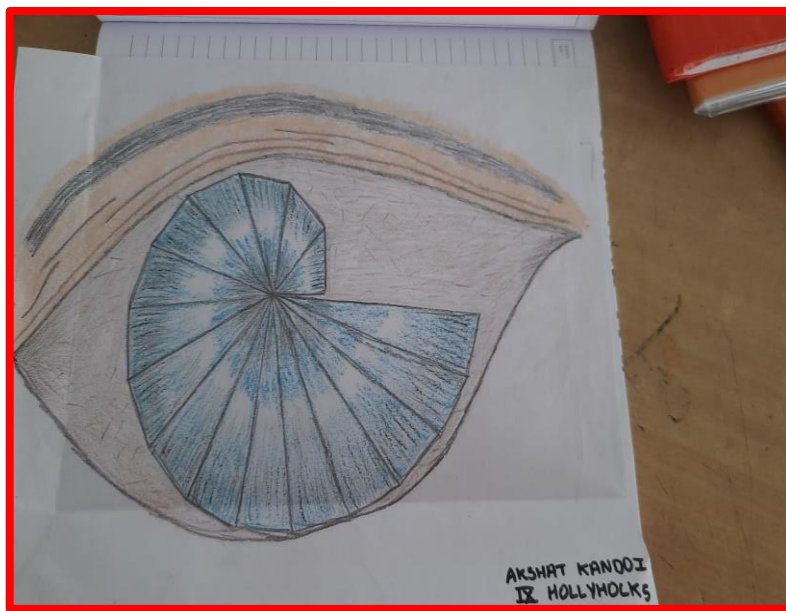
Students conducted this activity in 3 periods.

Material used were  $\text{KMnO}_4$ , Beaker, glass apparatus, PPT



## Mathematics

Students created designs of various objects such as peacocks, flowers etc. using square root spiral. It was drawn on sheet of paper using colours, geometry box. The activity was completed in 2 periods.

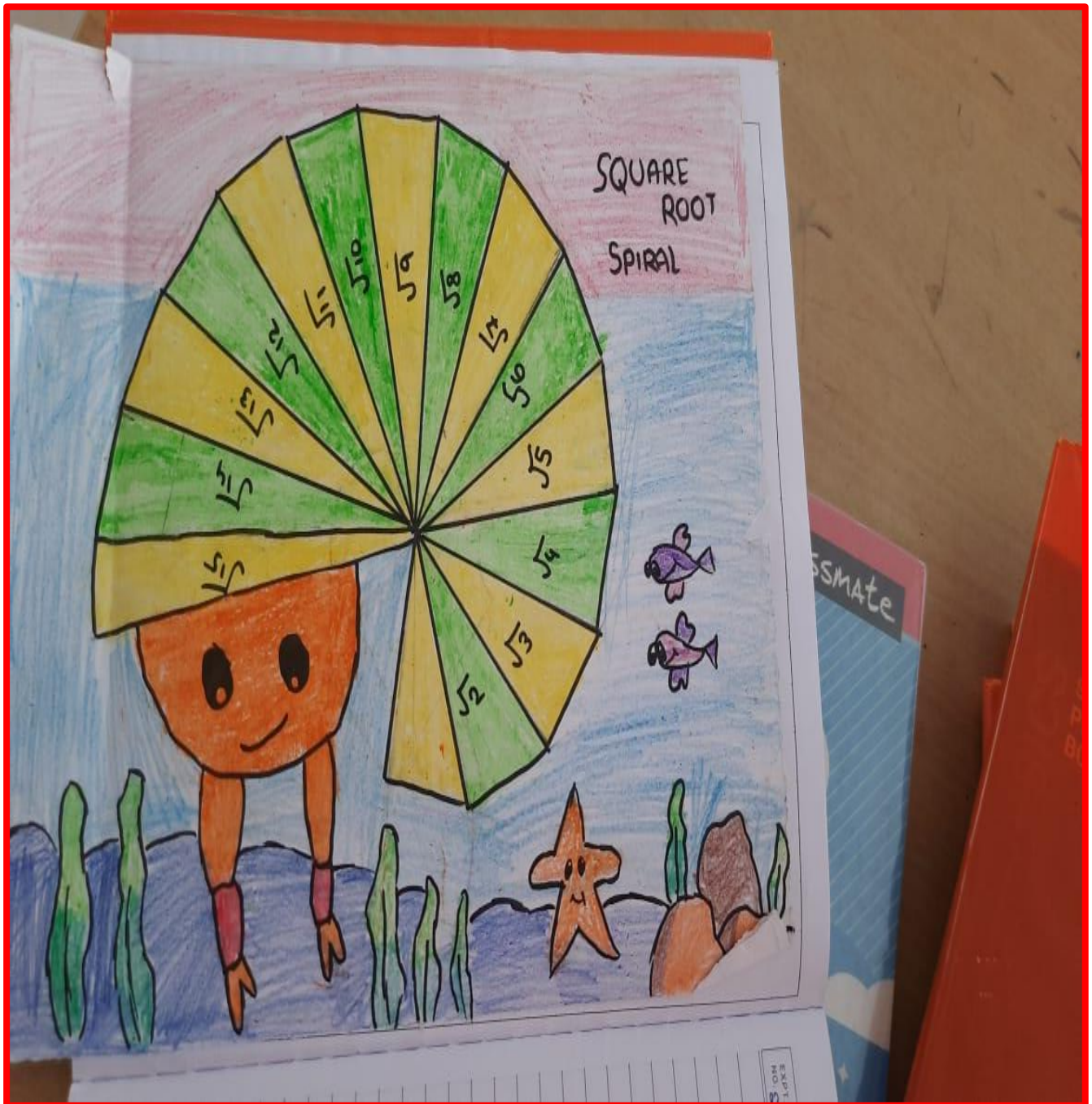


## Social Science

A mind map showing physical features of India was made by the students on A4 paper.

## Art Integration

square root spiral with Mathematics





## Science

Forces and laws of motion Students explained the various laws of motion by creating a prototype

This included the presentation skills as well



## Class X

Hindi-- mehganyi ki samasya - letter to vitt mantri

English-Formal letter on the topic

## Science

Chemical reactions and equations. Students will be writing a chemical change in the surrounding and represent it with the help of word equation

(29)

### REACTION INVOLVED IN BAKING. !!

THE GAS WHICH IS EVOLVED DURING BAKING THAT MAKES THE CAKE LIGHT AND FLUFFY IS CARBON DIOXIDE GAS ( $\text{CO}_2$ )

SODIUM BICARBONATE IS USED IN SMALL AMOUNTS IN MAKING BREAD.

WHEN WE HEAT SODIUM BICARBONATE ( $\text{NaHCO}_3$ ) IT DECOMPOSES TO ( $\text{Na}_2\text{CO}_3$ ) AND RELEASES WATER ( $\text{H}_2\text{O}$ ) WITH CARBON DIOXIDE ( $\text{CO}_2$ ) GAS.

• BAKING POWDER (SODIUM BICARBONATE) IS MIXED WITH THE FLOUR, WHEN W/ WATER IS ADDED TO THIS, BAKING POWDER UNDERGOES A CHEMICAL REACTION AND  $\text{CO}_2$  IS PRODUCED.

$$2 \text{NaHCO}_3 (\text{s}) \longrightarrow \text{Na}_2\text{CO}_3 (\text{s}) + \text{H}_2\text{O} (\text{g}) + \text{CO}_2 (\text{g})$$

Sodium Bicarbonate  $\longrightarrow$  Sodium Carbonate + Water + Carbon Dioxide

• THE CARBON DIOXIDE GAS WHICH GETS TRAPPED INTO THE DOUGH AND BUBBLES OUT THAT CAUSES THE CAKE TO RISE MAKING IT SOFT, SPONGY AND FLUFFY.

MADE BY: SACHI VARU, 10<sup>th</sup> BIVE

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### Rusting of Iron

$$\text{Fe} + \text{H}_2\text{O} + \text{O}_2 \longrightarrow \text{Fe}_2\text{O}_3 \cdot x \text{H}_2\text{O}$$

When Fe (Iron) comes into contact with moist air (i.e.  $\text{H}_2\text{O} + \text{O}_2$ ) it forms a thin Brown layer called Rust.

ARSH...

## **Class – 12**

### **Biology**

Sexual reproduction in flowering plants

Observation of pollen grain using microscope, glass slides, flower, sugar solution

### **Physics**

Ray optics Image formation by microscope and drawing ray diagrams.

### **Accounts**

**Specific Project on Company.** Analysis of Financial Statements using financial reports of different companies. It will be completed in 6 periods.

### **Business Studies.**

Marketing Management. Company Profile and products using company details.

### **Economics**

Statistics. Data Analysis and presentation through graph Graphs, Data for analysis