UNIT PLAN

A unit is a unique segment of subject matter in which the various items of knowledge are meaningfully linked to each other as components of a single compact entity.

A unit plan is a suggested design for transacting the curriculum material involved in a unit, with pre-determined objectives to be realized.

- Unit plan breaks up a lengthly unit into smaller sub-units so that pupils can easily grasp the scope of these during a brief overview.
- It helps teacher to present the various principles and concepts in orderly and systematic manner.
- It helps the teacher to plan a variety of learning experiences, keeping in mind the individual differences, nature of content and the objectives to be acheived.
- It provides frequent opportunities for students to review and recognize their learning.
- It helps teacher to plan definite outcomes of learning.

Name of the Student teacher : Amutha Sasthash
Name of the school : St. georges' H.S.S, Kothamangalam
Subject : Mathematics
Standard : IX
unit : Decimal Forms

INTRODUCTION ABOUT THE UNIT

A decimal is defined as a number expressed in decimal notation and generally applied to values that have a decimal part and seperated from the integer side by a decimal point. The place value of a decimal number helps to find the position of a digit in that number which helps to determine its value. For a decimal number, as we move left of the decimal point, each position is 10 times bigger and as we more right, each position is 10 times smaller. There are two types of decimal numbers; Terminating decimals and Recurring decimals.

In the chapter decimal forms, we deal with the concept of finding decimal form of the fractions. It emphasize on the fact that, every fraction can be written in the form of decimal number and that decimal number is called the decimal form of that fraction. The chapter begins with the idea of decimal forms of decimal fractions, the fraction whose denominator is in powers of ten. Then it progresses on the basis of the idea of finding the decimal form of a fraction with denominator a power of 2 or a power of 5 or product of both. Again there are certain fractions which doesnot include in the above category. So, the chapter explains a method to find the decimal form of fractions with denominator a prime number other than 2 or 5 or having a prime factor other than 2 or 5. All of these methods are by means of converting the fraction into decimal fractions and hence into decimal numbers.

CURRICULAR OBJECTIVES:

1. To understand the concept of fractions, decimal numbers, decimal forms and decimal form of decimal fractions.
2. To understand the method to find out the place value of a decimal number.
3. To understand the method to write a decimal number in terms of its digits and place value.
4. To understand the concept of finding the decimal forms of fractions with denominator a power of 2 or power of 5 or product of both by making the denominator in to power of 10.
5. To understand the concept of converting a fraction with denominator a prime number or having a prime factor (both are other than 2 and 5).
6. To understand the concept of solving the problem of finding the decimal form of a fraction with denominator a prime 11, by finding two fractions getting closer and closer to $\frac{1}{11}$ with denominators 100 and 10000.
7. To solve the problems by using the pattern nature of decimal form of fractions with denominator 9.
8. To understand the concept of terminating decimal and recurring decimal and to understand the method of identifying the terminating decimals and recurring decimals.

CONTENT ANALYSIS

TERMS

- decimal form
- integer part
- decimal part
- decimal fractions
- Terminating decimal
- Recurring decimal

FACTS

- Every fraction is a rational number, but not the converse.
- A decimal number have 3 parts; integer part, decimal part and decimal point.
- The corresponding decimal number of a fraction is called decimal form of that fraction.
- For a decimal number, the place value of the digits to the left of decimal point is $1, 10, 100, \ldots$ and to the right of decimal point is $\frac{1}{10}, \frac{1}{100}, \frac{1}{1000}, \ldots$
- Every natural number and decimal number can represent in terms of its digits and place value.
- If we multiply the numerator and denominator of a fraction with same number, we get an equal fraction.
- Each composite number is made up of a single set of prime numbers.
- Every mixed fraction can be written as an improper fraction.

- Every fraction can be written as a mixed fraction and further a sum of a whole number and a proper fraction.
- When we subtract a number y from a number x and result becomes zero implies y is equal to x and when the result tends to zero then it means that y is very closer to x.
- If there are two fractions with same numerator then the fraction with greater denominator will be less.
- The decimal form of fractions with denominator 9 follows a pattern nature.
- If the prime factors of the denominator contains only 2 and 5, then the decimal form of that fraction is a terminating decimal.
- If the factors of the denominator contains any prime number other than 2 and 5, then the decimal form of that fraction is a recurring decimal.

CONCEPTS

- The concept of rational numbers.
- The concept of fractions
- The concept of decimal numbers
- The concept of different parts of a decimal number.
- The concept of formation of decimal number using digits and corresponding place value.
- The concept of decimal forms.
- The concept that every fraction can be written as in the form of decimal numbers.

- The concept of formation of a natural number using its digits and place value.
- The concept of place value of digits in a decimal number.
- The concept of converting the fraction with denominator a power of 2 or power of 5 or product of both into decimal form.
- The concept of unique way of prime factorization of a composite number.
- The concept of doing problems by factorizing its denominator and for finding the method which is to be applied for.
- The concept of finding the decimal form of a fraction with denominator a prime other than 2 and 5.
- The concept of finding the decimal form of a fraction with denominator having a prime factor other than 2 and 5.
- The concept of finding the decimal form of a fraction with denominator a prime by finding 2 fractions getting closer and closer to that fraction with denominators 100 and 10000.
- The concept of terminating and recurring decimal.
- The concept of identifying terminating and recurring decimals.

DEFINITION

- Rational numbers are those numbers which can be written in the form $\frac{p}{q}$; $q \neq 0$ where p and q are integers.
- A fraction is a number which can be written in the form $\frac{p}{q}$; $q \neq 0$ where p and q are natural numbers.

- A terminating decimal is a decimal number in which after a finite number of decimal places, all succeeding place values are 0.
- A recurring decimal is a decimal number in which a figure or a group of figures is repeated indefinitely as 0.666... or 1.851851851...

LEARNING STRATEGIES

- Collaborative learning
- Problem solving
- Brain storming

PRE-REQUISITES

- The ability to do arithmetic operations.
- Knowledge of place value and digits of a natural number.
- Knowledge about decimal numbers and how to read it.
- Knowledge about decimal fractions
- The idea of equal fractions
- The idea of prime factorization
- The ability to find the decimal form of decimal fractions.
- The ability to find LCM of numbers.
- Knowledge of proper fraction, improper fraction & mixed fraction.
- The ability to find the recurrence relation
- The ability to compare two fractions.

LEARNING MATERIALS

- ICT → Laptop, power point presentation
  → cartoon
- Ordinary classroom equipments
- chart

BODY OF THE UNIT PLAN

No. of periods	Curricular Objective	Learning Activity	Learning Material	Learning Strategy	Evaluation Strategy
1	1	By showing certain numbers of the form $\frac{P}{Q}$ using powerpoint presentation and by asking questions frequently students identify fraction by understanding the concept of it, from the set of numbers. By using a receipt shown in power point presentation students understand the concept of decimal numbers and different parts of it. By giving two fractions to convert into a form that can be measure using a scale, students identify that fraction can convert into decimal numbers and that decimal is the decimal form of that fraction.	Power point presentation	Collaborative learning Problem solving Brain Storming	Oral type questions Written type questions

No.of periods	Curricular objective	Learning Activity	Learning Material	Learning Strategy	Evaluation Strategy
		By providing certain questions, Students understand the method of finding decimal form of decimal fractions.			
1	2	With proper guidelines given by teacher through power point presentation, students find the method to find out place value of decimal numbers with the help of chart.	Power point presentation Chart	Collaborative learning Problem solving Brain storming	Oral type questions Written type questions
1	3	With the help of teacher, by comparing the place value and digits of a natural number and the method of writing a natural number in terms of its digits and place value, students realize the method of finding the place value of decimal numbers & to write in terms of digits & place value	Power point presentation	Collaborative Learning Brain storming	Oral type questions

No. of periods	Curricular Objective	Learning Activity	Learning material	Learning strategy	Evaluation Strategy
2	4	With proper guidance of teacher and using power point presentation students find a method to find the decimal form of the fractions with denominator a power of 2 or power power of 5 or product of both. By using the method that they found, teacher provides certain questions through powerpoint presentation to practice the application of the method.	power point Presentation	Collaborative learning Brain storming	Oral type questions Written type questions.
1	5	With the proper guidlines given by the teacher through power point presentations, students practices and identifies the fractions with which we cannot apply the above mentioned method. By using the activities given in chart students identify a method to do such problems.	chart power point presentation	Brain storming Collaborative learning Problem solving	Oral type questions Written type questions

No. of periods	Curricular objective	Learning Activity	Learning material	Learning strategy	Evaluation strategy
1	6	With the help of teacher, chart and powerpoint presentation students to do the problem by means of the method that studied earlier.	chart power point presentation	problem solving Brain storming	Oral type questions Written type questions
1	7	Teacher provides a chart to identify the pattern nature of the decimal forms of fractions with denominator 9. And gives some problems through power point presentations to do by using the pattern nature of decimal forms of fractions with denominator 9.	power point presentation chart	Collaborative learning Problem solving Brain storming	Written type questions
1	8	With the help of power point presentation teacher gives certain problems and through proper instruction of teacher, students identify the terminating decimals & recurring decimals.	power point presentation	Collaborative learning Brain storming Problem solving	Oral type questions Assignment

FOLLOW UP ACTIVITY

1. Write the following fractions in decimal form.

   (i) $\frac{24}{10}$ (ii) $\frac{24}{100}$ (iii) $\frac{24}{1000}$ (iv) $\frac{24}{10000}$

2. Write the place value of the digits in the following numbers

   (i) 573.078 (ii) 584.54 (iii) 105.008

   Also write the given numbers in terms of its digits and place value.

3. Find the decimal form of the sums below

   (i) $\frac{1}{2}+\frac{1}{4}+\frac{1}{8}+\frac{1}{16}$

   (ii) $\frac{1}{5}+\frac{1}{25}+\frac{1}{125}+\frac{1}{625}$

4. Fill the following table and find the speciality of the decimal forms

   $\frac{1}{9} = 0.111\ldots$ $\frac{4}{9} = \ldots\ldots$

   $\frac{2}{9} = \ldots\ldots$ $\frac{5}{9} = \ldots\ldots$

   $\frac{3}{9} = \ldots\ldots$

5. Find out the decimal form of the following fractions

   (i) $\frac{3}{11}$ (ii) $\frac{4}{11}$ (iii) $\frac{5}{11}$

6. Check whether $\frac{1}{17}$ is a terminating decimal or recurring decimal; if it is recurring then find the recurring digit.

ENRICHMENT ACTIVITY

1. Find the decimal form of $\frac{23}{11}$.

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