|  |  |
| --- | --- |
| **THEME:** | Rational and Irrational numbers |
| **DATE**: | 30– 09 – 2024 |
| **CLASS**: | Js 3 |
| **TIME**: | 8:40-09:20am |
| **DURATION** | 40 MINUTES |
| **SUBJECT**: | Mathematics |
| **UNIT TOPIC:** | Rational and Irrational numbers |
| **LESSON TOPIC:** | Rational and Irrational numbers meaning and Identification |

**SPECIFIC OBJECTIVE**: By the end of the lesson, students should be able to

1. Define Rational and Irrational numbers
2. Identify rational and Irrational numbers
3. Differentiate between Rational and Irrational number

**INSTRUCTIONAL RESOURCES:**  Rational and Irrational numbers Chart and Venn Diagram

**LESSON PRESENTATION**

|  |  |  |  |
| --- | --- | --- | --- |
| **STEP 1** | **PREVIOUS KNOWLEDGE:** learners were taught the meaning proportion in math and the calculations and applications on inverse proportions | | Students recall. |
| **STEP 2** | **EXPLORATION:**  The teacher introduces the topic with the following questions:   1. What is rational and irrational number? 2. Can you differentiate between rational and irrational numbers? | | Students make attempt to answer the questions. |
| **STEP 3**  **Objective 1;**  **Objective 2;**  **Objective 3;** | **DISCUSSION:**  ***Teacher starts the discussion:***  Rational and Irrational numbers both are real numbers but different with respect to their properties. **A**[**rational number**](https://byjus.com/maths/rational-numbers/) is the one which can be represented in the form of P/Q where P and Q are integers and Q ≠ 0. But an **irrational number** cannot be written in the form of simple fractions. ⅔ is an example of rational numbers whereas √2 is an irrational number  Let us see how to identify rational and irrational numbers based on the given set of examples.  As per the definition, the rational numbers include all integers, fractions and repeating decimals. For every rational number, we can write them in the form of p/q, where p and q are integers value  The below image shows the Venn diagram of rational and irrational numbers which come under real numbers.  wk 3.jpg  **Difference Between Rational and Irrational Numbers**   |  |  | | --- | --- | | Rational numbers | Irrational numbers | | It is expressed in the ratio, where both numerator and denominator are the whole numbers | It is impossible to express irrational numbers as fractions or in a ratio of two integers | | It includes perfect squares | It includes surds | | The decimal expansion for rational number executes finite or recurring decimals | Here, non-terminating and non-recurring decimals are executed |  Examples of Rational Numbers  * Number 9 can be written as 9/1 where 9 and 1 both are integers. * 0.5 can be written as ½, 5/10 or 10/20 and in the form of all termination decimals. * √81 is a rational number, as it can be simplified to 9 and can be expressed as 9/1. * 0.7777777 is recurring decimals and is a rational number  Examples of Irrational Numbers Similarly, as we have already defined that irrational numbers cannot be expressed in fraction or ratio form, let us understand the concepts with a few examples.   * 5/0 is an irrational number, with the denominator as zero. * π is an irrational number which has value 3.142…and is a never-ending and non-repeating number. * √2 is an irrational number, as it cannot be simplified. * 0.212112111…is a rational number as it is non-recurring and non-terminating. * √5 is an irrational number. | | Students listen attentively and take down notes. |
| **STEP 4** | **APPLICATION:**  Write the following as rational numbers.   1. 0.3737373737… 2. 4.142142142…   Solution  Let x = 0.3737373737 ----- (i)  Multiply both sides of equation (i) by 100  100x = 37.37373737 ---- (ii)  Subtract equation (i) from (ii)  99x = 37  Divide both sides by 99    So, 0.37373737… , which is a rational number.  Let x = 4.142142142 ----- (i)  Multiply both sides of equation (i) by 1000  1000x = 4.142142142 ---- (ii)  Subtract equation (i) from (ii)  999x = 4138  Divide both sides by 999    So, 4.142412142… , which is a rational number. | | Students ask questions on the topic which the teacher answers. |
| **STEP 5** | **EVALUATION:** the teacher evaluates the students with the following questions:   1. What is Rational and Irrational numbers? 2. Mention examples of rational and Irrational numbers 3. Differentiate between Rational and Irrational number | | The students answer the questions. |
| **Assignment**  **References**  **New concept mathematics for Jss3 by A. A. Arigbabu et al.**  **New general mathematics for Jss3 by M/ F. Macrae et al.** | |  |