OPTIMUM
INTERNATIONAL SCHOOL

CLASS –X

Maths

Date:-18/04/2020

CHAPTER 1 -REAL NUMBERS

- Watch the online videos "REAL NUMBERS -Lecture 1" from Optimum Online E-Learning Platform and try to comprehend the concepts of decimal expansions and proof of irrational numbers. After that try to solve the questions given in your assignment.
- Lecture no. 03
- Lecture no. 04

1. Without actual division, show that each of the following rational number is a terminating decimal. Express each in decimal form.

(i) $\frac{23}{2^3 \times 5^2}$
(ii) 24/125
(iii) 171/800
(iv) 15/1600
(v) 17/320
(vi) 19/3125

2. Without actual division, show that each of the following rational numbers is a non-terminating repeating decimal:

I. $\frac{11}{2^3 \times 3}$
II. $\frac{73}{2^2 \times 3^3 \times 5}$
III. $\frac{129}{2^2 \times 5^3 \times 7^2}$
IV. 9/35
V. 77/210
VI. 32/147
VII. 29/343
VIII. 64/455

3. Express each of the following as a fraction in simplest form:

I. $0.\overline{8}$

II. $2.\overline{4}$

III. $0.\overline{24}$

IV. $2.2\overline{4}$

V. $0.3\overline{65}$

4. Prove that each of the following numbers is irrational.

i. $\sqrt{6}$

ii. $(2 - \sqrt{3})$

iii. $(3 + \sqrt{2})$

iv. $(\sqrt{3} + \sqrt{5})$

v. $\frac{3}{\sqrt{5}}$

5. (I) Give an example of two irrationals whose sum is rational.
(ii) Give an example of two irrationals whose product is rational.

6. State whether the given statement is true or false.

i. The sum of two rationals is always rational.

ii. The product of two rationals is always rational.

iii. The sum of two irrationals is always an irrational.

iv. The product of two irrationals is always an irrational.

v. The sum of a rational and an irrational is irrational.

vi. The product of a rational and an irrational is irrational.

7. Prove that $(4 - 5\sqrt{2})$ is an irrational number.

8. Write down the decimal expansions of the following rational numbers by writing their denominators in the form of $2^m \times 5^n$, where m, and n, are the non- negative m n integers.

i. ⅜

ii. 13/125

iii. 7/80

iv. 14588/625