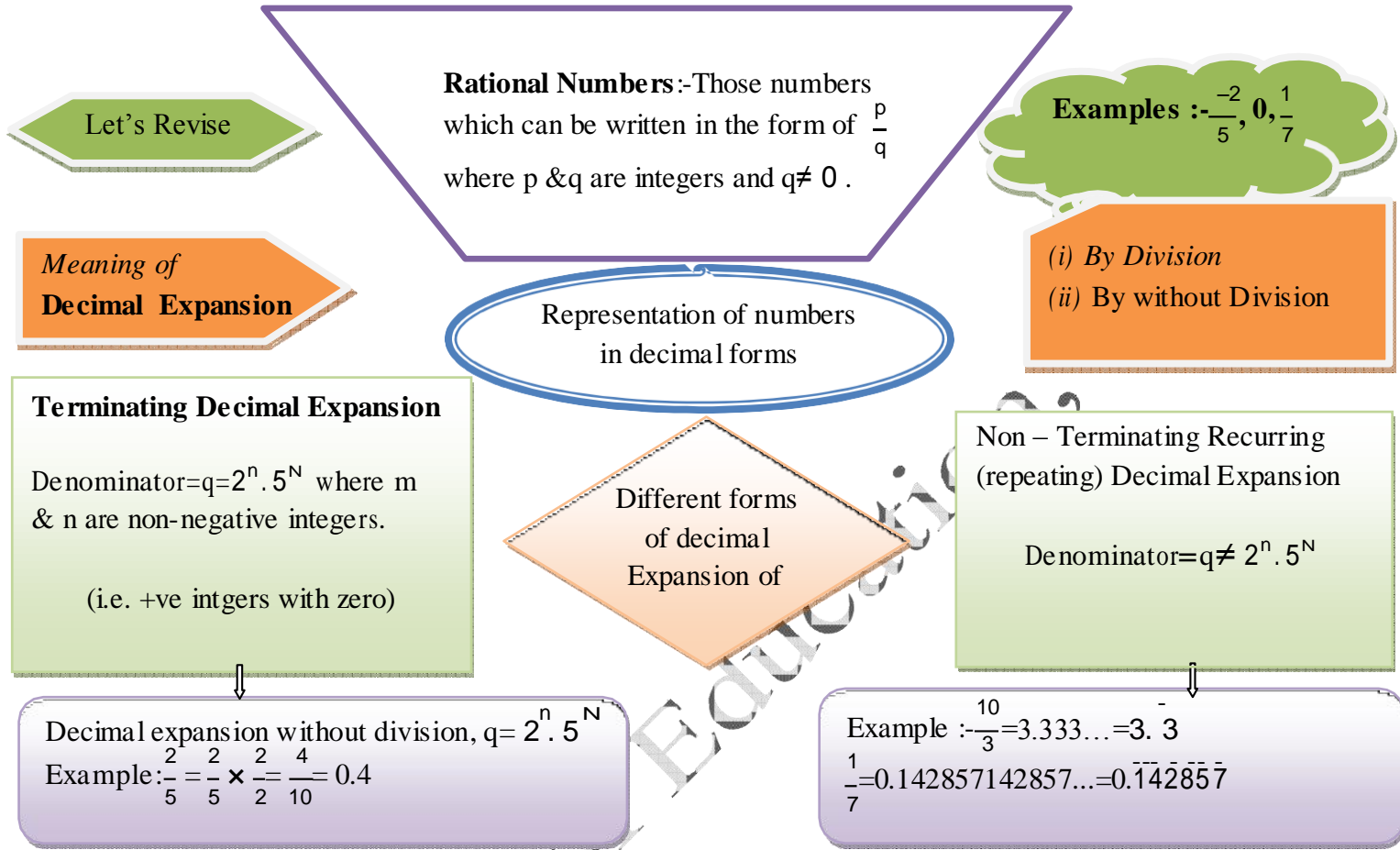


DELHI PUBLIC SCHOOL, JAMMU
SESSION: 2021-2022

Subject: Mathematics

Class: X

Topic : Decimal representation of rational numbers



TERMINATING DECIMAL EXPANSION :- Let $x = \frac{p}{q}$ be a rational number, such that the prime factorization of q is of the form $2^m \cdot 5^n$, where m & n are non negative integers. Then x has decimal expansion which terminates. Here the values of either m and n in 2 and 5 respectively may be 0. If $q \neq 2^m \cdot 5^n$, Then x will non-terminating repeating (recurring) decimal expansion.

Example -Without long division, state whether $\frac{15}{1600}$ will have the terminating or non terminating repeating decimal expansion.
Solution -Simplest form of $\frac{15}{1600} = \frac{5 \times 3}{5 \times 320} = \frac{3}{320}$, Here prime factorization of $q = 320 = 2^6 \times 5^1$ is in the form of $2^m \times 5^n$, where $m=6, n=1$
So, it is Terminating decimal expansion.

DO YOURSELF:

1) (Without long division, state whether $\frac{935}{10500}$ will have the terminating or non terminating repeating decimal expansion.

2) (After how many places the decimal expansion of $51/150$ terminates?)

3) (The decimal expansion of number $\frac{327}{2^3 \times 5^2}$ will be terminates after:
(a) One decimal place)b) Two decimal places (c) Three decimal places) d) Four decimal places