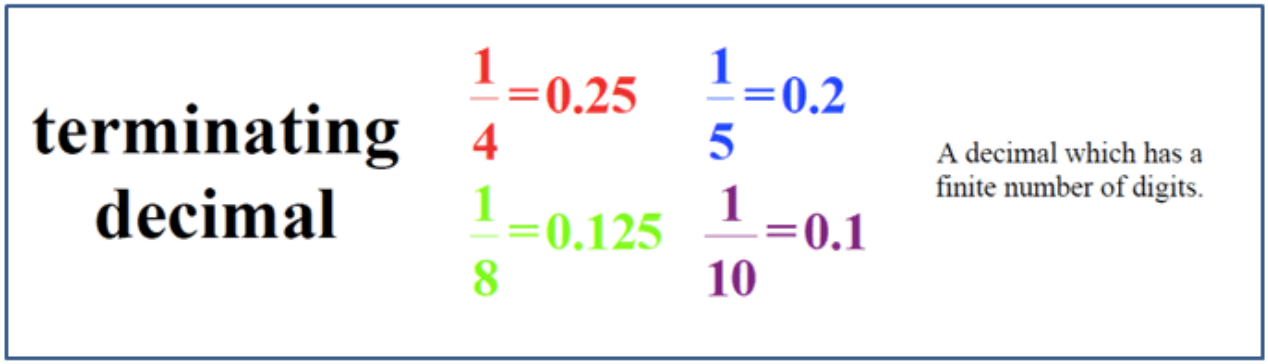
NCERT Class 10 Solutions: Real Numbers (Chapter 1) Exercise 1.4 – Part 1

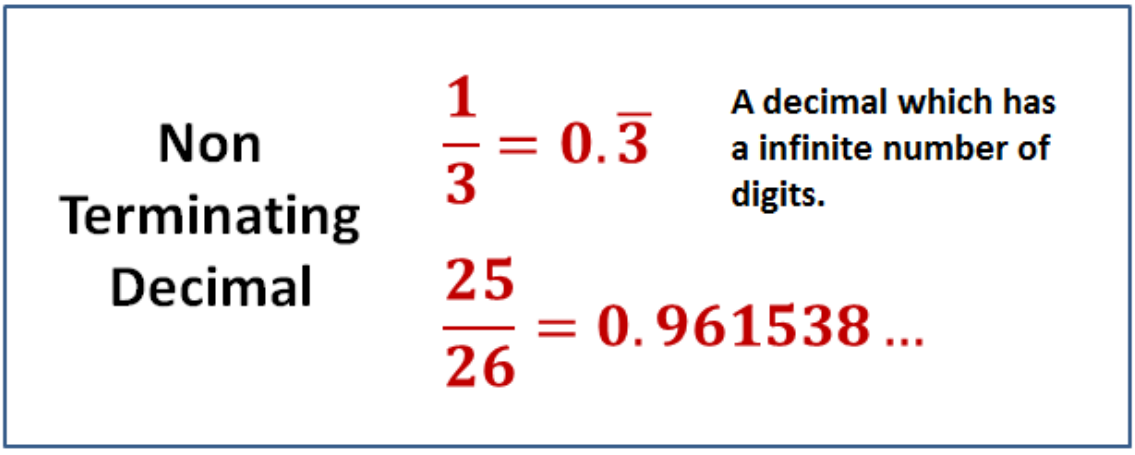
Q-1 Without actually performing the long division, state whether the following rational numbers will have a terminating decimal expansion or a non- terminating repeating decimal expansion:

1. $\frac{13}{3125}$
2. $\frac{17}{8}$
3. $\frac{64}{455}$
4. $\frac{15}{1600}$
5. $\frac{29}{343}$
6. $\frac{23}{2^3 5^2}$
7. $\frac{129}{2^2 5^7 7^5}$
8. $\frac{6}{15}$
9. $\frac{35}{50}$
10. $\frac{77}{210}$

Solution:

- We know that if the denominator of a rational number has no prime factors other than 2 or 5
- Then it is expressible as a terminating, otherwise it has non- terminating repeating decimal representation
- Thus, we will have to check the prime factors of the denominators of each of the given rational numbers





1. $\frac{13}{3125}$

$\frac{p}{q}$ Is terminating if

- p and q are co-prime
- And q is of the form 2^n5^m Where n and m are non-negative integers

Checking Co-prime

13 and 3125 have no common factors,

So, 13 and 3125 are co-prime

For denominator 3125

5	3125
5	625
5	125
5	25
5	5
	1

Hence $3125 = 5 \times 5 \times 5 \times 5 \times 5$

$= 5^5$

Denominator $= 5^5$

$= 1 \times 5^5$

$= 2^0 \times 5^5$

So, denominator is of the form $2^n 5^m$

Where $n = 0, m = 5$

Thus $\frac{13}{3125}$ is terminating decimal

1. $\frac{17}{8}$

$\frac{p}{q}$ Is terminating if

- p and q are co-prime

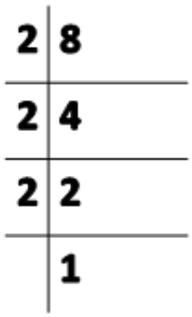
- And q is of the form 2^n5^m Where n and m are non-negative integers

Checking Co-prime

17 and 8 have no common factors,

So, 17 and 8 are co-prime

For denominator 8



Hence $8 = 2 \times 2 \times 2$

$= 2^3$

Denominator $= 2^3$

$= 1 \times 2^3$

$= 5^0 \times 2^3$

So, denominator is of the form 2^n5^m

Where $n = 3, m = 0$

Thus $\frac{17}{8}$ is terminating decimal