STD – 10 MATHS

CHAPTER - 1

REAL NUMBER

EXERCISE - 1.4 Q-1 (110 5)

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:

Note: If the denominator has only factors of 2 and 5 or in the form of $2^m \times 5^n$ then it has terminating decimal expansion.

If the denominator has factors other than 2 and 5 then it has a non-terminating decimal expansion.

(i)
$$\frac{13}{3125}$$

5	3125
5	625
5	125
5	25
5	5
	1

$$3125 = 5 \times 5 \times 5 \times 5 \times 5$$
$$= 5^{5}$$

Since, the denominator has only 5 as its factor,

 $\frac{13}{3125}$ has a terminating decimal expansion.

(ii)
$$\frac{17}{8}$$

2	8
2	4
2	2
	1

$$8 = 2 \times 2 \times 2$$
$$= 2^{3}$$

Since, the denominator has only 2 as its factor, $\frac{17}{8}$ has a terminating decimal expansion.

(iii)
$$\frac{64}{455}$$

5	455
7	91
13	13
	1

 $455 = 5 \times 7 \times 13$

Since, the denominator is not in the form of

 $2^{m} \times 5^{n}$ thus $\frac{64}{455}$ has a non-terminating decimal expansion.

(iv)
$$\frac{15}{1600}$$

2	1600
2	800
2	400
2	200
2	100
2	50
5	25
5	5
	1

 $1600 = 2^6 \times 5^2$

Since, the denominator is in the form of $2^{m} \times 5^{n}$

thus $\frac{15}{1600}$ has a terminating decimal expansion.

(v)
$$\frac{29}{343}$$

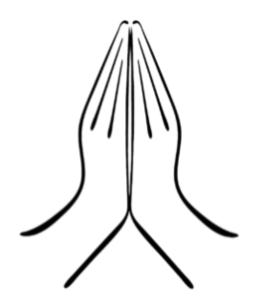
7	343
7	49
7	7
	1

$$343 = 7 \times 7 \times 7$$
$$= 7^3$$

Since, the denominator is not in the form of

$$2^{m} \times 5^{n}$$
 thus $\frac{29}{343}$ has a non-terminating decimal expansion.

Thanks



For watching