

STD – 10

MATHS

CHAPTER - 1

REAL NUMBER

EXERCISE - 1.4 Q-1 (1 to 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) $\frac{13}{3125}$

Factorizing the denominator, we get,

5	3125
5	625
5	125
5	25
5	5
	1

$$\begin{aligned} 3125 &= 5 \times 5 \times 5 \times 5 \times 5 \\ &= 5^5 \end{aligned}$$

Since, the denominator has only 5 as its factor,

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

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

Factorizing the denominator, we get,

2	8
2	4
2	2
	1

$$\begin{aligned} 8 &= 2 \times 2 \times 2 \\ &= 2^3 \end{aligned}$$

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

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

Factorizing the denominator, we get,

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) $\frac{15}{1600}$

Factorizing the denominator, we get,

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) $\frac{29}{343}$

Factorizing the denominator, we get,

7	343
7	49
7	7
	1

$$\begin{aligned} 343 &= 7 \times 7 \times 7 \\ &= 7^3 \end{aligned}$$

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