Real Numbers Ex 1.6 Q2

Answer :

(i) The given number is $\frac{3}{8}$.

Clearly, $8 = 2^3$ is of the form $2^m \times 5^n$, where $m = 3$ and $n = 0$.

So, the given number has terminating decimal expansion.

$$\therefore \frac{3}{8} = \frac{3 \times 5^3}{2^3 \times 5^3} = \frac{3 \times 125}{(2 \times 5)^3} = \frac{375}{(10)^3} = \frac{375}{1000} = 0.375$$

(ii) The given number is $\frac{13}{125}$.

Clearly, $125 = 5^3$ is of the form $2^m \times 5^n$, where $m = 0$ and $n = 3$.

So, the given number has terminating decimal expansion.

$$\therefore \frac{13}{125} = \frac{13 \times 2^3}{2^3 \times 5^3} = \frac{13 \times 8}{(2 \times 5)^3} = \frac{104}{(10)^3} = \frac{104}{1000} = 0.104$$

(iii) The given number is $\frac{7}{80}$.

Clearly, $80 = 2^4 \times 5$ is of the form $2^m \times 5^n$, where $m = 4$ and $n = 1$.

So, the given number has terminating decimal expansion.

$$\therefore \frac{7}{80} = \frac{7\times5^3}{2^4\times5\times5^3} = \frac{7\times125}{(2\times5)^4} = \frac{875}{(10)^4} = \frac{875}{10000} = 0.0875$$

(iv) The given number is $\frac{14588}{625}$.

Clearly, $625 = 5^4$ is of the form $2^m \times 5^n$, where $m = 0$ and $n = 4$.

So, the given number has terminating decimal expansion.

$$\therefore \frac{14588}{625} = \frac{14588\times2^4}{2^4\times5^4} = \frac{14588\times16}{(2\times5)^4} = \frac{233408}{(10)^4} = \frac{233408}{10000} = 23.3408$$

(v) The given number is $\frac{129}{2^2\times5^7}$.

Clearly, $2^2 \times 5^7$ is of the form $2^m \times 5^n$, where $m = 2$ and $n = 7$.

So, the given number has terminating decimal expansion.

$$\therefore \frac{129}{2^2\times5^7} = \frac{129\times2^5}{2^2\times5^7\times2^5} = \frac{129\times32}{(2\times5)^7} = \frac{4182}{(10)^7} = \frac{4182}{10000000} = 0.0004182$$

Real Numbers Ex 1.6 Q3

Answer :

(i) Since 43.123456789 has terminating decimal expansion.
So, its denominator is of the form $2^m \times 5^n$, where m, n are non-negative integers.

(ii) Since $43.\overline{123456789}$ has non-terminating decimal expansion.
So, its denominator has factors other than 2 or 5.

(iii) Since $27.\overline{142857}$ has non-terminating decimal expansion.
So, its denominator has factors other than 2 or 5.

(iv) Since 0.120120012000120000 ... has non-terminating decimal expansion.
So, its denominator has factors other than 2 or 5.

*********** END **********