

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.

$$\therefore \frac{7}{80} = \frac{7 \times 5^3}{2^4 \times 5 \times 5^3} = \frac{7 \times 125}{(2 \times 5)^4} = \frac{875}{(10)^4} = \frac{875}{10000} = 0.0875$$

(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.

$$\therefore \frac{14588}{625} = \frac{14588 \times 2^4}{2^4 \times 5^4} = \frac{14588 \times 16}{\left(2 \times 5\right)^4} = \frac{233408}{\left(10\right)^4} = \frac{233408}{10000} = 23.3408$$

(v) The given number is $\frac{129}{2^2 \times 5^7}$.

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.

$$\therefore \frac{129}{2^2 \times 5^7} = \frac{129 \times 2^5}{2^2 \times 5^7 \times 2^5} = \frac{129 \times 32}{\left(2 \times 5\right)^7} = \frac{4182}{\left(10\right)^7} = \frac{4182}{10000000} = 0.0004182$$

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. 142857 has non-terminating decimal expansion.
- So, its denominator has factors other than 2 or 5.
- (iv) Since $0.120120012000120000 \dots$ has non-terminating decimal expansion. So, its denominator has factors other than 2 or 5.

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