Exercise 1.2

Question 10:

A rational number in its decimal expansion is 327.7081. What can you say about the prime factors of q, when this number is expressed in the form $\frac{p}{q}$? Give reasons.

Answer 10:

327.7081 is terminating decimal number. So, it represents a rational number and also its denominator must have the form $2^m \times 5^n$.

Thus,

$$327.7081 = \frac{3277081}{10000} = \frac{p}{q}$$

$\therefore q = 10^4 = 2 \times 2 \times 2 \times 2 \times 5 \times 5 \times 5 \times 5$

$= 2^4 \times 5^4 = (2 \times 5)^4$

Hence, the prime factorization of q contains only factors of 2 and 5.