

Exercise: 1.2**Page Number: 1.6****Question 1:****Solution:** Roster form:

In this form, a set is defined by listing elements, separated by commas, within braces {}.

(i) $\{a, b, c, d\}$

(ii) $\{1, 2, 3, 4\}$

(iii) $\{11, 13, 17, 19\}$

(iv) $\{2, 4, 6, 8, 10, \dots\}$

(v) \emptyset

(vi) $\{2, 3, 5\}$

(vii) $\{17, 26, 35, 44, 53, 62, 71, 80\}$

(viii) $\{T, R, I, G, O, N, M, E, Y\}$

(ix) $\{B, E, T, R\}$

Question 2:**Solution:**

Set-builder form:

To describe a set, a variable x (each element of the set) is written inside braces. Then, after putting a colon, the common property $P(x)$ possessed by each element of the set is written within braces.

(i) $\{x : x \in N, x < 7\}$

(ii) $\{x : x = 1n, x \in N\}$

(iii) $\{x : x = 3n, n \in Z\}$

(iv) $\{x : x \in N, 9 < x < 16\}$

(v) $\{x : x = 0\}$

(vi) $\{x^2 : x \in N, 1 \leq n \leq 10\}$

(vii) $\{x : x = 2n, n \in N\}$

(viii) $\{5n : n \in N, 1 \leq n \leq 4\}$

Question 3:**Solution:**

(i) $A = \{0, \pm 1, \pm 2, \pm 3\}$

(ii) $B = 1, \frac{1}{3}, \frac{1}{5}, \frac{1}{7}, \frac{1}{9}$

(iii) $C = \{0, 1, 2, 3, 4\}$

(iv) $D = \{A, E, I, O, U\}$

(v) $E = \{\text{February, April, June, September, November}\}$

(vi) $F = \{M, I, S, P\}$

Question 4:

Solution:

(i) implies (vi)

(ii) implies (v)

(iii) implies (i)

(iv) implies (iv)

(v) implies (iii)

(vi) implies (ii)

Question 5:

Solution:

The set of vowels in the English alphabet that precede q is $\{a, e, i, o\}$.

Question 6.

Solution:

The set of all positive integers whose cube is odd is $\{2n+1 : n \in \mathbb{Z}, n \geq 0\}$

Question 7.

Solution:

The set-builder form of the set
.12, 25, 310, 417, 526, 637, 750. is:

$$\left\{ \frac{n}{n^2 + 1} : n \in \mathbb{N}, n \leq 7 \right\}$$