Hence, $B = \{a_1, a_2, a_3, a_4, a_5, a_6, .....\} = \{1, 1, 2, 3, 5, 8, .....\}$

Holiday Homework - Work-sheet 1 EXERCISE

**LEVEL-1** Class XI MATHS

1. Describe the following sets in Roster form:
   (i) $\{x : x$ is a letter before $e$ in the English alphabet$\}$.
   (ii) $\{x \in N : x^2 < 25\}$.
   (iii) $\{x \in N : x$ is a prime number, $10 < x < 20\}$.
   (iv) $\{x \in N : x = 2n, n \in N\}$.
   (v) $\{x \in R : x > x\}$.
   (vi) $\{x : x$ is a prime number which is a divisor of 60$\}$.
   (vii) $\{x : x$ is a two digit number such that the sum of its digits is 8$\}$.
   (viii) The set of all letters in the word 'Trigonometry'.
   (ix) The set of all letters in the word 'Better'.
2. Describe the following sets in set-builder form:
   (i) $A = \{1, 2, 3, 4, 5, 6\}$
   (ii) $B = \{1, 1/2, 1/3, 1/4, 1/4, ...\}$
   (iii) $C = \{0, 3, 6, 9, 12, ...\}$
   (iv) $D = \{10, 11, 12, 13, 14, 15\}$
   (v) $E = \{0\}$
   (vi) $\{1, 4, 9, 16, \ldots, 100\}$
   (vii) $\{2, 4, 6, 8, .....\}$
   (viii) $\{5, 25, 125, 625\}$
3. List all the elements of the following sets:
   (i) $A = \{x : x^2 \le 10, x \in Z\}$
   (ii) $B = \left\{x : x = \frac{1}{2n-1}, 1 \le n \le 5\right\}$
   (iii) $C = \left\{x : x$ is an integer, $-\frac{1}{2} < x < \frac{9}{2}\right\}$
   (iv) $D = \{x : x$ is a vowel in the word "EQUATION"$\}$
   (v) $E = \{x : x$ is a month of a year not having 31 days $\}$
   (vi) $F = \{x : x$ is a letter of the word "MISSISSIPPI" $\}$

So, $\phi \subset A$ is correct and $\phi \in A$ is incorrect. Hence, (ix) is incorrect and (x) is correct.
As $\phi \subset A$ but $\{\phi\}$ is not a subset of $A$. So, (xi) is incorrect.

Class XI MATHS WORK-SHEET 2 EXERCISE 1.4

**LEVEL-1**

1. Which of the following statements are true ? Give reason to support your answer.
   (i) For any two sets $A$ and $B$ either $A \subseteq B$ or $B \subseteq A$.
   (ii) Every subset of an infinite set is infinite.
   (iii) Every subset of a finite set is finite.
   (iv) Every set has a proper subset.
   (v) $\{a, b, a, b, a, b, ...\}$ is an infinite set.
   (vi) $\{a, b, c\}$ and $\{1, 2, 3\}$ are equivalent sets.
   (vii) A set can have infinitely many subsets.
2. State whether the following statements are true or false:
   (i) $1 \in \{1, 2, 3\}$ (ii) $a \subset \{b, c, a\}$ (iii) $\{a\} \in \{a, b, c\}$
   (iv) $\{a, b\} = \{a, a, b, b, a\}$ (v) The set $\{x : x + 8 = 8\}$ is the null set.
3. Decide among the following sets, which are subsets of which:
   $A = \{x : x \text{ satisfies } x^2 - 8x + 12 = 0\}$, $B = \{2, 4, 6\}$, $C = \{2, 4, 6, 8, ....\}$, $D = \{6\}$.
4. Write which of the following statements are true ? Justify your answer.
   (i) The set of all integers is contained in the set of all rational numbers.
   (ii) The set of all crows is contained in the set of all birds.
   (iii) The set of all rectangles is contained in the set of all squares.
   (iv) The set of all real numbers is contained in the set of all complex numbers.
   (v) The sets $P = \{a\}$ and $B = \{\{a\}\}$ are equal.
   (vi) The sets $A = \{x : x$ is a letter of the word "LITTLE"$\}$
   and, $B = \{x : x$ is a letter of the word "TITLE" $\}$ are equal.
5. Which of the following statements are correct? Write a correct form of each of the incorrect statements.
   (i) $a \subset \{a, b, c\}$ (ii) $\{a\} \in \{a, b, c\}$ (iii) $a \in \{\{a\}, b\}$