

Name - _____

Start time - __ : __

End time - __ : __

Solve the following:

1. For all the sets in this question, $\varepsilon = \{x : x \text{ is a positive integer, } x < 30\}$

A = {prime numbers}

B = {square numbers}

C = {cube numbers}

D = {multiples of 4}

a) List the members of A, B, C and D.

b) Find

(i) $n(A)$ (ii) $n(B)$ (iii) $n(C)$ (iv) $n(D)$

c) Find (i) $n(E)$ where $E = \{x : x \in \text{both A and B}\}$

(ii) $n(F)$ where $F = \{x : x \in B \text{ but not } D\}$

(iii) $n(G)$ where $G = \{x : x \notin A, x \notin B, x \notin C, x \notin D\}$

2. A = {1, 2, 3, 4} B = {0, 2, 4}

a) List the elements of the following sets:

(i) $C = \{x : x \in \text{either A or B or both}\}$

(ii) $D = \{x : x \in A \text{ but not } B\}$

(iii) $E = \{x : x = a - b, a \in A, b \in B, x < 1\}$

b) Each element of the following sets is a pair of coordinates. List the elements of each set.

(i) $F = \{(a, b) : a \in A, b \in B, a + b < 5\}$

(ii) $G = \{(a, b) : a \in A, b \in B, a \times b > 6\}$

3. List the members of $A = \{x : x < 15\}$ if $\varepsilon = \{x : x \text{ is a square number}\}$.

4. List the members of each of the following sets

(i) $A \cap C$ (ii) $A \cap B \cap C$ (iii) $(B \cap C)$

(iv) $A' \cap C$ (v) $(A \cup B)'$ (vi) $(A \cap C) \cup (B \cap C)$

