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Changing your Tomorrow

SETS

PERIOD -3

SUBJECT : MATHEMATICS
CHAPTER NUMBER: 6
CHAPTER NAME :SETS

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Learning outcome

Students will be able to know about Subset, Proper subset, Super set, Universal set and complement of a set

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Previous knowledge:

1)If C is the set of letters in the word “cooler”, find :

(i) Set C

(ii) n(C)

(iii) Number of its subsets

(iv) Number of its proper subsets.

Note : (i) If a set has n elements, the number of its subsets = 2^n

(ii) If a set has n elements, the number of its proper subsets = $2^n - 1$

Exercise- 6(c)

1) Find all the subsets of each of the following sets :

(i) A = {5, 7}

(ii) B = {a, b, c}

(iii) C = {x : x ∈ W, x ≤ 2}

(iv) {p : p is a letter in the word 'poor'}

Sol:

(i) A = {5,7}

Subsets of set A = { }, {5}, {7}, {5,7}

(*ii*) B = {*a*,*b*,*c*}

Subsets of set B = { }, {*a*}, {*b*}, {*c*}, {*a*,*b*}, {*a*,*c*}, {*b*,*c*}, {*a*,*b*,*c*}

(*iii*) C = {*x* : *x* ∈ W, *x* ≤ 2}

= {0,1,2}

∴ Subsets of set C = ϕ, {0}, {1}, {2}, {0,1}, {0,2}, {1,2}, {0,1,2}

(*iv*) {P : P is a letter in the word 'POOR'}

= {*p*,*o*,*r*}

∴ Subsets of the given set = ϕ, {*p*}, {o}, {*r*}, {*p*,*o*}, {*p*,*r*}, {*o*,*r*}, {*p*,*o*,*r*}

2) If C is the set of letters in the word “cooler”, find :

(i) Set C

(ii) n(C)

(iii) Number of its subsets

(iv) Number of its proper subsets.

Note : (i) If a set has n elements, the number of its subsets = 2^n

(ii) If a set has n elements, the number of its proper subsets = $2^n - 1$

Solution:

(i) C = {c, o, l, e, r}

(ii) n(C) = 5

(iii) Number of its subsets : $2^5 = 2 \times 2 \times 2 \times 2 \times 2 = 32$

(iv) Number of its proper subsets = $2^5 - 1 = 32 - 1 = 31$

3) If T = {x : x is a letter in the word 'TEETH'}, find all its subsets.

Sol: T = {t,e,h}

Subsets of set T = φ, {r}, {e}, {h}, {t,e}, {t,h}, {e,h}, {t,e,h}

4) Given the universal set = {-7,-3, -1, 0, 5, 6, 8, 9}, find :

(i) A = {x : x < 2}

(ii) B = {x : -4 < x < 6}

Sol:

Universal set = {-7, -3, -1, 0, 5, 6, 8, 9},

(i) A = {x : x < 2} = {-7, -3, -1, 0}

(ii) B = {x : -4 < x < 6} = {-3, -1, 0, 5}

Home assignment

Ex 6(c)

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