EXERCISE 1.5

1. Let U = { 1, 2, 3, 4, 5, 6, 7, 8, 9 }, A = { 1, 2, 3, 4}, B = { 2, 4, 6, 8 } and C = { 3, 4, 5, 6 }. Find (i) A′ (ii) B′ (iii) (A ∪ C)′ (iv) (A ∪ B)′ (v) (A′)′ (vi) (B – C)′

2. If U = { *a, b, c, d, e, f, g, h*}, find the complements of the following sets :

(i) A = {*a, b, c*} (ii) B = {*d, e, f, g*}

(iii) C = {*a, c, e, g*} (iv) D = { *f, g, h, a*}

3. Taking the set of natural numbers as the universal set, write down the complements of the following sets:

(i) {*x* : *x* is an even natural number} (ii) { *x* : *x* is an odd natural number }

(iii) {*x* : *x* is a positive multiple of 3} (iv) { *x* : *x* is a prime number }

(v) {*x* : *x* is a natural number divisible by 3 and 5}

(vi) { *x* : *x* is a perfect square } (vii) { *x* : *x* is a perfect cube}

(viii) { *x* : *x* + 5 = 8 } (ix) { *x* : 2*x* + 5 = 9}

(x) { *x* : *x* ≥ 7 } (xi) { *x* : *x* ∈ N and 2*x* + 1 > 10 }

4. If U = {1, 2, 3, 4, 5, 6, 7, 8, 9 }, A = {2, 4, 6, 8} and B = { 2, 3, 5, 7}. Verify that

(i) (A ∪ B)′ = A′ ∩ B′ (ii) (A ∩ B)′ = A′ ∪ B′

5. Draw appropriate Venn diagram for each of the following :

(i) (A ∪ B)′, (ii) A′ ∩ B′, (iii) (A ∩ B)′, (iv) A′ ∪ B′

6. Let U be the set of all triangles in a plane. If A is the set of all triangles with at least one angle different from 60°, what is A′?

7. Fill in the blanks to make each of the following a true statement :

(i) A ∪ A′ = . . . (ii) ϕ′ ∩ A = . . .

(iii) A ∩ A′ = . . . (iv) U′ ∩ A = . . .