UNIT 1 Logic   Mental Tests

M 1.1 **Standard Route** *(no calculator)*

1. Tom is 4 years older than Mark. Mark is 10 years old.
    How old is Tom?   (14)

2. Two children in a family are aged 10 and 12. Alan is older than Kate.
    How old is Alan?   (12)

3. In a swimming race, Jane finished before Kim; Pam finished before Jane.
    (a)   Who finished first?   (Pam)
    (b)   Who finished last?   (Kim)

4. Sue is 1 year older than Rachel and 2 years younger than Jane.
    Jane is 9 years old.
    (a)   How old is Sue?   (7)
    (b)   How old is Rachel?   (6)

5. In a class of 30 boys and girls, there are 6 pupils who are left-handed
    4 of whom are girls. There are 10 right-handed boys.
    How many:
    (a)   boys are left-handed,   (2)
    (b)   boys are there in total,   (12)
    (c)   girls are there in total?   (18)

6. From the whole numbers { 1, 2, 3, . . . , 10 }, the set A is defined as the
    set of even numbers, and B is defined as the set of number divisible by 3.
    What number (or numbers) is common to both sets?   (6)

UNIT 1 Logic   Mental Tests

M 1.2 Academic Route *(no calculator)*

1.   Sue is 1 year older than Rachel and 2 years younger than Jane.

   Jane is 9 years old.

   (a)   How old is Sue?   (7)

   (b)   How old is Rachel?   (6)

2.   In a class of 30 boys and girls, there are 6 pupils who are left-handed
   4 of whom are girls. There are 10 right-handed boys.
   How many:

   (a)   boys are left-handed,   (2)

   (b)   boys are there in total,   (12)

   (c)   girls are there in total,   (18)

   (d)   girls are right-handed?   (14)

3.   From the whole numbers { 1, 2, 3, . . . , 10 }, the set A is defined as the
   set of even numbers, and B is defined as the set of number divisible by 3.

   (a)   What is the intersection of A and B?   (6)

   (b)   What numbers are not in the union of A and B?   { 1, 5, 7 }

4.   From the whole numbers { 1, 2, 3, . . . , 20 }, the set A is defined as the
   set of numbers divisible by 3, and B is defined as the set of numbers divisible by 5.

   (a)   What is the intersection of A and B?   { 15 }

   (b)   What is the intersection of B and the complement of A?   { 5, 10, 20 }

UNIT 1 Logic   Mental Tests

M 1.3 Express Route *(no calculator)*

1. In a class of 30 boys and girls, there are 6 pupils who are left-handed
    4 of whom are girls. There are 10 right-handed boys.
    How many:

    (a)   boys are left-handed,   (2)

    (b)   boys are there in total,   (12)

    (c)   girls are there in total,   (18)

    (d)   girls are right-handed?   (14)

2. From the whole numbers { 1, 2, 3, . . . , 10 }, the set A is defined as the
    set of even numbers, and B is defined as the set of number divisible by 3.

    (a)   What is the intersection of A and B?   (6)

    (b)   What numbers are not in the union of A and B?   { 1, 5, 7 }

3. From the whole numbers { 1, 2, 3, . . . , 20 }, the set A is defined as the
    set of numbers divisible by 3, and B is defined as the set of numbers divisible by 5.

    (a)   What is the intersection of A and B?   { 15 }

    (b)   What is the intersection of B and the complement of A?   { 5, 10, 15, 20 }

4. From the whole numbers { 1, 2, 3, . . . , 15 }, the set A is defined as the set of numbers
    with two digits, and B is defined as the set of numbers divisible by 3 or 4.

    (a)   What is the complement of the union of A and B?   { 1, 2, 5, 7 }

    (b)   What is the intersection of A with the complement of B?   { 10, 11, 13, 14 }