

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 $\{ 1, 2, 3, \dots, 10 \}$, 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 $\{ 1, 2, 3, \dots, 10 \}$, 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 $\{ 1, 2, 3, \dots, 20 \}$, 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 $\{ 1, 2, 3, \dots, 10 \}$, 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 $\{ 1, 2, 3, \dots, 20 \}$, 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 $\{ 1, 2, 3, \dots, 15 \}$, 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? $\{ 10, 11, 13, 14 \}$