1. 15 – 9 2’s complement

here,

m = 15 = 01111

n = 9 = 01001

2’s complement of n,

n’ = 0111

adding m and n’

01111

+10111

=100110

discarding most significant bit

00110

2. 9 – 15 2’s complement

here,

m = 9 = 01001

n = 15 = 01111 (add a 0 bit in front to signify negative numbers)

2’s compliment of n

n’ = 10001

adding m and n’

01001

10001

11010

Most significant bit is 1 so it is a negative number so discard most significant bit and find 2’s compliment of the result

-0110

3. -7 – 6 2’s compliment

here,

m = -7 = 0111

n = -6 = 0110

finding 2’s compliment of m and n

m’ = 1001

n’ = 1010

adding m’ and n’

1001

1010

10011

most significant bit is 1 so finding 2’s compliment of result after discarding most significant bit and add negative sign

-1101