The Cardinality of a Set

The cardinality of a set is the number of elements in the set. If we have a set A={2,3,5,7,11,13,17,19}, then the cardinality of set A is 8 and we write n(A)=8. [An alternative symbolism for the cardinality of set A is to write |A|, but this is easily confused with the use of the vertical bars for absolute value. We will stay with the n(A) symbolism.] For the following sets:

B={6,2,4,11,9}

D={4,8,12,16,…,44,48,52}

E={x| x>5 and x<49 and x is a whole number and the written form of x contains the digit 1}

F={1,3,5,7}

we have

n(B) = 5

n(D) = 13

n(E) = 13

n(F) = 4

n(B∩F) = 0

Remember that something is either in a set or it is not in the set and that we do not have multiple instances of an element in a set. Thus, if we were to write G={1,3,4,5,3,2,3,8} we would be misleading the reader because that set should have been written as G={1,3,4,5,2,8}. In particular, n(G) is 6. [As usual, the order of the element in a set is immaterial, although it helps readers if we do organize the set members as is G={1,2,3,4,5,8}.]

Note that using the sets above n(D)=n(E). When two sets have the same cardinality we say that they have equinumerocity.