

Chapter I

INTRODUCTION

A Steiner triple system is a configuration obtained by an arrangement of elements of a finite set into triples in such a way that each pair of elements of the set is contained in exactly one triple. Not all finite sets can be made into a Steiner triple system. A necessary condition for the existence of Steiner triple systems is derived in Chapter II. In Chapter IV we prove that the necessary condition is also sufficient for the existence of Steiner triple systems. Chapter III deals with theorems on construction of Steiner triple systems from those of smaller orders. Some of these theorems are needed in the existence proof in Chapter IV. Chapter V provides direct construction of Steiner triple systems, which in turn constitutes an alternate proof of the sufficiency of the condition for the existence of Steiner triple systems.