A popular concrete mix 0.5:1:1:2 was used here for experimental purpose. Recycled coarse aggregates (RCA) were prepared from these concrete after 28 days curing called as known source aggregates. These aggregates were compared with their corresponding natural aggregates, unknown source RCA and Indian Standard (IS) requirements. Concrete mix was prepared by replacing 0%, 10%, 20%, 30%, 50% and 100% of known and unknown source RCA. Thus total twelve trials were prepared and the effects of RCA on fresh and hardended properties have been established. Fresh and hardended properties of concrete were determined. Some improved new equations are proposed for the prediction of the relations between the mechanical properties of RAC based on the statistical regression analysis with the least squares method.