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Ted Dobson* (ted.dobson@upr.si). *Classifying vertex-transitive digraphs of order a product of three distinct prime numbers with a solvable group of automorphisms.* Preliminary report.

Classifications of vertex-transitive graphs with various properties are common in the literature. The property we consider is the number of vertices. Such classifications usually give a minimal transitive subgroup of the automorphism group of the graph, and have only been accomplished, by a variety of authors, when the number n of vertices is p , p^2 , p^3 , pq , and some values of pqr , where p , q , and r are distinct primes. For $n = pqr$, graphs whose automorphism group are almost simple groups have also been determined, again by a variety of authors. We focus on those graphs that have a transitive solvable subgroup (and mention that there are automorphism groups that are neither almost simple nor contain a transitive solvable subgroup). There are characterizations of the minimal transitive subgroups of some vertex-transitive graphs of order pqr with a transitive solvable subgroup of automorphisms, for p , q , and r satisfying certain arithmetic conditions. We show that the known families of minimal transitive subgroups of vertex-transitive graphs of order pqr , are the only minimal transitive subgroups of vertex-transitive graphs of order pqr with a transitive solvable subgroup of automorphisms, for all values of p , q , and r . (Received January 25, 2022)