Many artists have decorated convex polyhedra with different kinds of patterns. We extend this artistry by applying patterns to *triply periodic polyhedra*, infinite polyhedra in 3-dimensional Euclidean space that repeat in three independent directions. The faces of the polyhedra we consider will be copies of a regular polygon; and we further require that they be *uniform*: there is an isometry of the polyhedron that takes any vertex to any other vertex. These polyhedra are often called hyperbolic since the sum of the angles about each vertex is greater than 2π. Up to color symmetry, we decorate each polygon face with the same pattern of motifs. Most of the triply periodic polyhedra that are known contain embedded Euclidean lines. These embedded lines can be used for artistic purposes. For example if the motif is an animal with bilateral symmetry, that mirror line can be placed on one of the embedded lines. Although the polyhedra we discuss do not seem to have been classified, in 1926 H.S.M. Coxeter and John Petrie proved that there were three such polyhedra whose symmetry groups are flag-transitive, the natural analogs of the Platonic solids. We show patterns on those and other triply periodic polyhedra.