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The prototypical example of an o-minimal structure is formed by the semialgebraic sets. In the 1980's, van den Dries observed that many properties of semialgebraic sets follow from a few axioms. Since then the investigation of o-minimal structures, i.e. structures satisfying these axioms, has been a flourishing subject, with many applications to other areas of mathematics. Here we shall focus on o-minimal expansions of fields and their valuations. In particular, we show that whenever  $R$  is an o-minimal expansion of a field and  $V$  a proper convex subring then the o-minimality of the corresponding residue field with structure induced from  $R$  via the residue map is equivalent to  $(R, V)$  satisfying a first order axiom scheme. (Received January 26, 2010)