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MAIN THEOREM. *Assume* A *is a* $\mathbf{Z}$*-lattice and* $G \subset GL(A)$ *is a finite group. Then* $\mathbf{C}[A]^G$ *is a polynomial ring if and only if* G *is a reflection group and, for some choice of root system, it becomes a Weyl group with* A *as its weight lattice.*

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NOTE ADDED IN PROOF: As occasionally happens when a mathematician wanders from his area of expertise, he re-invents the wheel. The appendix (§ 4) can be eliminated by invoking a theorem of Serre [B] to the effect that the fixed ring of a suitably nice regular local ring under the action of a finite group is also regular local if and only if the group acts as a pseudo-reflection group on the tangent space of the original local ring. The fifth section is, to a large extent, implicit in work of Steinberg [C]. A statement closer to mine can be found in [A].

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