Product-mix auctions are sealed-bid mechanisms for trading multiple units of multiple differentiated goods. They implement competitive-equilibrium allocations based on the preferences that participants express in an easy-to-use-and-understand geometric language. All concave substitutes (respectively, strong substitutes) preferences can be uniquely represented, and no other preferences can be represented, by appropriate sets of permitted bids in the corresponding version of this language. These languages thus also provide new characterizations of ordinary substitutes, and of strong substitutes. We discuss implementation of the auctions, and extensions and variants of the language, e.g., allowing for budget constraints.