

CPS 296.1

Auctions & Combinatorial Auctions

Vincent Conitzer
conitzer@cs.duke.edu

A few different 1-item auction mechanisms

- **English** auction:

- Each bid must be higher than previous bid
- Last bidder wins, pays last bid

- **Japanese** auction:

- Price rises, bidders drop out when price is too high
- Last bidder wins at price of last dropout

- **Dutch** auction:

- Price drops until someone takes the item at that price

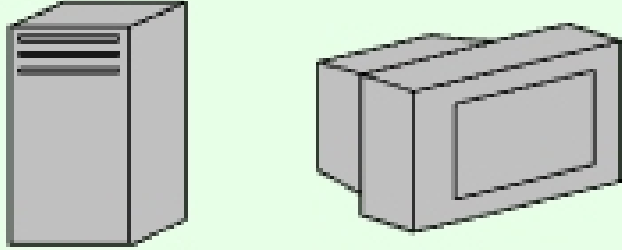
- **Sealed-bid** auctions (direct revelation mechanisms):

- Each bidder submits a bid in an envelope
- Auctioneer opens the envelopes, highest bid wins

- **First-price** sealed-bid auction: winner pays own bid

- **Second-price** sealed bid (or **Vickrey**) auction: winner pays second-highest bid

Complementarity and substitutability

- How valuable one item is to a bidder may depend on whether the bidder possesses another item
- Items a and b are **complementary** if $v(\{a, b\}) > v(\{a\}) + v(\{b\})$
- E.g. 
- Items a and b are **substitutes** if $v(\{a, b\}) < v(\{a\}) + v(\{b\})$
- E.g. 