Examples of auctions

- eBay (one seller, many buyer)
- Government’s procurement auction (many sellers, one buyer)
- Christie’s and Sotheby’s art auction
- Chicago wine company’s auction on wine
When are auctions appropriate?

1. Seller doesn’t know buyers’ true values
   - Otherwise
     - $y = \text{max value held by buyers}$
     - Seller imposes fixed price of $y - 1c$ and gets the biggest possible profit margin

2. Buyers don’t know each other’s value
   - Independent, private values

Assumption:
Only 1 item being auctioned
Types of auctions

- Real-time
  - Descending bid/Dutch auction
    - [http://www.youtube.com/watch?v=V2CK2TatM_U](http://www.youtube.com/watch?v=V2CK2TatM_U)
  - Ascending bid/English auction
    - [http://www.youtube.com/watch?v=q73-EaQydWU](http://www.youtube.com/watch?v=q73-EaQydWU)

- Simultaneous
  - First-price sealed bid auction
    - Highest bidder wins and pays own bid
  - Second-price sealed bid auction (Vickrey auction)
    - Highest bidder wins, but pays the 2\textsuperscript{nd} highest bid

Next

- Second-price auction
  - Bidder’s dominant strategy is to bid truthfully
    - Why?

- First-price auction
  - Will bidders be truthful?
Second-price auction
Bidders' dominant strategy is to bid truthfully

First-price auction

- Will bidders be truthful?
- No
  - Bid $v_i$ $\Rightarrow$ Payoff is 0, win or lose
  - Bid $< v_i$ $\Rightarrow$ Could potentially get +ve payoff
Winner's curse

- "Common value auction"
- The "intrinsic" value of the item is common to all bidders, but bidders are uncertain about the value
- Example: offshore oil-field
- Highest bidder may end up losing money, even in second-prize auction
  - Why?

Which auction is more profitable for a seller?

- First-price
  - Seller gets the highest bid, but the buyers lied (i.e., they underbid)
- Second-price
  - Seller gets the 2nd highest bid, but that is true value
- Which one is better? Unknown.
Auctions with multiple items?

Multiple items

- Not well understood
- Second-prize auction may not be collusion-proof
  - Example: Germany's spectrum auction (1999)
- "Generalized" second-prize (GSP) auction
  - Coming up - last week