Exam #2 (100 Points Total)

- Take the exam during an *uninterrupted period of no more than 2 hours.* (It should not take that long.) The space provided below each question should be sufficient for your answer, but you can use additional paper if needed. *You are encouraged to show your work for partial credit.* It is very difficult to give partial credit if the only thing on your page is "$x = 3$".

- *Other than this cheat sheet, all you are allowed to use for help are the basic functions on a calculator.* Partial translation: no books, no notes, no websites, no talking to other people, and no advanced calculator features like programmable functions or present value formulas.

- People who have taken the exam can talk to each other all they want, and people who have not taken the exam can talk to each other all they want, but communication between the two groups about class should be limited to three phrases: "Yes", "No", and "Have you taken the exam?"

- For questions or other emergencies, call me at x5124 or 206-351-5719.

- **Expected value** is given by summing likelihood times value over all possible outcomes:

$$\text{Expected Value} \quad = \sum_{\text{Outcomes } i} \text{Probability}(i) \cdot \text{Value}(i).$$

- A **Pareto efficient** (or **Pareto optimal**) allocation or outcome is one in which it is not possible find a different allocation or outcome in which nobody is worse off and at least one person is better off. An allocation or outcome B is a **Pareto improvement over A** if nobody is worse off with B than with A and at least one person is better off.

- A (strictly) **dominant strategy** for player X is a strategy which gives player X a higher payoff than any other strategy *regardless of the other players' strategies.*

- In an **ascending price auction**, the price starts out at a low value and the bidders raise each other's bids until nobody else wants to bid. In a **descending price auction**, the price starts out at a high value and the auctioneer lowers it until somebody calls out, "Mine." In a **first-price sealed-bid auction**, the bidders submit bids in sealed envelopes; the bidder with the highest bid wins, and pays an amount equal to his or her bid (i.e., the highest bid). In a **second-price sealed-bid auction**, the bidders submit bids in sealed envelopes; the bidder with the highest bid wins, but pays an amount equal to the *second-highest* bid.