

PROBLEM

To be turned in at the beginning of next class (Game theory 1).

Your answers will not be graded: turn this in for class participation credit.

Your Name:

You are a duopolist producer of a homogeneous good. Both you and your competitor have **zero** marginal cost. The market demand curve is given by:

$$P = 60 - Q$$

where $Q = Q_1 + Q_2$, Q_1 is your output, and Q_2 is your competitor's output. Your competitor is a randomly selected student taking 15.010. **Your objective is to maximize your profit.**

(a) You and your competitor will play this game *only once*, and you both announce your decisions at the same time. What is your choice of output Q_1 ?

What do you expect your competitor to choose for Q_2 ?

What price P do you expect to exist in the market?

(b) You play the game *only once*, as above, but, this time you must announce your decision *before* your competitor does. Will you choose the same quantity?

If not, how much will you produce?

(c) Now, instead of choosing output, you and your competitor each choose a *price*. Because the output is homogeneous, consumers will purchase from whoever offers the lowest price. Again, you will play this game only once, and the objective is to maximize your profit.

Will you choose the price you expected to occur in (a)?

If not, what is your choice of price P_1 ?