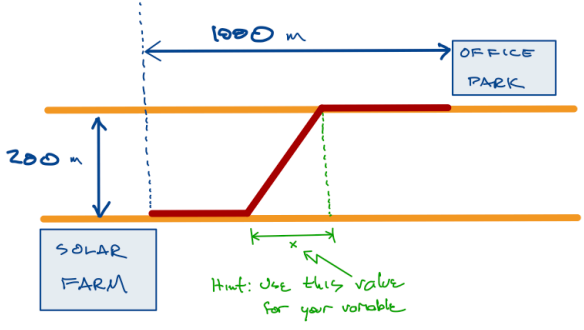
Work on these with your partner(s) at the board

1. A utility company is planning to run a cable from a solar farm on one side of a river to an office park on the other side. It costs \$4 per meter to run the cable over land, while it costs \$5 per meter to run the cable under water. Suppose the river is 200 meters wide and the office park is 1000 meters downstream from the solar farm.



   (a) What is the most economical way to lay the cable?
   (b) How much will it cost?

2. The utility company still wants to run a cable from the solar farm to the office park as in #1, but due to river flooding becoming more unpredictable, they have adjusted the cost to lay the cable under water. It now costs $6 per meter run cable under water but still $4 per meter to run the cable over land.
   (a) What is the most economical way to lay the cable in this scenario? Compare your answer to your answer in 1(a). Does this make sense?
   (b) How much will it cost?

3. Trader Joes is designing a cylindrical can to hold 1 liter of chicken broth. Suppose the side costs 0.02 cents per square cm and the top and bottom cost 0.04 cents per square cm.
   (a) What are the dimensions that will minimize the cost?
   (b) How much will it cost?