

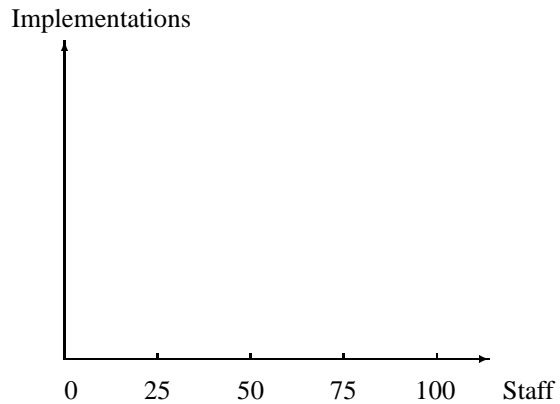
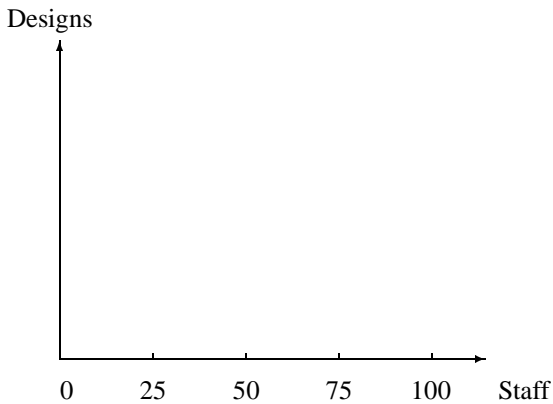
HANDOUT 1
 Production Possibility Frontier (PPF) Example
 Economics 1, UCLA, Fall 1998
 Instructor: Geoffrey Gerdes

1. Suppose you are the manager of a consulting firm that designs and produces custom software solutions for your clients. To accomplish these tasks you supervise a large staff of programmer/analysts. For reasons dictated by the needs of your clients, and by the nature of your business, you offer and sell two separate services, technical design specifications (a document describing how best to solve a client's problem) and actual implementations (in the form of hardware and software).

The imperfect substitutability of your staff results in the following schedule showing the maximum monthly output you can achieve of the 2 products/services depending on the number of your staff you devote to each type:

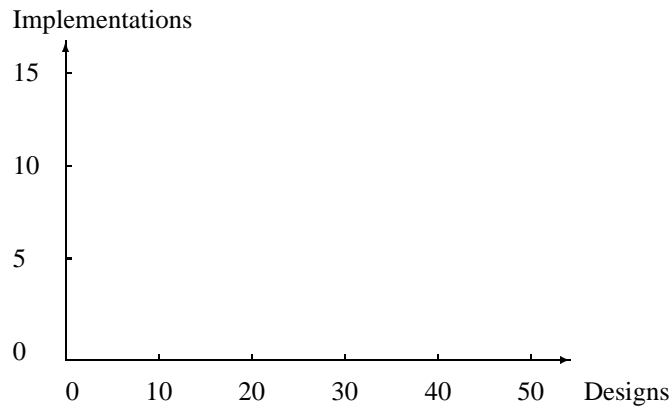
Staff Members	Designs	Implementations
0	0	0
25	20	7
50	35	12
75	45	14
100	50	15

In the following graphs, draw the *total product* curves by plotting the number of Designs and Implementations on the vertical axes against the number of staff members on the horizontal.



Can you name some possible explanations for the shape of these curves (in other words, what might cause the imperfect substitutability)?

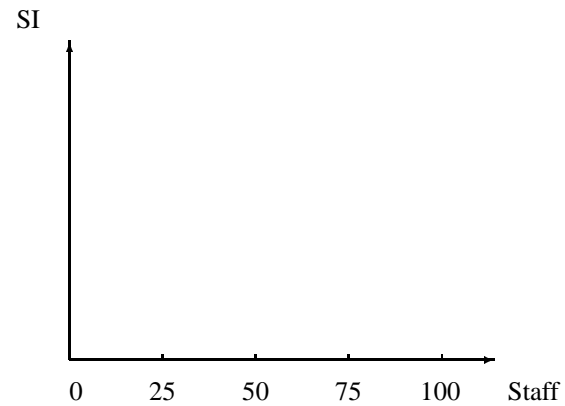
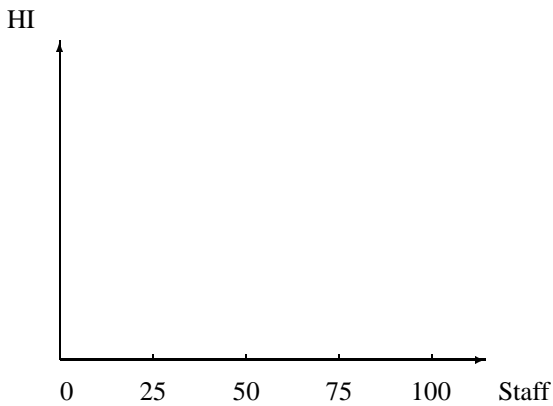
In the following graph, plot the PPF for the consulting firm:



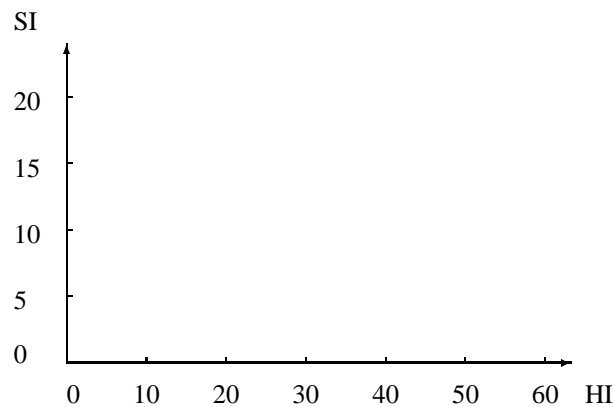
2. Now suppose that your firm provides complete software solutions to clients, including design and implementation in the total package, but solutions naturally fall into 2 categories, hardware-intensive (HI) and software-intensive (SI). The following schedule shows the maximum amount of each type of solution your company can provide depending on the number of your staff devoted to each type:

Percent of Staff	Hardware-intensive	Software-intensive
0	0	0
25	15	5
50	30	10
75	45	15
100	60	20

In the following graphs, draw the *total product* curves by plotting the number of hardware-intensive and software-intensive solutions on the vertical axes against the number of staff on the horizontal.



In the following graph, plot the PPF for the consulting firm:



3. Questions concerning the scenarios described above.

- What happens to the curves if the programmer/analyst union bargains for reduced work hours and 2 weeks additional vacation per year?
- What happens to the curves if 1/2 of the employees participate in a certification program which increases their productivity in design?
- What if a new software program reduces time spent implementing solutions?
- In the first scenario, what if the firm's facilities limit design production to no more than 20 per month? Where is the technological PPF? What are the firm's actual production choices?
- Given the scenario in d), at what point on the frontier will you choose to produce?