

Math 236 in-class work for Feb. 1, 2001

A computer programmer (P), a mathematician (M), and an electrical engineer (E) are partners in a consulting firm. Each subcontracts a portion of his or her own work to the other two.

For each \$1.00 of consulting work that P produces, he consumes as inputs \$0.40 of his own work, \$0.10 of M's work, and \$0.30 of E's work.

For each \$1.00 of work that M produces, she consumes as inputs \$0.20 of P's work, \$0.30 of her own work, and \$0.40 of E's work.

For each \$1.00 of work that E produces, she consumes as inputs \$0.30 of P's work, \$0.40 of M's work, and \$0.20 of her own work.

- (a) How much work input from each of the partners will be consumed if P produces \$1,000 of consulting? In technical terms, what are the "intermediate demands" upon the three in order for P to produce this much output?

- (b) If P, M, and E produce x_1 , x_2 , and x_3 dollars output, respectively, then what are the total intermediate demands from each of the three?

- (c) In a certain week, the firm's customers contract for \$2,000 output from P, \$3,500 from M, and \$2,500 from E. How much must each of the partners produce in order to satisfy these "final demands"?