

Linear Programming – Cabinets

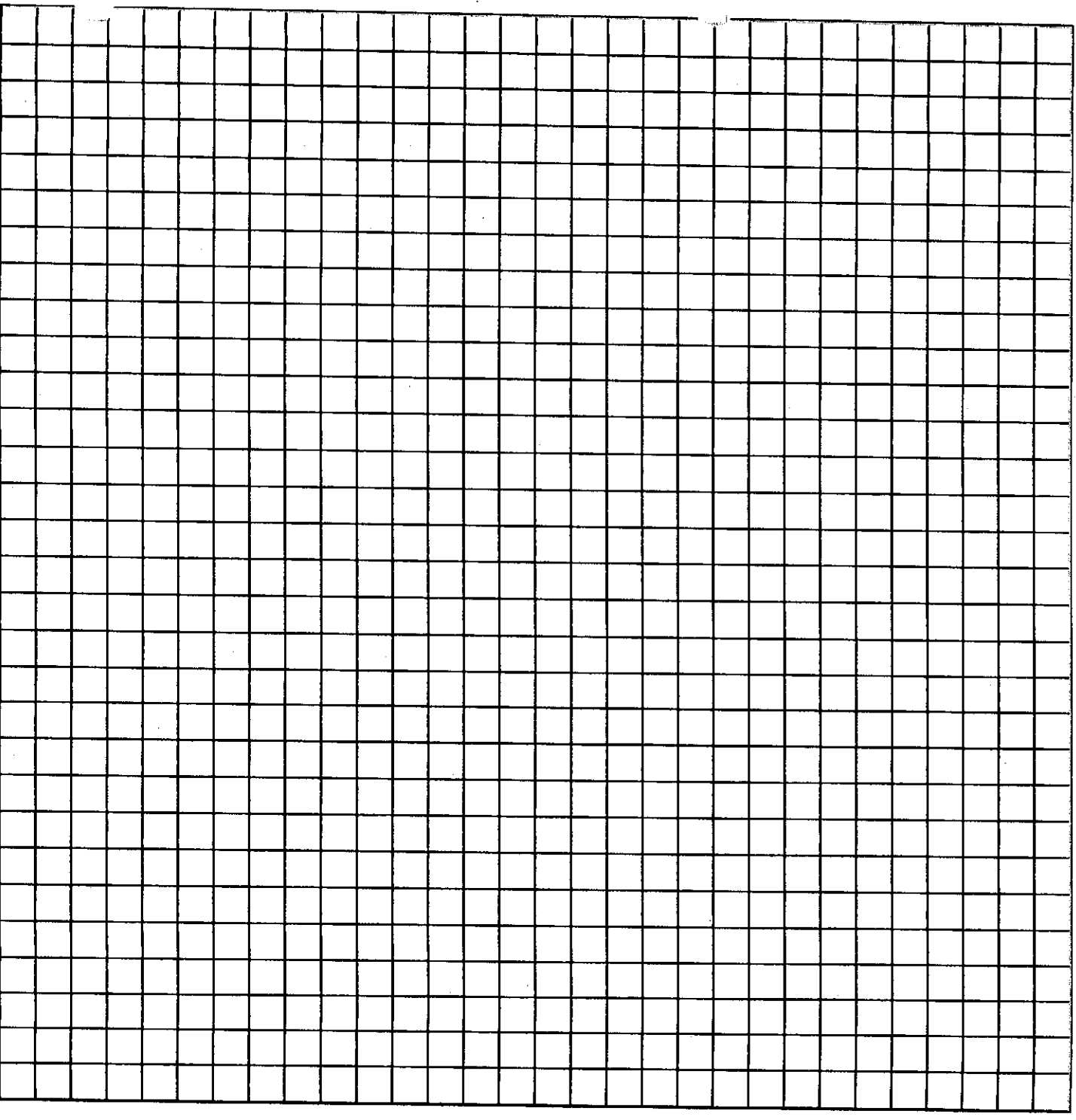
Your company produces cabinets using two different processes. The number of assembly hours required for each process is listed in the table below. You can use up to 3000 hours of machine time, up to 3600 hours of skilled labor, and up to 3600 hours of unskilled labor. The profit from Process A is \$50 per cabinet and the profit from Process B is \$70 per cabinet. How many cabinets should you make with each process to obtain a maximum profit?

	Process A		Process B	
Machine Time	1		2	
Skilled labor	2		2	
Unskilled labor	3		1	

A large grid of graph paper, consisting of 30 columns and 20 rows, intended for plotting the feasible region and objective function for the linear programming problem.

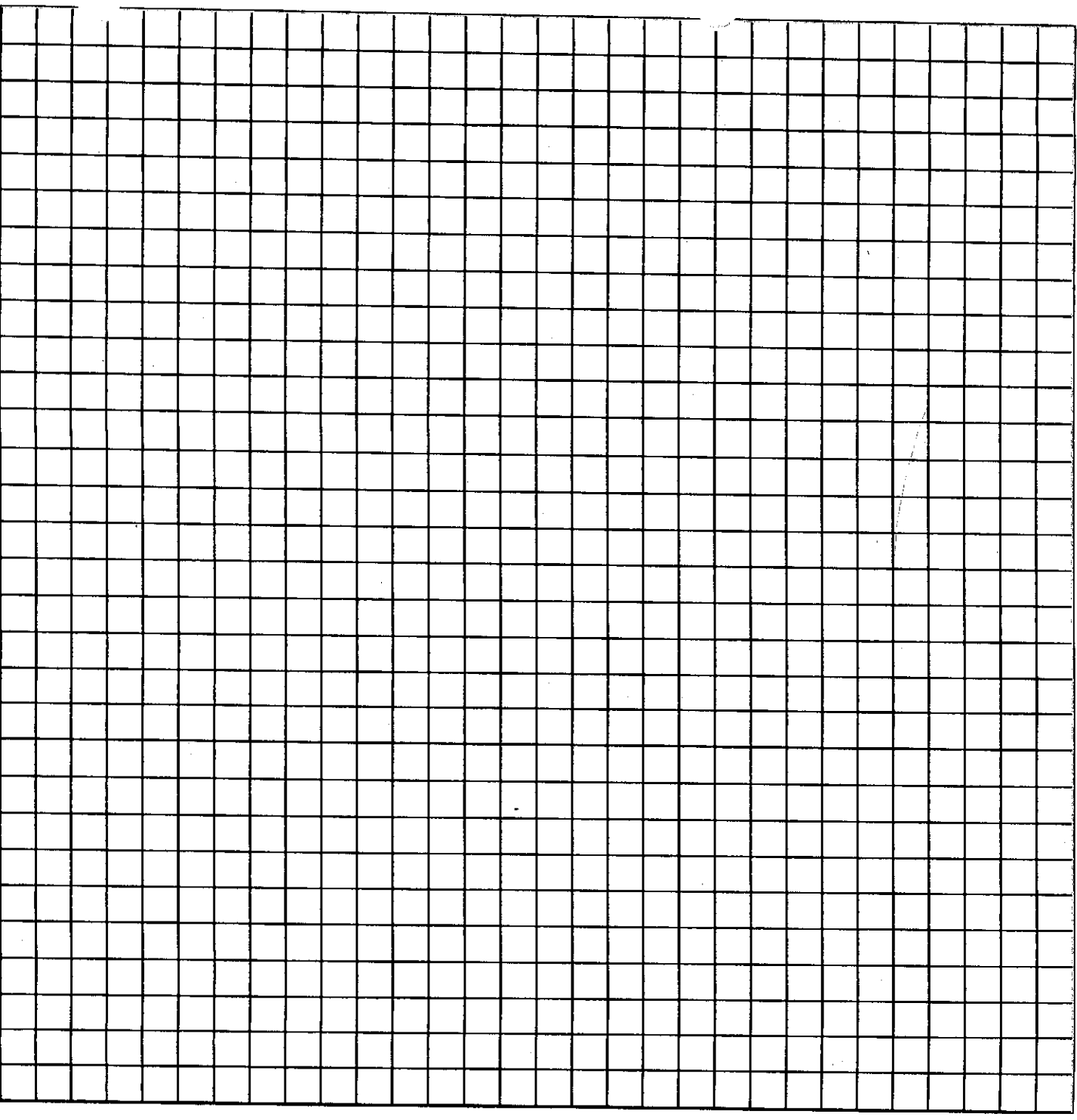
Linear Programming – Parking Lot

The area of a parking lot is 600 square meters. A car requires 6 square meters of space. A bus requires 30 square meters space. The attendant can handle only 60 vehicles total. If a car is charged \$2.50 and a bus is charged \$7.50 to park, how many of each should be accepted into the lot to maximize income?



Linear Programming – Inventory Control

You are the assistant manager of an appliance store. Next month you will order two types of stereo systems. Model A costs \$300. Your profit is \$40. Model B costs \$400 and your profit is \$60. You expect a profit of at least \$4800. You expect to sell at least 100 units. How many of each model should you order to minimize the cost?



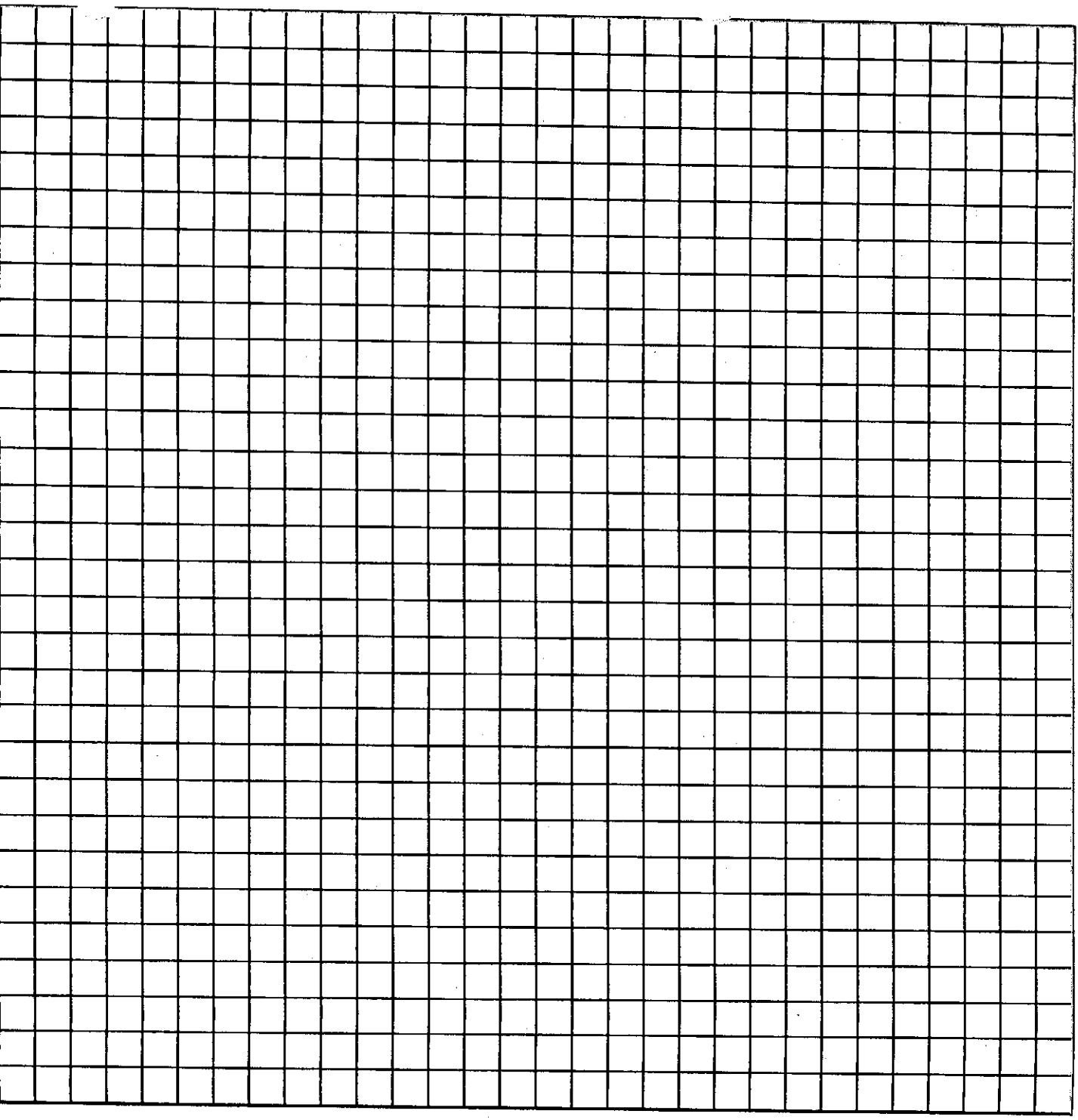
Linear Programming – The Magician

Your school has contracted a professional magician to perform at the school. The school has guaranteed an attendance of at least 1000 people and total ticket receipts of at least \$4800. The tickets are \$4 for students and \$6 for non-students, of which the magician receives \$2.50 and \$4.50, respectively. What is the minimum amount of money the magician could receive?

A large grid of graph paper, consisting of 30 columns and 20 rows of small squares, intended for graphing the solution to the linear programming problem.

Linear Programming – Missiles

The Fly-by-Night Aircraft Corporation manufactures two missiles, the Patriot and the Scud. No more than 7 Patriots and no more than 11 Scuds can be manufactured per day. No more than 12 total missiles can be manufactured per day. The number of Patriots manufactured must be no more than twice the number of Scuds. You must use more than 1000 man-hours of labor per day. It takes 100 man-hours to manufacture each Scud and 200 man-hours to manufacture each Patriot. If Fly-by-Night makes a profit of \$300 per Scud and \$200 per Patriot, how many of each type of missile should be produced per day to give the greatest profit?



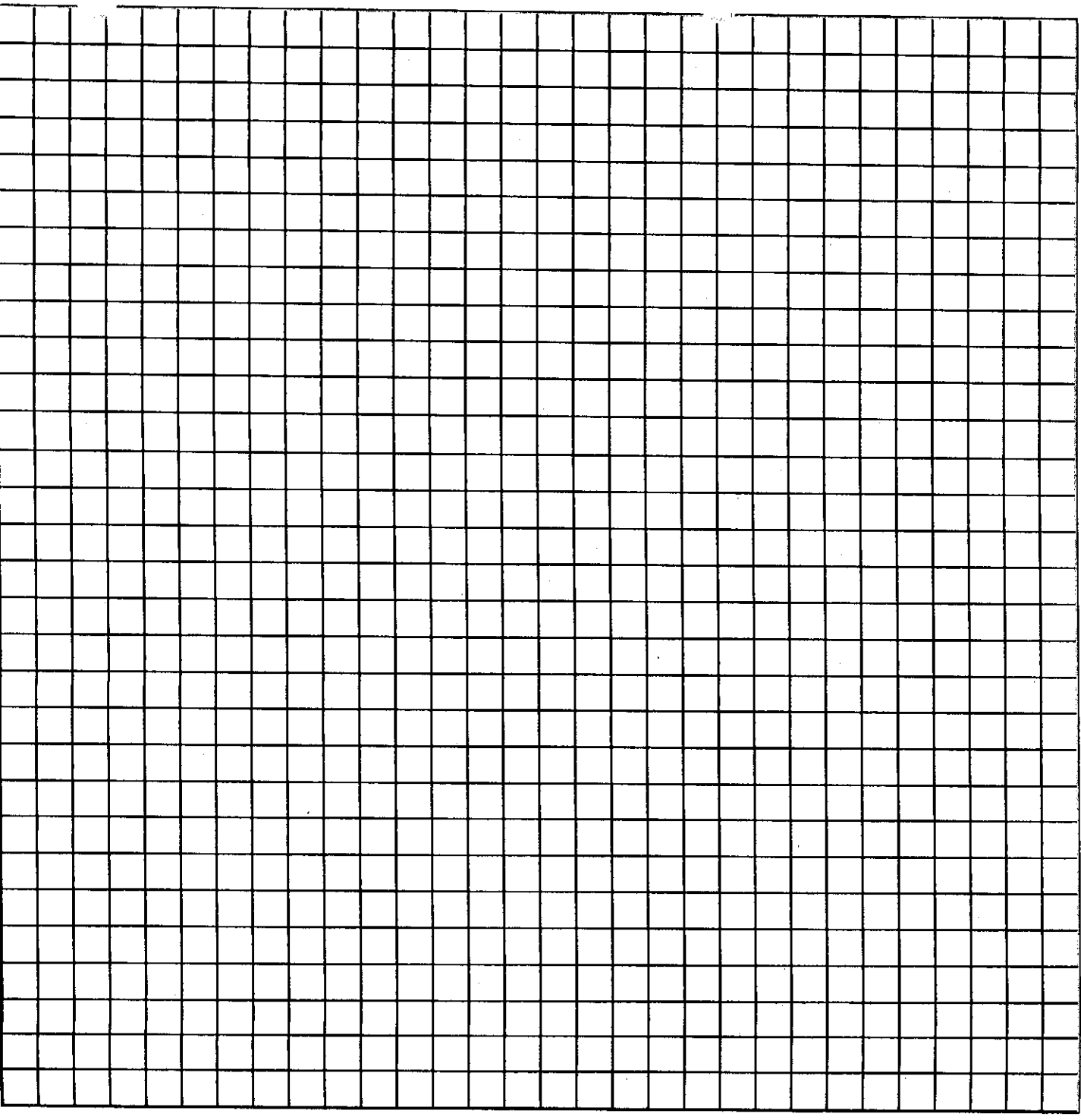
Linear Programming – Transportation

The officers of a high school senior class are planning to rent buses and vans for a class trip. Each bus can transport 40 students, requires 3 chaperones, and costs \$1200 to rent. Each van can transport 8 students, requires 1 chaperone, and costs \$100 to rent. The officers must plan to accommodate at least 400 students. Since only 36 parents have volunteered to serve as chaperones, the officers must plan to use at most 36 chaperones. How many vehicles of each type should the officers rent in order to minimize the transportation costs? What are the minimal transportation costs?

A large grid of graph paper, consisting of 30 columns and 20 rows of small squares, intended for graphing the solution to the transportation problem.

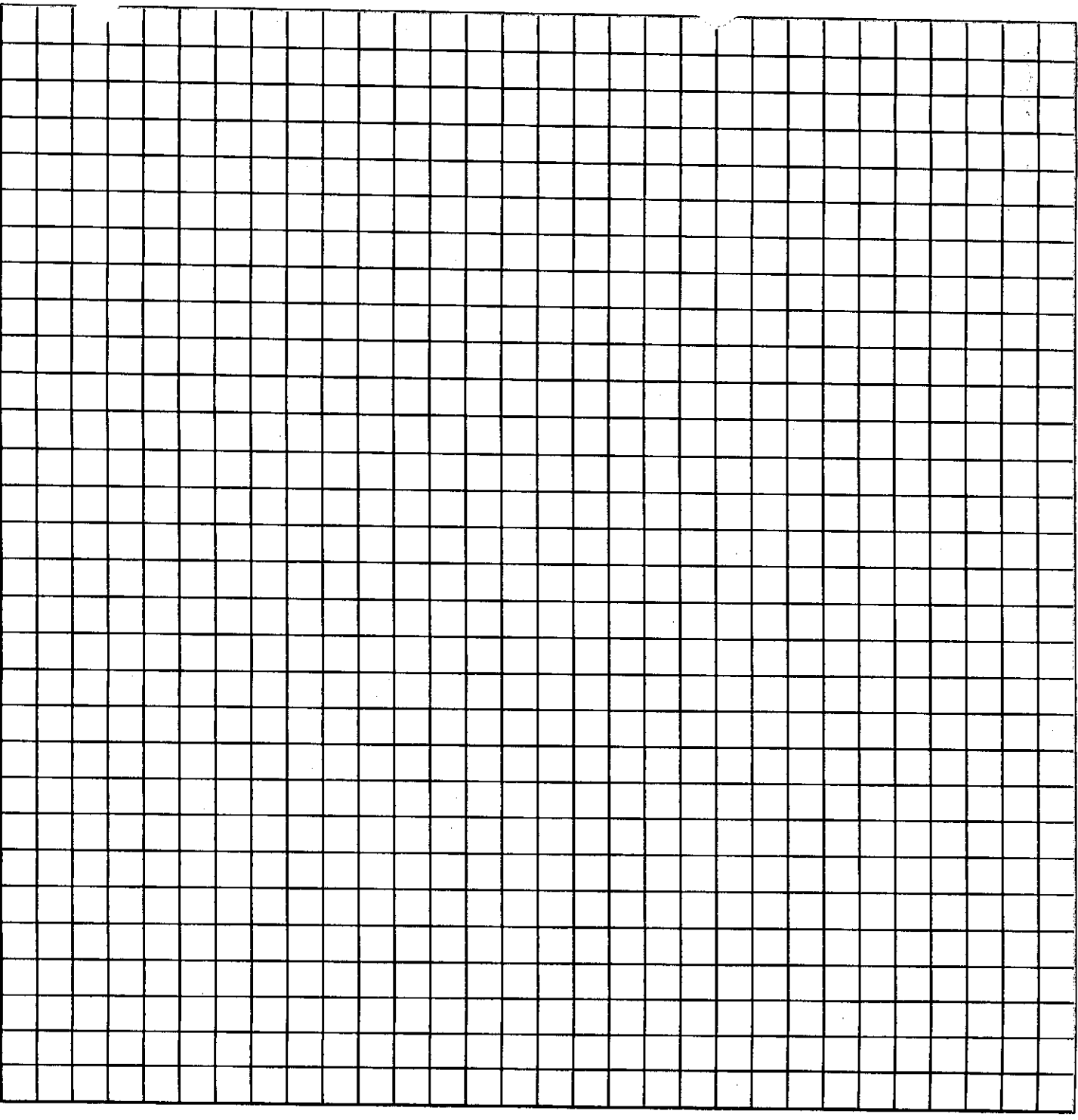
Linear Programming – CB Radios

A manufacturer of CB radios makes a profit of \$25 on a deluxe model and \$30 on a standard model. The company wishes to produce at least 80 deluxe models and at least 100 standard models per day. To maintain high quality, the daily production should not exceed 200 radios. How many of each type should be produced daily in order to maximize the profit?



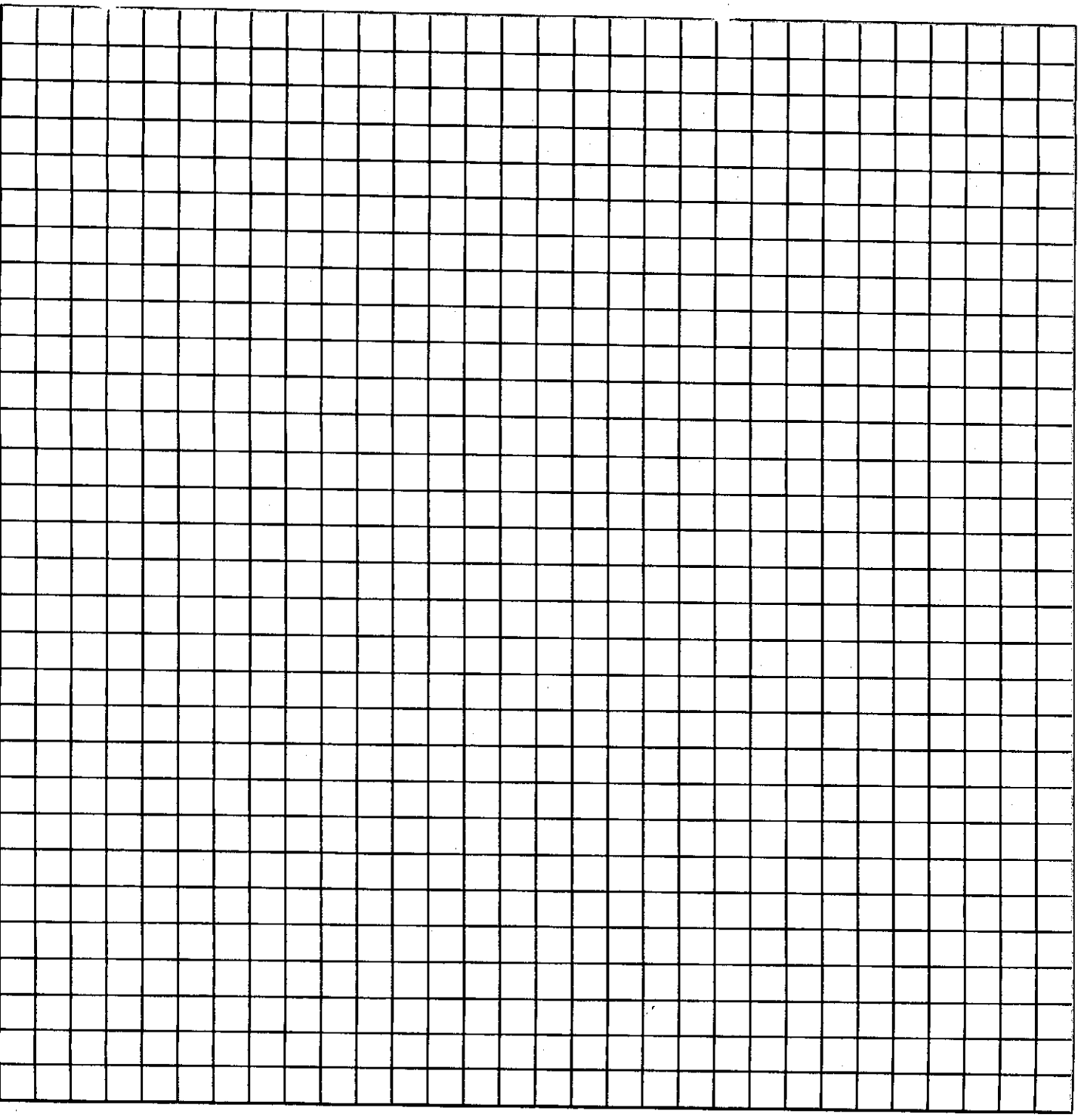
Linear Programming – Tennis Anyone?

A manufacturer of tennis rackets makes a profit of \$15 on each Set Point racket and \$8 on each Double Fault racket. To meet dealer demand, daily production of Double Faults should be between 30 and 80. The number of Set Points should be between 10 and 30. In order to maintain high quality, the total number of rackets produced should not exceed 80 per day. How many of each type should be manufactured daily to maximize the profit?



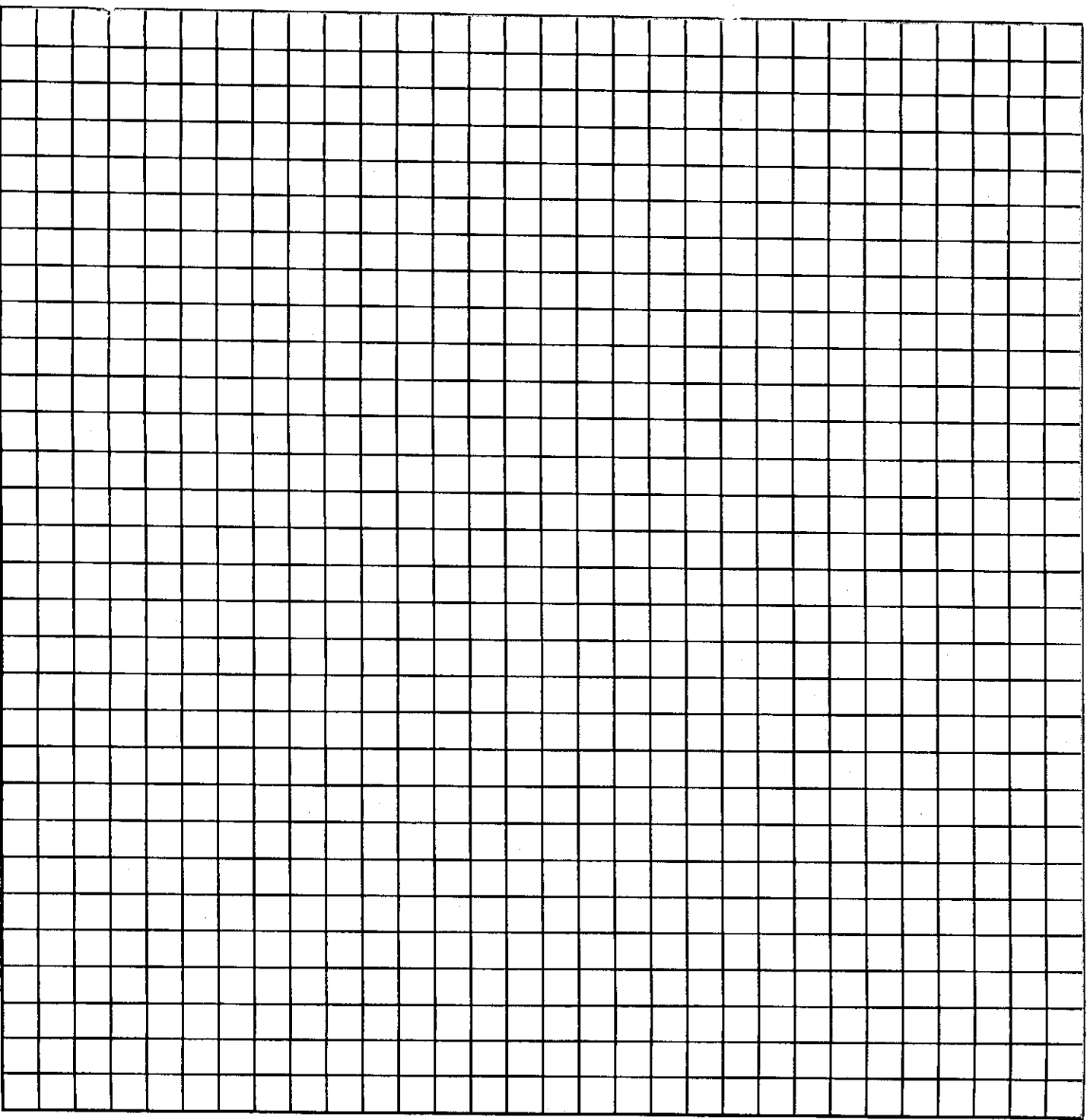
Linear Programming – Math Quiz

The math quiz consists of computation problems and graphing problems. Computation problems are worth 6 points each and graphing problems are worth 10 points each. You can answer a computation problem in 2 minutes and a graphing problem in 4 minutes. You have forty minutes to take the quiz and may choose no more than 12 problems to answer. Assuming you answer all the problems attempted correctly, how many of each type should you answer to get the highest score?



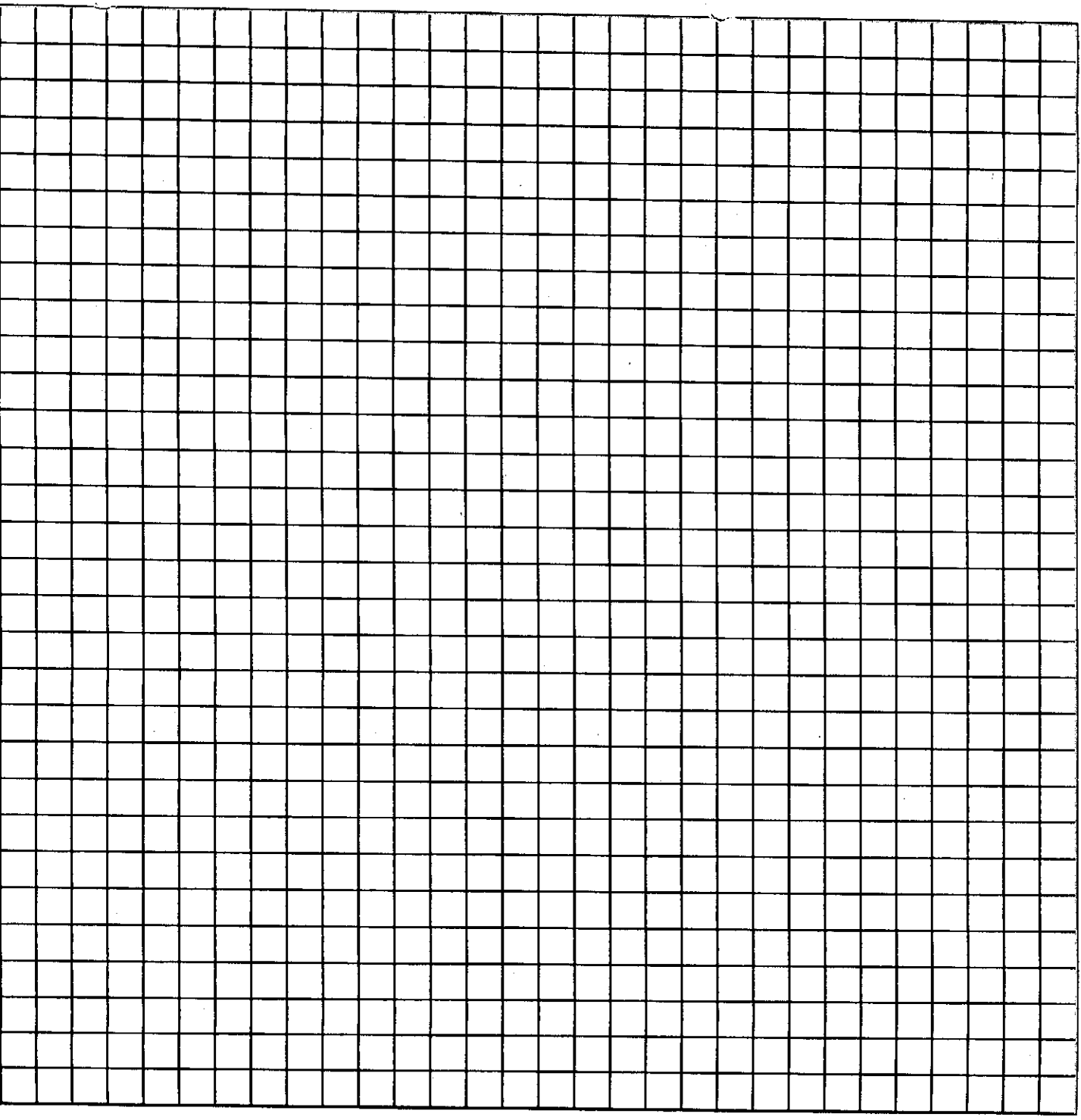
Linear Programming – Fish

A biologist needs at least 40 fish for her experiment. She cannot use more than 25 perch or more than 30 bass. Each perch costs \$5 and each bass costs \$3. How many of each fish should she use in order to minimize cost?



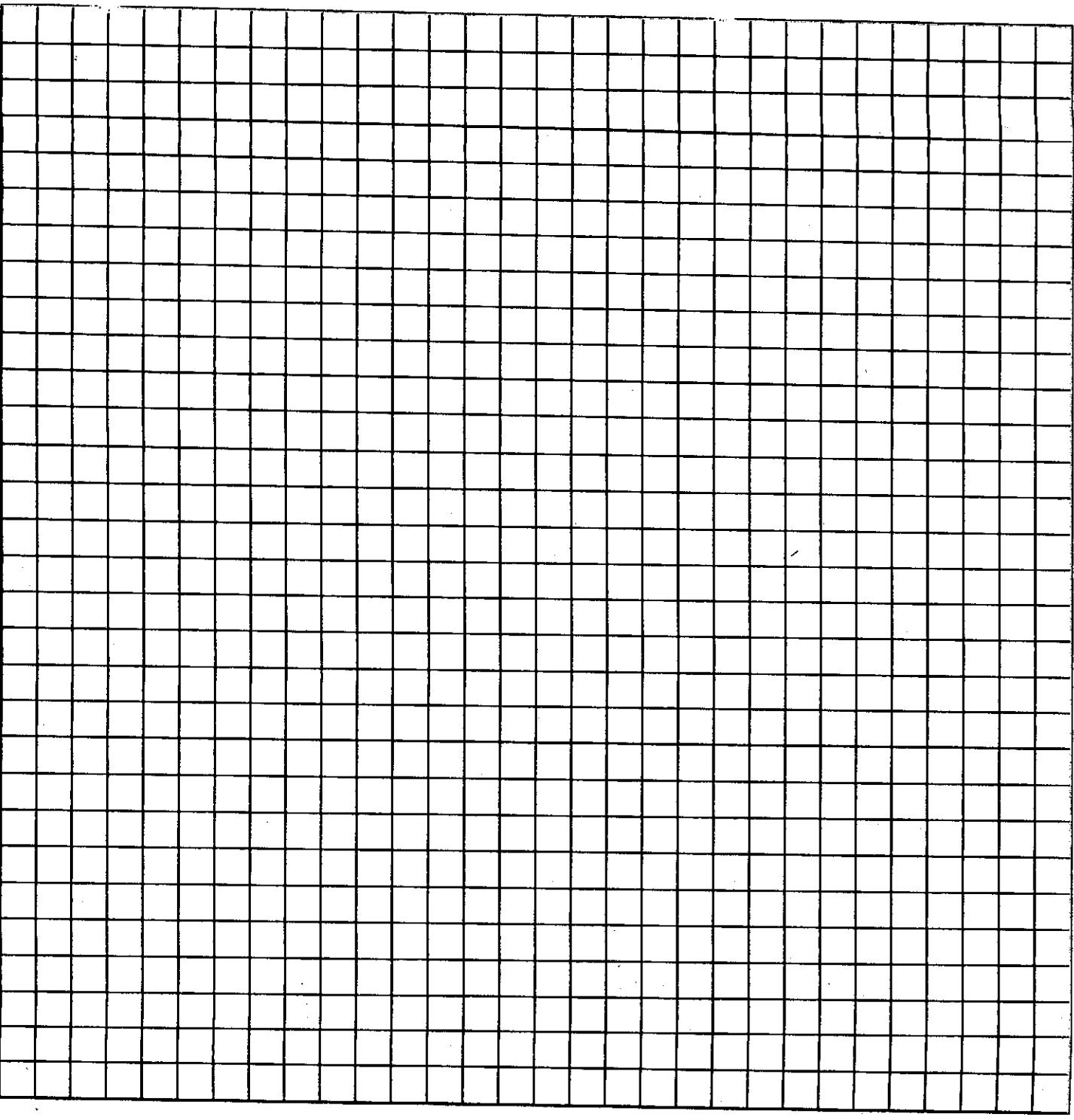
Linear Programming - TV and VCR Production

A company manufactures television sets and VCR's. It must produce at least 20 TV sets per month, but cannot make more than 60 of them. The company also cannot produce more than 100 VCR's per month. Total production of TV sets and VCR's combined cannot exceed 140. The profit for a TV set is \$45 and \$175 for a VCR. Find the number of each item that should be manufactured in order to maximize profit.



Linear Programming – Widgets and Gadgets

A manufacturer makes widgets and gadgets. At least 500 widgets and 700 gadgets are needed to meet the minimum daily demands. A machine can produce 1200 widgets and 1400 gadgets per day. The combined number of widgets and gadgets that the packaging department can handle is 2300 per day. If the company sells widgets for \$.40 and gadgets for \$.50 each, how many of each item should be produced for maximum income?



Linear Programming – Lawn Mower

For each lawn mower motor made by Process A, you make \$25 profit. For each motor made by Process B, you make \$35 profit. Using the conditions given in the table below, how many motors should be produced by each process to maximize your profits?

	Process A 3 hours	Process B 6 hours	Maximum Hours 1500
Unskilled Labor			
Skilled Labor	2 hours	1 hour	700

A large grid of graph paper, consisting of 20 columns and 30 rows of small squares, intended for plotting the linear programming problem.