The Seven Steps for Solving a Linear Programing Problem

- 1. Define variables for unknowns in the problem
- 2. Used defined variables to write constraints for the problem
- 3. Graph the system of inequalities to obtain the feasible region
- 4. On the graph, determine and label the corner points of the feasible region
- 5. Define the objective function
- 6. Evaluate the objective function at all corner points
- 7. Check that the solution makes sense in terms of the original problem and include appropriate units

Dr. Lee's dentist practice is open for 7 hours each day. His receptionist schedules appointments, allowing 1/2 hour for a cleaning and 1 hour to fill a cavity. He charges \$40 for a cleaning and \$95 for a filling. Dr. Lee cannot do more than 4 fillings per day. Find the number of each type of appointment that maximizes Dr. Lee's income for the day

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A book store manager is purchasing new bookcases. The store needs 320 feet of shelf space. Bookcase A provides 32 ft of shelf space and costs \$200. Bookcase B provides 16 ft of shelf space and costs \$125. Because of space restrictions, the store has room for at most 8 of bookcase A and 12 of bookcase B. How many of each type of bookcase should the manager purchase to minimize the cost?

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A health food store is creating smoothies with soy protein and vitamin supplements. A Soy Joy smoothie costs \$2.75 and uses 2 ounces of soy and 1 ounce of vitamin supplement. A Vitamin Boost smoothie costs \$3.25 and uses 3 ounces of vitamin supplement and 1 ounce of soy protein. The store has 100 ounces each of vitamin supplement and soy protein in stock. How many of each type of smoothie should the store make in order to maximize revenue?