

**Algebra II**  
**Applications of Linear Programming**

Name \_\_\_\_\_  
Date \_\_\_\_\_ Period \_\_\_\_\_

**Solve the following problems using linear programming.**

1. Rosalyn works no more than 20 hours a week during the school year. She is paid \$10 an hour for tutoring geometry students and \$7 an hour for delivering pizzas for Pizza King. She wants to spend at least 3 hours but no more than 8 hours a week tutoring. Find Rosalyn's maximum earnings.
2. The Northern Wisconsin Paper Mill can convert wood pulp to either notebook paper or newsprint. The mill can produce at most 200 units of paper a day. At least 10 units of notebook paper and 80 units of newspaper are required daily by regular customers. If the profit on a unit of notebook paper is \$500 and the profit on a unit of newsprint is \$350, how many units of paper should the manager have the mill produce each day to maximize profits?
3. A sales associate at a paint store plans to mix color  $A$  and color  $B$ . The sales associate has exactly 32 units of blue dye and 54 units of red dye. Each gallon of color  $A$  requires 4 units of blue dye and 1 unit of red dye. Each gallon of color  $B$  requires one unit of blue dye and 6 units of red dye.
  - a) Let  $a$  represent the number of gallons of color  $A$ , and let  $b$  represent the number of gallons of color  $B$ . Write the inequalities that represent the number of gallons of paint that can be mixed.
  - b) Find the maximum number of gallons,  $a + b$ , that can be mixed.
4. TeeVee Electronics, Inc., makes console and wide-screen televisions. The equipment in the factory allows for making at most 450 console televisions and 200 wide-screen televisions in one month. It costs \$600 per unit to make a console television and \$900 per unit to make a wide screen television. The profit on each console television is \$125 per unit, while the profit for each wide screen television is \$200 per unit. During the month of November, the company can spend \$360,000 to make these televisions. To maximize profits, how many of each type should they make?