T In the Back Yard   N ⊠ ⊖

Damon has 60 cement tiles that are each one square foot. He has a string of lights that is 40 feet long. His family wants to make a patio big enough for a picnic table. (A patio is a paved area where families can relax outside.) You may use *Centimeter Grid Paper* or square-inch tiles to help you.

1. What rectangle would you tell Damon to make with the square-foot tiles? You do not have to use all the tiles or the whole string of lights, but you cannot use more than 60 tiles or more than 40 feet of lights.

   A. Draw your patio. Label the side lengths.
   B. Why do you think this is a good rectangle for a patio?
   C. What is the area of your patio?
   D. What is the perimeter? Write a number sentence for the perimeter.
   E. Do you have tiles that will not be used in your patio? If so, how many?
   F. Are there lights left over? If so, how many feet?

2. Damon decides to make a patio that has the largest possible area with the whole perimeter lighted by the lights. He plans to use all 40 feet of lights.

   A. What is the rectangle with the largest area he can build and use exactly 40 feet of lights, if he can buy more square-foot tiles? Draw Damon's patio on *Centimeter Grid Paper*.
   B. What is the area of the patio?
   C. Does Damon have enough tiles to make this patio? How do you know?
   D. If he needs to buy more square-foot tiles, how many more does he need to buy?