

Exemplars

Name: _____

P/S	R/P	Com	Con	Rep	A/Level

Billy's Goat 0

Billy's Goat

Billy's family had a pet goat that liked to jump their fence and graze on the grass in their neighbor's yard. Billy's dad told his children that he would have a contest to see which child could solve the goat problem most efficiently. The prize is freedom from mowing any grass all summer! He asked his children to find the best possible place to tie the goat in their own backyard so it would have the maximum grazing area. He gave the children some rope and a stake to tie the goat to and reminded the children that their yard was square and the total length of their fence was 600 feet.

Help Billy win the contest by explaining the answers to the following questions:

- Where should the stake be placed so that the goat will have the maximum grazing area?
- What length of rope should he use, and how much space will the goat have to graze?
- How much grass will be left to mow?
- If the lawn mower cuts 15,000 square inches in $1\frac{1}{2}$ minutes, about how many hours are needed to cut the remainder of the grass?

Show all of your mathematical thinking.