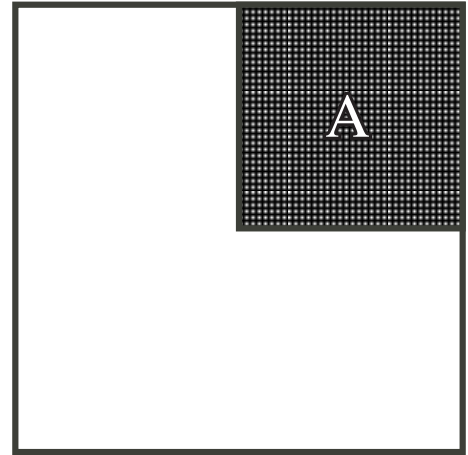


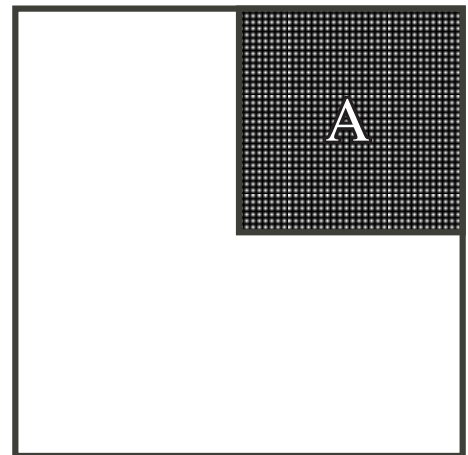
**Problem**

**Inherit this Problem! (For pairs or groups of students)**

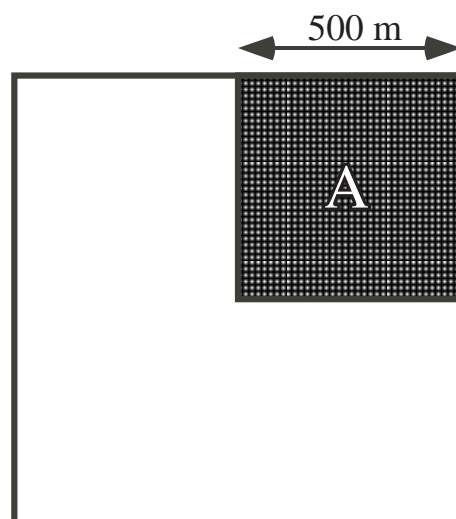
a) A landowner died and left a large, square piece of land to his wife and six children. His wife received one-quarter of the land (Section A), and his children had to parcel out the remaining three-fourths of land equally. Draw a picture showing how the landowner's children divided the land. Remember, each of the six sections must be the same size and shape.



b) Suppose that there were only four children. Draw a second picture showing how the landowner's children divided the land. Remember, each of the four sections must be the same size and shape.



c) Assume none of the land from b) was fenced. If each side of Section A has length 500 m, how much fencing, in total, would be required to enclose each of the four children's plots you designed in part b)?



**Hints**

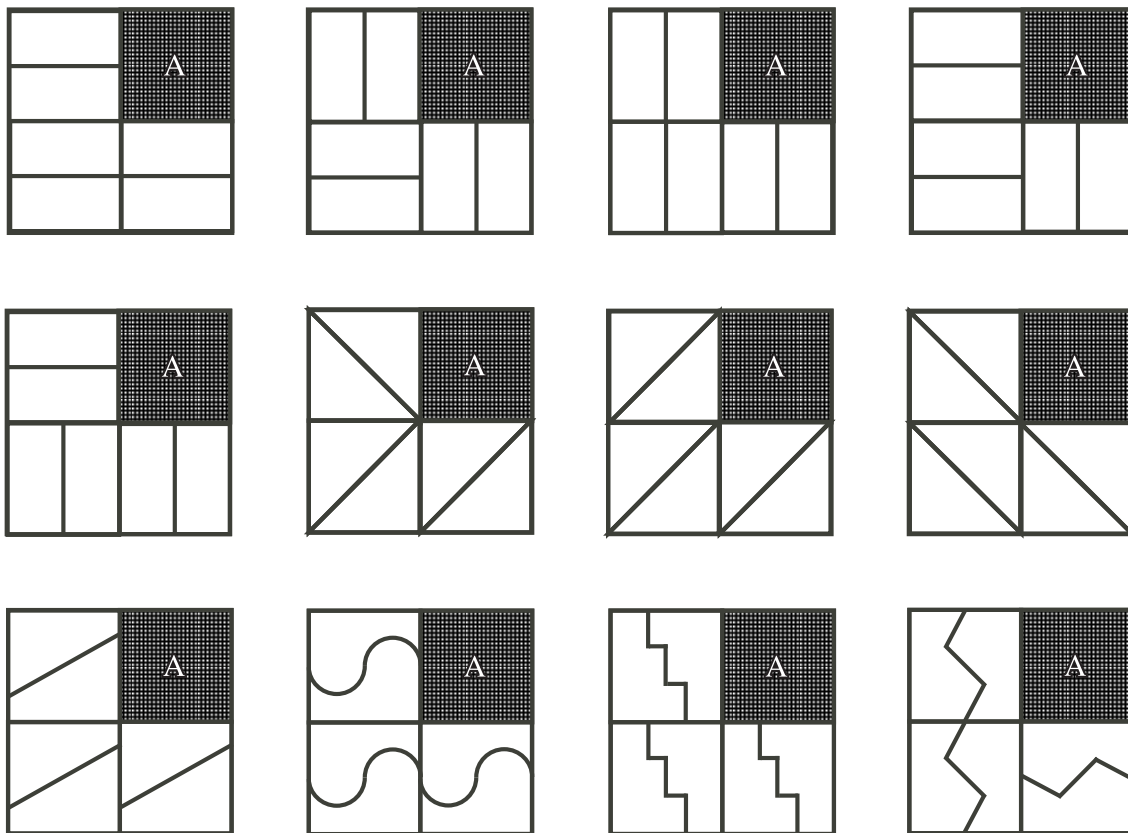
**Hint 1** - Must the plots be rectangular?

**Hint 2** - Do you need more than one fence along common boundaries?

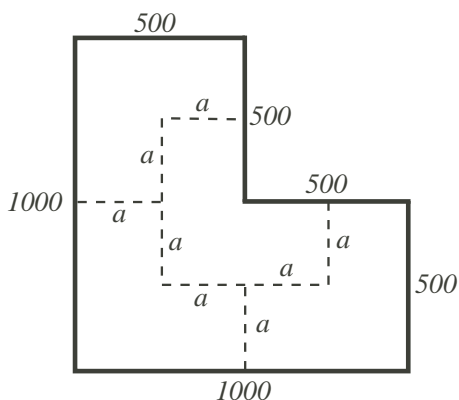
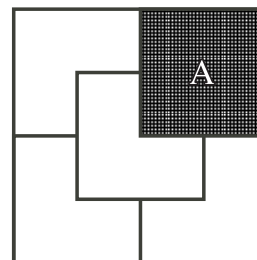
*Suggestion:* You may wish to have a class discussion about whether needing sections 'the same size and shape' permits sections that are reflections or rotations of one another.

**Solution**

- a) There are infinitely many solutions. Here is a selection; you may wish to have students contribute to a set of solutions for the whole class to critique, as to shape and equal size.



- b) Here is a solution. An interesting question for class discussion is whether there are any other solutions.



- c) If each side of section A has length 500 m, then the outside boundary of the four plots would require  $1000 + 1000 + 500 + 500 + 500 + 500 = 4000$  m of fencing. The interior (dashed) boundaries would require another  $8 \times a = 8 \times 250 = 2000$  m of fencing. Thus, in total, you would need  $4000 + 2000 = 6000$  m of fencing.