Please do not write on the subject, and do not forget to hand it back at the end.

OPTIMIZATION

A school manager has to buy at least 70 plates and 40 soup bowls.

Two wholesalers propose respectively:

- a pack A including 10 plates and 10 soup bowls for £10 and,

- a pack B including 20 plates and 10 soup bowls for £12,50.

We want to find the number x of packs A and the number y of packs B that the manager has to buy to minimize the cost.

1. Write an inequality expressing that 70 plates are required. Write another one expressing that 40 soup bowls are required.

2. In a set of axes with 2 cm unit, draw two adequate straight lines and shade the unwanted region.

3. Using the graph, explain why the manager can or cannot buy:

   i) 2 packs A and 2 packs B;

   ii) 3 packs A and 2 packs B;

   iii) 6 packs A and 1 pack B.

4. In this question:

   i) Write in terms of x and y the cost denoted by C corresponding to the purchase of x packs A and y packs B.

   ii) Draw the line corresponding to a cost of £72,50.

   iii) Draw the line corresponding to a cost of £55. What can you say about these lines? Why?

   iv) Draw the line corresponding to the minimal cost. Find x and y for the cost to be minimal; find the minimal cost.