

Problem

Farmer Ben has a rectangular vegetable garden that measures 4.5 metres by 9 metres. Unfortunately, the local hungry rabbits are eating all he grows. Being a peaceful man, Ben decides to build a 7.5 metre by 12 metre fence around the garden to protect his harvest.

- a) If the garden is centered in the fenced area, how much distance is there between the fence and each edge of the garden?
- b) If Ben expands his garden next year to use the whole area inside the fence, how much more planting area will he have, compared to this year?

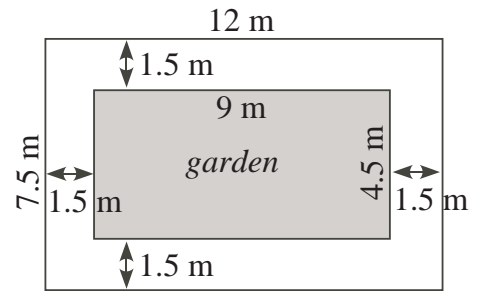
Hints

Hint 1 - Draw a careful diagram showing both the garden and the fence and their dimensions.

Suggestion: Supply students with graph paper to encourage accurate diagrams.

Solution

- a) From the diagram, we see that if the garden is centred, the difference of 3 m in each dimension will be evenly split, giving a distance of 1.5 metres between the fence and each edge of the garden.



- b) Since the new planting area will be $7.5 \times 12 = 90$ square metres, and the original garden was $4.5 \times 9 = 40.5$ square metres, Ben has added 49.5 square metres, i.e., he has more than doubled his planting area.