

CCT Weekly Practice Mathematics

VIRUS IN THE FIELD

Shyama is an upcoming organic farming researcher. She planted Heena shrubs in a straight line at a distance of 2m along the boundary of her triangular field. The diagram shows the plants at the edge of the field.



On Day 1, one of the plants in the middle of one side gets infected with a virus (V).



On Day 2, that plant is dead (D) and the virus infects the plants next to it.



This continues from day to day so this is the pattern on Day 3.



The diagram shows that the virus infects two more plants on day 3. So the total number of plants that are infected or dead is five.

Question 1

Complete the table given below

Day (n)	Total number of plants that are infected or dead (t)
1	1
2	3
3	5
4	
5	

Question 2

Find a formula for t in terms of n

Question 3

If on the 49th day all Henna plants are found dead, find the total number of Henna shrubs that Shyama had planted.

Question 4

If each Heena shrub occupies a space of 25 cm, find the perimeter of Shyama's field.

Question 5

On the 4th day, Shyama found that the spread of virus can be curbed by increasing the distance to more than 2m between a healthy and an infected plant. She decides to remove the plants next to the infected plants. The cost of removing a plant is Rs 10. Calculate the cost incurred by her for curbing the spread of the virus by removing the infected and the minimum required healthy plants.

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Answers

1.

4	7
5	9

2. $t = 2n - 1$

3. 97 plants

4. 218.25m

Total Plants = 97 and all are planted at a distance of 2m and each plant occupies 25 cm of space

$$\begin{aligned}\text{Perimeter} &= \text{Length of the boundary} = 97 \times 2 + 97 \times 25 = (194 + 24.25) \text{ m} \\ &= 218.25 \text{ m}\end{aligned}$$

5. Rs. 90

On 4th day 7 plants will be infected or dead and two healthy plants from either side to be shifted so

Total Cost for shifting 9 plants ($9 \times 10 = \text{Rs. } 90$)

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